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A Study on Employee Choice of Retirement Schemes: Empirical Evidence from Malaysian Public Universities

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ABSTRACT

Retirement systems are generally classified into two categories, namely, defined benefit (DB) and defined contribution (DC) plans. These plans differ in the method used to determine the benefits, or in the distribution of risk. While reducing the provision of the DB plan and replacing the DB plan with the DC plan are the contemporary trends world-wide, DB and DC plans still constitute the two major types of retirement schemes. Consequently, to choose between the two options is among the decisions faced by individuals and organisations. Alternatively, an individual may also voluntarily set up his or her own supplementary retirement plans through savings.

Malaysia, like many other developing countries, continues to face the problem of an ageing population which has become increasingly important to tackle. Consequently, employers, the government and employees need to make tough decisions to formulate the best retirement plan that can satisfy and meet the needs of the Malaysian workforce. Since there has been no study that has focused on the choice between the DB and DC retirement plans and the satisfaction of the workforce with the existing retirement plans in Malaysia, this is a gap that this research attempts to fill. Moreover, individual employees' retirement decisions and choice patterns have not been extensively investigated despite the fact that their inputs are vital due to the greater responsibility of employees to set up their own retirement plans in the future.

This research aims to study the factors predictors) that influence the type of retirement plans chosen by Malaysian public universities' employees guided by the Bounded-Rationality-Theory. The factors that influence and help predict the choice of retirement plans include demographic-features, knowledge level, voluntary savings perceptions, extension of working years beyond retirement, health status, peer effects, retirement income sources, preferences for certain plan features, mobility, job aspects and risk-benefit considerations. The research output from this study will provide intelligence and advice on retirement behaviour of Malaysian civil servants who are expected to decide on: (1) choice between DB (PENSION) versus DC (Employee Provident Fund/EPF) schemes; and (2) choice between owning versus not-owning any voluntary retirement scheme.

Employing the multidimensional positivist paradigm, the researcher has conducted a questionnaire survey involving 348 Malaysian public university employees with a stratified random sampling method to collect primary data. Questionnaire feedback and responses were analysed applying two main binary models of logistic-regression. Eleven semi-structured interviews were analysed using the content analysis technique to complement the questionnaire results.

The results were illuminating. First, they revealed an above-average level of satisfaction perceived by employees. Second, a statistically significant difference in satisfaction between the EPF and PENSION schemes has been found with higher satisfaction being recorded within the PENSION group. As for the voluntary scheme choice, the OWN group were significantly more satisfied compared to the NOT-OWN group. Knowledge, demographics, retirement income sources and plan features were variables found to influence the choice of compulsory schemes. The same variables, together with perceptions on voluntary savings, job related aspects, extension of working years beyond retirement, health status as well as preferences on risk and benefits were found to influence the decision to buy a voluntary scheme. There were no major contradictions between the qualitative findings and the quantitative results. The findings will be beneficial not only to the government in improving the national retirement system, but also to the industrial players in targeting potential customers for their retirement products.

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ABBREVIATIONS

AVC	:	Additional Voluntary Contributions
BRT	:	Bounded Rationality Theory
BTS	:	Bartlett's Test of Sphericity
CEUPACS	:	Congress of Unions of Employees in the Public and Civil Services
CFA	:	Confirmatory Factor Analysis
CPF	:	Singaporean Central Provident Fund
DB	:	Defined Benefit
DC	:	Defined Contribution
df	:	Degree of Freedom
DV	:	Dependent Variables
EFA	:	Exploratory Factor Analysis
EPF	:	Employee Provident Fund
EPU	:	Malaysian Economic Planning Unit
EXP(B)	:	Odds Ratio
FA	:	Factor Analysis
FPB	:	Faedah Pencen Bercarum (New Pension Trust Fund)
FRS	:	Family Resource Survey
GCR	:	Golden Handshakes
GDP	:	Gross Domestic Product
H & L	:	Hosmer and Lemeshow Test
ICP	:	Investment Choice Plan
ILO	:	International Labour Organisation
IMF	:	International Monetary Fund
IPTA	:	Public Universities
IRSA	:	Individual Retirement Savings Account
ITNM	:	Malaysian National Institute of Translation
IV	:	Independent Variables
KMO	:	Kaiser Meyer-Olkin Measure of Sampling Adequacy
KWSP	:	Kumpulan Wang Simpanan Pekerja
LCT	:	Life Cycle Theory
LIAM	:	Life Insurance Association Malaysia
LL	:	log-likelihood
LR	:	Likelihood Ratio

MEF	:	Malaysian Employers Federation
MOHE	:	Ministry of Higher Education
MTUC	:	Malaysian Trade Union Congress
MVA	:	Missing Value Analysis
NASCOM	:	National Council of Senior Citizens Organisation s Malaysia
OLS	:	Ordinary Least Squares
PAC	:	Percentage Accuracy in Classification
PAYG	:	Pay-As-You-Go
PCA	:	Principle Component Analysis
PENSION	:	Malaysian Government Pension Plan
PTF	:	Pension Trust Fund
RCT	:	Rational Choice Theory
SD	:	Standard Deviation
SEE	:	Standard Error of Estimate
SERPS	:	State Earnings Related Pension Scheme
SOCSO	:	Social Security Organisation
SPSS	:	Statistical Package for the Social Sciences
SSAU	:	Superannuation Scheme for Australian Universities
SSL	:	Sum of Square Loadings
VIF	:	Variance Inflation Factor

CHAPTER 1: INTRODUCTION

This chapter identifies and describes the chosen field of research. It explains the motivation for undertaking this research. It also outlines the central proposition of the research and indicates discussions on the rationale behind it. Specifically it discusses the background, problem statements, justifications of adopting choice and satisfaction as the core theme, research objectives, framework, hypotheses, scope and limitations, as well as expected outcomes and contributions.

1.1 Background

One of the most pressing, contemporary issues in many countries is to deal with the consequences of ageing populations. The consequences of an ageing population and the implications to the society are serious, creating the need to look into other relevant issues particularly the retirement systems. This issue has undoubtedly attracted the attention of numerous parties: governments (policy makers), the public, employers, academics, and others. Proposals to alter the existing retirement plan for the purpose of improvement which also aim at lessening the government expenditures have been criticised by many. For example, in Malaysia, the insurance industry is exerting pressure on the government by making serious attempts to lobby the government to approve the setting up of private pension funds. Pressure also comes from the Malaysian Federation of Employers (MEF), who, in 2004, insisted that the government conduct a detailed study of the private pension fund proposal. Meanwhile, employees are still unsure about setting up their retirement funds, still hesitant on what and which type of plan to opt for. Everyone seems interested in seeking clarification from the government concerning the reform of the Malaysian retirement system.

In Malaysia, private sector workers are required to arrange their retirement plans by contributing to a compulsory national savings scheme, namely, the Employee Provident Fund (EPF) which is a defined contribution (DC) plan. EPF is a publicly-mandated, government-managed savings plan with contributions apportioned between employers and employees. As for civil servants, they can choose from two basic alternatives - either EPF or the Malaysian government pension (a defined benefit (DB) plan) - for their compulsory retirement plan. Once made, the choice is final and cannot be reversed. Apart from these two compulsory schemes, employees also have the option of setting

up their own voluntary pension plans via insurance companies. However, the decision making is not as simple as it may sound. For employees, there are challenges and complexities in understanding the different kinds of retirement plans. It can be a very tricky process for them to be absolutely certain that their chosen plans are the ones capable of ensuring a secure financial future after their retirement.

A skilled professional actuaries company, MERCER reported that prior to the 1997 Asian Financial Crisis, employers sought ways to evade the investment risk associated with funded DB schemes, while employees under the DC schemes were frustrated with the low returns on their balances (Kassim, 2009). Besides, in the government sector, the growing numbers of government pensioners have increased the expenditure on pension payment four fold in 2004 compared with the figure ten years ago (see section 1.2.6).

There is no specific existing study conducted to determine the factors that influence the decisions of the Malaysian workforce in choosing their retirement plans. Experiences from other developed countries are significant reference points, but a straightforward imitation of their approaches in the Malaysian context is arguably inappropriate. The acceptable norms in western cultures can be highly controversial in a developing country like Malaysia. Thus, this study will investigate and explore issues associated with the choice of retirement plans in Malaysia with the focus on civil servants, represented in this study by university employees. It is expected that this study will provide valuable inputs in preparing the country for the process of a demographic transition into a fully "aged" nation.

1.2 The Problems Outlined

Creswell (2003) described a problem statement/research problem as:

> *"The issues that exist in the literature, in theory, or in practice that lead to a need for the study"*
>
> (Creswell, 2003, p. 80)

This draws our attention to the basic research question of "Is Malaysia ready to tackle the emergent issue of an ageing population with its retirement systems?" Current

reviews are needed in local ageing studies, policies and practices to assess Malaysia's level of preparation for a 'greying' society and moving towards an equitable society for all ages. Recently, there is a growing concern regarding this issue as indicated by the numerous conferences on ageing organised to bring together researchers, academics, policy makers, social workers, service providers and other individuals interested in ageing population issues. **Table 1.1** in **Appendix A2** summarises a few relevant national and international conferences held from the year 2000 onwards. The themes of these conferences indicate that there is an issue of choice between pension plans to be resolved both in public or private retirement systems. Hence, this research focuses its analysis on employee's behaviour in choosing a retirement plan.

Outcomes from this study would serve as very important inputs for many interested parties. Interestingly, this also indicates that Malaysians have come to recognise the need to deal with issues regarding their retirement systems. In 1995, the Malaysian Government formulated the National Policy for the Elderly (Sim, 2002). The policy aimed to:

> *"Creating a society of elderly people who are contented and possess a high sense of self worth and dignity, by optimizing their self potential and ensuring that they enjoy every opportunity as well as (the) care and protection (of) members of their family, society and nation."*
>
> (Government of Malaysia, 1996, p. 571)

Subsequently, in 2004 the government declared a National Day of older persons. The objective was to generate awareness and advocacy for older and less-affluent people with the theme of "Active and Productive Ageing" (UNDG Country Teams). This is an indication of concern on the part of the government on the ageing issue.

There are a number of issues to be considered in Malaysian retirement systems: the weakening of traditional family support, an increasing ageing population, inadequacy and poverty, extension of working years beyond retirement, health care, gender and the government expenditure on pensions. These issues accentuate the need to conduct this research, specifically focusing on the factors that affect the choice of retirement plans. Additionally, the researcher also includes the "peer effect" factor in this study since it is believed to influence choice as suggested by Duflo and Saez (2002).

1.2.1 Traditional Family Support

The stability of traditional family structures and a continuously young population have formed the basic social parameters for the welfare systems in Asia (Croissant, 2004). Thus, it is common practice in Malaysia for children to take care of their elderly parents. This traditional structure of income support is reinforced by common living arrangements, where older people live with their families and working incomes are pooled into household income. Sim and Hamid (2010) reported that the percentage of older Malaysians still living in extended family households has dropped from 57.8 percent in 1991 to 49.2 percent in 2000. Meanwhile, Ramesh (2003) reported that in Malaysia, the percentage of the elderly living alone is only 6 percent, confirming that the traditional care system remains largely intact. In contrast in Organisation for Economic Co-operation and Development (OECD) countries, only 23 percent of the elderly (65+ years old) live with their children or family and 29 percent live alone. In addition, the number of the elderly living alone or with a spouse is increasing steadily. A report titled "Averting the Old Age Crisis" (World Bank, 1994) related the trend to strains on the family support systems as an indirect outcome of high growth and urbanization rates as exemplified in East Asian economies, namely Malaysia and Singapore. The informal family support systems are under pressure due to urbanisation which creates the tendency for families to become both smaller and more widely dispersed (Beattie, 1998). Additionally, Croissant (2004) blamed it on the problems of an ageing society, increasing the demand for the care of older people, declining fertility rates and population growth, and the slow growth of the labour force. This notion is further supported by Caraher (2003b) and Martin (1989) who further discussed the consequence of rapid industrialisation and urbanisation on the ability of a family to offer support to their vulnerable family members. Furthermore, there are higher concentrations of older people in the rural areas of the country, the majority of which are Bumiputras (embracing ethnic Malays as well as other indigenous ethnic groups) and females (Yaacob, 2000).

Consideration of a retirement income has become an important issue, since the traditional family support system is declining (Asher, 1998; Asher, 2002; Subrahmanya, 2002) leading to growing dependency on formal systems. Another study by Caraher

(2003a) touched on this issue by comparing the approaches to income provision for the elderly in Singapore and Malaysia and derived three main findings: inadequate current arrangements and own savings, and increasing poverty. Thus, it can be concluded that the traditional family support which has been an important source in the retirement system is weakening, thus urging employees to decide on their own retirement plans.

1.2.2 Ageing and Pension Reform

Increasing longevity has placed additional financial strains on systems providing retirement incomes. All around the world the ageing population phenomenon has affected retirement systems and has led to much research and debate. Thus, public pension systems have been heavily reformed during the last two decades across developed and developing countries (Bonasia & Napolitano, 2006). At the end of 2000, employer-based pension assets amounted to USD 12.2 trillion worldwide (Ryan, 2003). However, pension assets remain concentrated in relatively few countries with 90 percent of total assets in just five countries namely Canada, Japan, Netherlands, the UK and the USA. Although pension assets are concentrated, many countries are taking steps to restructure their retirement systems. In the USA, it is argued that the country's largest age group, those born between 1946 and 1964 and known as the baby boomers, will approach their retirement age, resulting in depletion of and large deficits in the USA's Social Security Trust Fund (Ryan, 2003). In Europe, ageing has forced European countries to re-evaluate the social contract between the government and its citizen. This is due to the pressure on its DB (PAYG) plans with the ratio of pensioners to working population expected to be 60 percent by 2050 (Ryan, 2003). Similarly, Bryne et al. (2009) agree that DC plans are also becoming increasingly common in UK. In Latin America, Bertranou and Rofman (2002) and Ryan (2003) indicated that in 1981, Chile transformed its bankrupt government pension system (PAYG) into a compulsory, fully-funded, private sector-managed DC scheme. Ryan (2003) added that countries like Argentina, Colombia, and Peru developed retirement systems similar to Chile in the 1990s. Elsewhere in Australia, the reforms appear to be directed at reducing the social assistance model of government transfers and to increase the role of social insurance (Bonasia and Napolitano, 2006). Additionally, a review of civil service pension programs in 53 different countries found that many retirement systems for civil servants are headed towards, or already in, a state of financial collapse (World Bank, 2000).

Similar to the west, the reality is that the Malaysian population is also ageing (Masud, 2008; Population Ageing in the Developing World Conference, 2004; United Nations, 2001; Ramachandran and Wells, 2004; Mohamed, 2000; Muhamad and Merriam, 2000; Muhamad & Kamis, 2002; Narayanan, 2002; Caraher, 2000, Caraher, 2003b, Mohan, 2004; and Ibrahim, 2004). According to the census in 2000; there are 1,451,665 persons aged 60 years and above; representing 6.1 percent of the total population of 23.27 million in Malaysia (Population Ageing in the Developing World Conference, 2004). The figure is expected to double by 2030, highlighting the persistence of this issue (Goh, 2005). A recent study reported that approximately one out of sixteen Malaysians is elderly, above 60 years old (Masud, 2008). Thus, ageing population issues trigger critical challenges in developing countries like Malaysia and its neighbours, as indicated by Ramesh (2002) and the United Nations (2001):

> *"…. the ageing process in most developing regions is taking place in a much shorter period of time, and it is occurring on a relatively larger population base."*
>
> (United Nations, 2001, p.13)

Thus far, there has been little discussion about the future of the Malaysian retirement system in preparing for the rapid growth of its ageing population. Subsequently, far too little attention has been paid to the decisions of the Malaysian workforce in setting up their retirement plans in order to prepare for their retirement. The increase in the number of elderly individuals will have a serious effect on the Malaysian retirement system and could lead to a pension reform by the government.

The issue of retirement systems has been a controversial one and much disputed in Malaysia. For instance, there has always been a conflict of interest between the government and the EPF scheme provider. Specifically, it is a conflict between the Ministry of Finance (MOF) as the EPF's regulator, and the government, as the biggest borrower from EPF (Thillainathan, 2003). The conflict of interest originates from the argument that government spending benefits all Malaysians but only private sector employees are mandated by law to contribute to the EPF's pool of "forced" savings (McKinnon, 1996; Thillainathan, 2003).

There are many questionable decisions which had been made in relation to the use of EPF funds by the government which could jeopardise the EPF's main task to provide adequate retirement income to its members. Ramesh (2003) indicated that in 2000 the EPF's investment portfolio was RM179 billion, amounting to 52 percent of Malaysia's GDP, making it an important player in the Malaysian economy. Essentially, it is the access to large quantities of low-cost funds, which encourages the government to borrow from the EPF for use of national spending. For example, Ramesh (2003) agreed that EPF's funds were an important source of finance for development in Malaysia in the 1970s and 1980s. However, in recent years it has been engaged largely for non-development purposes, such as shoring up companies linked to the governing party or increasing the Bumiputra share of the economy. Another example of debatable action would be the case of borrowing EPF funds to finance the new international airport - KLIA (Turner, 2002). EPF committed itself to be the major financier of RM20 billion worth of private initiative projects under the 9th Malaysia Plan, as announced by its chief executive officer (The Star, 27/07/2006). The day before, the EPF surprisingly became the biggest shareholder of a TV broadcast and print media group, Media Prima Berhad. The reason for EPF's increased stake in the media company is still unknown (The Star, 26/07/2006). When the EPF fund was first set up, there was a requirement that at least 70 percent of the fund would be invested in Malaysian government securities, but the required proportion was reduced to 34 percent in 1995 (Ramesh and Asher, 2000).

The issue of low dividends from pension funds has also sparked anger in Malaysia. Clari News (20/04/2003) reported that a low dividend payout of 4.25 percent for a 40-year pension in the year 2002, by EPF had provoked anger among its 10.3 million contributors, resulting in workers picketing. The declining dividend since the mid 1990s has led to calls from various sectors to revamp the composition of the EPF's investment panel and strategy. In fact, the MTUC, the largest patron for trade unions in the private sector, called for the entire investment panel to be fired (Thillainathan, 2003).

All of the above events, have led to the questioning of the ability and the commitment of the EPF in achieving its main objective which is "to provide the best retirement savings scheme for Malaysians" (EPF, 2011). If employees could no longer depend on the EPF, they are exposing themselves to the risk of inadequate retirement funds and need to set up more voluntary retirement plans. Likewise, civil servants are also subject

to the risk of uncertainty, since the government is now trying to terminate and replace the government pension schemes due to budget constraints (Utusan Malaysia, 31/10/2004; Harian Metro, 25/07/2006; The Star, 10/07/2006; New Strait Times, 25/07/2006).

1.2.3 Inadequacy and Poverty

Many retirees are exposed to the risk of poverty as many of them experience a reduction in income but not in expenditure. Addressing the issue of poverty amongst the elderly, in 2002, the National Council of Senior Citizens Organisations Malaysia (Nascom) stated that 5 percent of 1.4 million elderly persons in Malaysia belong to the `hardcore' poor who do not have proper shelter and food (Pereira, 2004). The EPU defined hardcore poverty using the formula of "half of poverty line" for a Malaysian household monthly income (Economic Planning Unit, 2004). In 2009, the Ministry of Women, Family and Community Development Malaysia specified that the Malaysian[1] poverty line is RM750, while the hardcore poverty line is RM440 (Ministry of Women Family and Community Development, 2011). Elsewhere, Selvaratnam, et al. (2010) defined the poverty line for Malaysia as RM691. A small-scale local study by Yahaya et al. (2004) on the elderly poor in a state of Malaysia, Kelantan, also arrived at a similar finding. They reported that all of their respondents received a monthly income of less than RM171.67, implying incidences of hardcore poverty of less than RM255 income. Meanwhile, the former chief secretary to the government said that more than 60,000 government pensioners are receiving less than RM400 monthly (New Sunday Times, 01/05/2001). In addition, the Malaysian Government Pensioners Association has frequently requested the government to review the present pension scheme. Recently, many government pensioners have been complaining about the absence of a revisions to their pension plan and have regularly appealed for revision to cover the increasing cost of living (The Star, 25/07/2006).

On the other hand, the EPF's contributors are more concerned about the risk factor. The EPF's existing arrangement for investment and pooling of risk offers no protection

[1] The currency rate is based on statistics from the Central Bank of Malaysia (Central Bank of Malaysia, 2011) taken from the Inter-bank Foreign Exchange Market in Kuala Lumpur. The rates at every 1st January of year 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, are *3.80, 3.80, 3.80, 3.80, 3.80, 3.80, 3.77, 3.51, 3.31, 3.47, 3.42* respectively for 1 US Dollar (USD) to the Malaysian ringgit (RM).

to a retiring contributor against market or longevity risks. Early withdrawals from individual accounts will affect not only the final balance, but also the dividend yield (Caraher, 2003a, Narayanan, 2002). Although the EPF started off as a retirement fund, contributors are now allowed to withdraw up to 40 percent of their accumulated savings for housing, education and health purposes, which can result in a shortage of retirement savings (Thillainathan, 2003). In fact, according to Ramesh (2003) and Ibrahim (2004), a key reason that the EPF is unable to provide adequate income support during retirement is due to these pre-retirement withdrawals. Currently as in 2011, there are ten types of pre-retirement withdrawals as listed below (EPF, 2011):

1. Withdrawal to Reduce / Redeem Housing Loan
2. Education Withdrawal
3. Pensionable Employees Withdrawal and Optional Retirement Withdrawal
4. Members' Savings Investment Withdrawal
5. Withdrawal to Purchase a House
6. Withdrawal to Build a House
7. Withdrawal of Savings of More than RM1 Million
8. Housing Loan Monthly Instalment Withdrawal
9. Flexible Housing Withdrawal
10. Health Withdrawal

Disturbing research findings were reported Nor (2001). He revealed that more than 85 percent of Malay respondents planned to spend some of their money to perform the Haj or Umrah (Muslims pilgrimage to Mecca), while 61 percent of the Chinese surveyed planned to take an overseas holiday after retirement. He also discovered that although 70 percent of the respondents claimed that they could manage their money after retirement; they had in fact planned to spend their money for economically unproductive purposes (Utusan Malaysia, 28/07/2001) such as holidays, upgrade current living style and excessive purchase of goods or services. The tendency to withdraw the lump sums without utilizing them in a prudent manner affects the adequacy of retirement funds. Similarly, a recent study by EPF in 2006 revealed that almost 69 percent of retirees deplete their EPF funds within the first three years of retirement (The Star, 18/06/2006). Elsewhere, Wong (2006) also highlighted another problem regarding the fund: EPF only covers a small proportion of the older population, mainly those from the formal sector. This is due to the fact that the contributions to the fund are mandatory

only for the formal sector, while those from the informal sector and those who are self-employed prepare for their retirement on a voluntary basis. The informal sector, which represents a large proportion of older persons, has to rely mainly on personal savings or financial support from families. Thus, inadequacy is an important factor to be considered by employees.

The discussion above suggests that employees are unskilled in financial management, leading to poverty during the retirement phase. This issue will be thoroughly explored in this thesis.

1.2.4 Retirement Age and Extension of working years

There are numerous factors which could affect the retirement benefits from employer-provided retirement plans. These include retirement age and length of service (Foster, 1998). According to Schulz (2002), attitudes toward retirement in the future are likely to shift from the previous simplistic view of "all work before retirement" and "no work after" to more part-time work, and an older workforce with more training and retraining. This consequently implies that the retirement age is a very important issue to discuss in any retirement study.

There are various types of retirement classifications stated by the government *Public Service Schemes Pension Act ~ Act 227* (Malaysian Pensions Act, 1980) and *Statutory and Local Authorities ~ Act 239* (Pensions Local Authorities Pensions Act, 1980) which include compulsory and optional retirements. Specifically, they are divided into four categories (Public Service Department, 2011) below:

1. Compulsory Pension Under Section 10 Act 227/239
2. Compulsory Retirement at the Instance of the Government Under Section 11 Act 227/239
3. Optional Retirement Under Section 12 Act 227/239
4. Retirement due to Privatisation of a Government Agency Under Sections 10(5)(b), 12 and 12A/13 Act 227/239

The first category is the common one which also refers to leave as is mandatory retirement. In the second category, if the government requires and the pension-

officer/personnel agree, the following pension may then take place. Such conditions apply first, on the grounds of national interest [Section 11(a)(i)], where the government requires that a pensionable officer/personnel be appointed to another post under a different appointing authority. Note that "pensionable-officer/personnel" refers to the serving personnel who already opted for a pension instead of the EPF scheme. Second, in the interests of the Public Service or Statutory Bodies or Local Authorities, where the government may require the retirement of a pensionable-officer whose performance has been low or declining over a certain period or that person has persistent health problems but not to the level of being medical boarded.

The third category, optional retirement, could only be valid for pensionable-personnel after attaining 40 years of age. A period of reckonable service[2] of more than 10 years is required to enable pension benefits be paid to the personnel. The final category - retirement due to privatization - is quite rare, where upon the government's approval, pensionable personnel may be retired when a public agency or part of it is privatized. The retirement is on a voluntary basis based on the options offered: either due to the abolition of the office held under Paragraph 10(5)(b) Act 227/239 if the offer into employment of the privatized entity is refused; or optional retirement under Section 12 Act 227/239 as stipulated in Paragraph 15 and he/she agrees to work with the company; or retired after appointment to work for the company under Section 12A Act 227 or Section 13 Act 239 if less than 45 years for women and 50 years for men effective from the date of the privatization and he/she accepts work with the company.

The mandatory retirement age in Malaysia, for both government and private sectors, was originally fixed at 55 years. However, the government realized that at age 55, many civil servants are still young and healthy and retirement at that age would mean a loss to the government. On 1st October 2001, the retirement age was lengthened by one year, to 56 years (Berita Harian, 31/07/2001**;** Berita Mingguan, 01/07/2001**;** SST, 18/03/2001) by virtue of the *Malaysian Pensions Act 1980 (Act 227) and Pensions Local Authorities Pensions Act 1980 (Act 239)*. Civil servants appointed on or after 1st

[2] Reckonable service means a period of service reckonable under the ordinance. Pension Adjustment Act 1980 Laws of Malaysia Reprint Act 238 (2006) defines it as any service of an officer in Malaysia or in any of the territories which presently constitute Malaysia which has been used in the computation of the pension or other benefits of the officer on his retirement or of his dependents upon death.

October 2001, would have to retire at the age of 56, while the existing officers have the choice to retire at age 55 or 56.

The Deputy Minister in the Prime Minister's Department said that the one year extension to the retirement age was only an experiment (The Star, 31/07/2001). He added that if the policy was found to be effective and beneficial, the government would consider extending the retirement age beyond 56. The Congress of Unions of Employees in the Public and Civil Services (CUEPACS) was reported to agree with the Prime Minister, that the retirement age of civil servants should be increased gradually to 58 - 60 years (Berita Mingguan, 01/07/2001; SST, 06/05/2001). However, in 2002; the prime minister declined a proposal from CEUPACS and the Malaysian Trade Union Congress (MTUC) to extend the retirement age from 56 to 58 years, on the grounds that it would deprive fresh new workers, especially graduates, of opportunities to enter the job market (Berita Harian, 11/12/2002). In 2006, there was a draft proposal to extend the retirement age from 56 to 58 for certain critical posts (Berita Mingguan, 26/02/2006). Finally, on the 10th May 2008, the government granted the CEUPACS' request to increase the compulsory retirement age to 58 years old effective on 1st July 2008 (The Star, 11/05/2008). The government is also deliberating seriously on the possibility of academic lecturers working until the age of 65 (Berita Harian, 14/09/2006).

The discussion above shows that the decision on the Malaysian retirement age is affected by many issues such as making way for a younger generation, the unwillingness of civil servants to extend their services and also the difficult task of retaining professional officers in certain sectors. For instance, lecturers at public universities have many decisions to make: first, regarding the choice of EPF versus government pension, and second, the choice of retirement age. This would also pose another dilemma for civil servants in setting up their retirement plans.

1.2.5 Health Care and Gender

Malaysia is a good example where gender differences are apparent in the demographic and labour market fields, resulting in a significant disadvantage for women in terms of social protection (Vlachantoni and Falkingham, 2011). Gender deserves serious attention due to the higher number of older women compared to men in Malaysia and the expected residual lifetimes (expected remaining life after retirement) are longer for females. However, as women tend to live longer than men, the disproportion between males and females increases with age. Mohamed (2000) highlighted this matter by stating that the sex ratio of men per 100 women will decrease from 90.1 in 1990 to 85.8 in 2020. The Malaysian Department of Statistics (2001) reported that there are 1.4 million elderly in Malaysia with more than 52 percent of them being women. Sim (2002) claimed that females in Malaysia have outlived males by an average of 3 to 4 years over the past two decades. Thus, the ageing population is increasingly becoming disproportionately female. Accordingly, this demographic trend has led to gender becoming one of the important themes in studies on ageing.

In addition, women do not necessarily have a longer period of good health, albeit a long life. Undeniably, the elderly are less healthy than others. Women's health contributes a large proportion of health resource utilization and costs. For examples, in US, data from Medical Expenditure Panel Survey (MEPS) between 1999 and 2001 showed among insured seniors, older women spent 17% more per person per year on prescription drugs than older men (Correa-De-Araujo et al, 2005). Furthermore, they found that greatest disparity in health care spending between men and women was in the population aged 45 to 64 years. In this group, the median annual per-capita expenditures for women were approximately 50% greater than for men ($2,871 versus $1,849) (Woolhandler et al, 2007). Similarly in Canada, older women (majority age of above 75 years) make more family practice visits, have more chronic health conditions, and take a greater number of medications than men (Vegda et al., 2009).

The need for more medical care may adversely affect women financially. Caraher (2003b) noted that women are likely to suffer the adverse effects of poverty in old age due to earlier retirement combined with greater life expectancy. Although many variables such as income, age, race, religion, and education level do affect the life insurance ownership of husbands and wives (Gandolfi and Miners, 1996), there is no

study to indicate how these variables affect the retirement plan choices of men and women, especially in Malaysia. Thus, gender issues create another need for conducting this research.

1.2.6 The Burden of the Government Pension

Although Malaysian civil servants have enjoyed the pay as you go (PAYG) retirement systems, they are now exposed to the risk associated with the growing number of government pensioners (The Malay Mail, 28/11/2005; Utusan Malaysia, 31/10/2004), which have increased the concerns about expenditure on pension payments. In 2004, the government paid more than RM4 billion, representing a four fold increase compared to the last ten years (Berita Harian, 06/09/2005; Berita Harian, 09/11/2004; New Sunday Times, 04/09/2005; Utusan Malaysia, 23/10/2004).

Recognising the increasing fiscal burden of financing the PAYG retirement benefits, the government established the Pension Trust Fund (PTF) in 1991 under *The Pensions Trust Fund Act 1991* (Act 454) with an initial allocation of RM500 million (Asher, 1998). This fund is administered by the Accountant General's Office under the Ministry of Finance and is initiated to take over the responsibility of pension payment from the Federal Government in the long term. The PTF is funded through the following: an annual Government grant of 5 percent of the annual emoluments in the Federal Budget; repatriation of Government contributions in the EPF for pensionable officers upon retirement; monthly contributions of 17.5 percent of each pensionable employee's salary from statutory and Local Authorities and investment returns (Public Service Department, 2009). The term "emolument" for the civil servant covers all income for an officer and includes his or her monthly basic salary, fixed allowance, incentive payments and other additional allowances (Refer to current Service Circular No-10 Year 2009 (Public Service Department, 2011)). Despite the existence of PTF, there are still debates on the abolition of a government pension for civil servants. It originated from the idea of introducing a new type of retirement scheme for civil servants in place of the existing pension scheme. The Prime Minister assured that the new scheme would be more beneficial than the existing one (Utusan Malaysia, 31/10/2004).

Surprisingly, in July 2006, the newspapers reported that the government pension scheme would be replaced with contributions to the EPF (Harian Metro, 25/07/2006; The Star, 10/07/2006). The new scheme was expected to be implemented in 2007[3] and would be similar to the optional EPF scheme introduced in 1991. Immediately following the news, CEUPACS vetoed the new scheme - called Faedah Pencen Bercarum (FPB) - which is to be managed by the EPF (New Strait Times, 25/07/2006). The vice-chairman of the Malacca branch of the Malaysian Government Pensioners Association argued that civil servants earn lower income than private employees, and their EPF savings might not be adequate (The Star, 05/08/2006). He added that the civil servants would also lose out on medical benefits under the EPF option.

In fact, this matter could affect almost 900,000 civil servants if the government decided to implement the conversion. Perhaps the most serious accusation was that the government was trying to get more people to opt out of the pension scheme (The Star, 07/08/2006) to reduce its financial burden. In September 2006, after the objections from many parties, the government suggested the creation of a different type of government pension scheme that would replace the existing scheme (Utusan Malaysia, 13/09/2006). It would now require both the government and civil servants to contribute to a retirement fund during employment.

All of the discussions above suggest that there is a high possibility that the government will reform the government pension schemes in its effort to reduce the burden of financing pensions, which will encourage sharing mechanisms between the government and employees. This thesis will help to reveal why employees decided to choose the government pension plan in the first place.

1.3 Reason for Choice: DB versus DC Plans

Retirement systems generally fall into two types: the defined benefit (DB) and defined contribution (DC) plans, which differ according to how the benefits are determined or in the distribution of risk. While reducing the provision of the DB plan and replacing it with the DC plan are the contemporary trends worldwide, both the DB and DC plans still constitute the two major types of retirement schemes. Consequently, choosing

[3] As in 2011, there is no action/decision made as regards to the FPB implementation (Public Service Department, 2011)

between the two schemes is amongst the most critical decisions faced by individuals and organisations. Additionally, an individual might also set up his or her own retirement plan voluntarily from their own finances.

In chapter 2, the definitions of these two main types of retirement plans are discussed in detail. Until recently, the most prominent model for the public service pension plan in both developed and developing countries is the DB plan (Mitchell, 2002). However, many contributing factors such as the ageing population problem affect the public service retirement plan. Thus, the DC plan is seen as an alternative or additional pillar to the system. Ippolito and Thompson (2000), Chen (2006), Bryne (2007), Even and Macpherson (2007), Yang (2005a), FitzPatrick and Chu (2007), Craig and Toolson (2008), Bryne et al. (2009), Ross and Wills (2002), Kruse (1995), OECD (2002), Papke (2004), Milevsky and Promislow (2004), Mottola and Utkus (2008), Coggburn and Reddick (2007), Sweeting (2007), Schieber and Shoven (1996), and Ross (2000) also indicated that there has been a widespread shift from the DB plans towards DC plans in many countries. Ross (2000) saw the potential consequences of such a shift in the context of the responsibility of making the decision for retirement savings and personal involvements in the retirement planning process. He concluded that the level of involvement in the personal retirement savings decision may be a significant factor in determining the tendency of an individual to save for their retirement. He also proposed greater individual involvement in the decision making process. Accordingly, this thesis might help to enlighten interested parties on some of the issues related to individual behaviour in making the retirement choice.

No individual faces a choice free of constraints. As Mottola and Utkus (2003) claimed, more choices mean more information to digest and more comparisons to make. Since employees arguably face confusions and complexities in decision making, more skills and knowledge are needed to evaluate the available options. Thus, there is a need to evaluate the retirement behaviours which act as valuable information to employees in making their retirement decisions.

Income insecurity for old people is a worldwide problem, but its manifestations differ in different parts of the world. This study is intended to capture the reality of the retirement systems in Malaysia. It is evident from the previous discussion that choice is an issue in many aspects of the retirement plan in Malaysia. These choices include the

decision to choose between the DB and DC plans, a retirement age of 55 versus 56 and others, and even the selection of investment portfolios[4] in the EPF plan. This study will investigate individuals' choices of retirement plans, and the influencing factors.

It is common for new civil servants in Malaysia to be concerned about the task of choosing between the EPF and pension schemes. Individuals need to be able to evaluate the advantages and disadvantages of each scheme to reach a decision. In other words, employees who participate in a particular retirement scheme are most likely to be interested in knowing the risks to which they are exposed to. As expressed by CEUPACS (BERITA HARIAN, 23/10/2004), civil servants demand more clarification on both schemes to facilitate their decision making. The problem of a one-off final decision could make it more difficult to perform the selection. This one final irrevocable choice could significantly affect their finances after retirement, thus complicating employees' decision in selecting a scheme. Furthermore, Ramesh (2004) agreed about the lack of information (and studies) on pension schemes for civil servants, despite the fact that the funds from the programmes were frequently used in huge amounts as social welfare expenditures in the region due to the generosity of the programmes.

From the earlier discussions, evidently it is important to conduct a comprehensive and in depth study on this subject. It is hoped that by providing information, such as on the perception of satisfaction among employees, would help to endorse the Malaysian retirement systems. Thus, analysis of the sample of civil servants in Malaysian universities may give important insights as starting point for further studies. The aim of this study is also to assess whether the theories and practices in other countries are applicable in Malaysia.

Many existing literatures focused on the choice of investment portfolio in the retirement plan from the employers' or providers' perspective, such as studies by Even and Macpherson (2008), Koh et al. (2008), Gallery et al. (2004), Coggburn and Reddick

[4] EPF introduced the Members Investment Scheme in November 1996 (EPF, 2011) to further open investment options for its members but was limited to those with savings of more than RM55, 000 in Account 1. Total savings of RM5.9 billion have been withdrawn by members to be invested under the scheme as at June 2003. Members were given options to invest in either unit trust funds or with Asset Management companies appointed by the EPF Investment Panel. There are various unit trust funds in the market for the members to opt for. As of June 30, 2003, EPF has appointed 25 unit trust companies. Funds are invested in equities, balanced, fixed income, Islamic equities, money markets, Islamic bonds, Islamic balanced and equity index tracking.

(2007), Valdes-Prieto (1999), OECD (2005), Drew and Stanford (2002), Yang (2005a), Thillainathan (2003), World Bank, (1994) to mentioned a few. While others such as Choi et al., (2001, 2004), Lindeman (2002), Mitchell, et al. (2005) and Whitehouse (2001) have tried to address the investment choice from both perspectives of employees and employers. While Fry et al. (2007), Butler and Teppa (2003), Bryne et al. (2009), Clark-Murphy and Gerrans (2001), Dulebohn (2002), Milevsky and Promislow (2004), Papke (1998), Tapia and Yermo (2007), and Chatterjee and Zahirovic-Herbert (2009) tried to focus solely on the employees perspective, there is gap in the literature as there has been no particular focus on individual choices in deciding which type of plan to enrol in. Furthermore, there are very few studies on Malaysian retirement systems. Studies in Malaysia are limited to the private sector retirement plans and are more focused on EPF schemes rather than the government pension scheme (PENSION). This research goes beyond the existing studies by investigating the variables influencing the employees' choice of compulsory (mandated) retirement scheme in the Malaysian public universities which is to choose between a DB (PENSION) and a DC (EPF) schemes. Apart from this compulsory choice (between EPF and PENSION) this research will also endeavour to study the voluntary choice (either to own or not own any voluntary retirement scheme).

1.4 Choice and Satisfaction

The discussions above suggest that there might be a possibility of dissatisfaction among employees with regard to decisions on the choices of the compulsory retirement schemes offered by the government. Since there is a choice to make, it is vital to analyse the "satisfaction" issue here. Interestingly, empirical findings in the literature revealed that the availability of extensive choices such as in 401(k)[5] retirement plans led to dissatisfaction amongst employees, thus leading to them choosing the default option rather than making other choices (Iyengar et al., 2003).

[5] The 401(k) plan is one of the important DC plans in the USA where under the Section 401(k) plan it is defined as: "a qualified cash or deferred arrangement (CODA) that allows eligible employees the options of putting money into the plan or receiving the fund as cash." Rejda (2011, p. 509). A section 401(k) plan can be a qualified profit sharing plan, savings or thrift plan, or stock bonus plan, and normally both employers and employees contribute to the plan.

The frameworks of economics and psychology can be employed to examine employees' choices of retirement plans. Many authors concur on the relationship between choice, scarcity of resources, wants and satisfaction. For example, Miller (1994) described economics as a study of how people make choices to satisfy their wants. Meanwhile, Parkin (1997) recognized it as the study on the choices people make to cope with scarcity. Hence, economics is concerned with the use of scarce resources to achieve the best possible end result and at the same time fulfil unlimited human wants and needs. Sensibly, in reality it is impossible to completely fulfil these unlimited wants and needs. Thus, a more rational theory is needed to better explain human choice behaviour. Rational Choice Theory (RCT) constitutes a dominant paradigm in explaining human behaviour and actions with its foundations of neoclassical economic theory and utility theory. However, adopting the Bounded Rationality Theory (BRT) could improve the RCT because RCT is mainly aimed at utility maximisation. Specifically, Simon's BRT emphasised the "satisfying" alternatives (Simon, 1991, 1997). Accordingly, "satisfaction" is an important variable to be examined and is applied in the research framework for this study together with the BRT.

There are many retirement studies which employ satisfaction as an explanatory variable. The topics of studies include employee benefit satisfaction including retirement plans (Williams 1995; Dreher et al., 1988; Wilson et al., 1985), financial resources during retirement (Power and Hira, 2004), retirement life satisfaction (Calasanti, 1996), pension plan and job satisfaction (Luchak and Gellatly, 2002; Donohue and Heywood, 2004), job satisfaction (Saari and Judge, 2004), and on the national pension systems satisfaction (Bay and Paderson, 2004). Some studies also specifically looked at universities' retirement savings satisfaction (Dulebohn and Murray, 2007), job satisfaction (Saari and Judge, 2004) and on retirement plan choice satisfaction from the retirees' perspective (Sundali et al., 2008). However, only a few studies were found to specifically mention the satisfaction variable in studies on retirement plan choice satisfaction (Dulebohn et al. 2009; Dulebohn et al., 2000, Danehower and Lust, 1995), and the voluntary/private retirement plan satisfaction (Iyengar et al., 2003; Todd and Davis, 1994; Danehower and Lust, 1995). Hence, this is another gap that this study attempts to fill.

1.5 Research Objectives

In this study, the BRT provides the basic framework for understanding the civil servants' behaviour on their choice of retirement scheme. This study aims to identify and understand the factors that may influence employees' decisions in choosing their retirement schemes (plans). In this framework, the BRT has been included in the research framework by including elements of: first, satisfaction in the dependent variables; and second, soft and hard constraints in the independent variables; and finally, knowledge (information) as another independent variable.

The purpose of this research is to discover the views regarding retirement system choice in Malaysia. It also attempts to ascertain the factors influencing choice of retirement plan among Malaysian civil servants with the focus on employees at Malaysian public universities. Specifically, these purposes can be achieved by focusing on the following **research objectives**:

1. To identify individual characteristics and the predictors of the decisions of employees in Malaysian public universities in choosing retirement plans (schemes) and to examine how these factors influence the decisions of choice.
2. To assess the perceived level of satisfaction with different choices of retirement schemes perceived among the employees in Malaysian public universities.

This is essentially positivist research. Thus, it accords with Black (1993), who recommended a specific research question followed by a number of hypotheses. Kerlinger (1979, 1986) also recommended some of the characteristics for good positivistic research questions. First, it could express a relationship between variables. Second, it should be stated in unambiguous terms in question form and thirdly, it should imply the possibility of doing an empirical test. Subsequently, DeVaus (1996) warned that there are many examples of unfocused surveys that reported insignificant information. Thus, in this study, the researcher is trying to avoid such problems by formulating research questions. Zikmund and Zikmund (2000) explained that a hypothesis is a proposition that is empirically testable. It is an empirical statement concerned with the relationship among variables. The purpose of formulating hypotheses is to offer a clear framework and a guide when collecting, analysing and interpreting data. In many cases, hypotheses serve as a tool for testing the relationship

between variables. Accordingly, the **research questions** for this study are listed below:

1. What are the factors that may influence the decision of Malaysian public universities' employees in choosing their retirement schemes? (*Objective 1*)
2. To what degree are the relationships of the above factors (in 1) related to the retirement schemes choices? (*Objective 1*)
3. What is the level of satisfaction perceived by the Malaysian public universities' employees about the different types of retirement schemes choices? (*Objective 2*)
4. Are there any differences in the level of satisfaction between the retirement scheme choices? (*Objective 2*)

In order to answer these research questions, specific **research hypotheses** have been developed which are discussed in Section 4.4.

1.6 Scope and Limitations of Study

There is a limitation on the sample size and scope in this study since the sample will be taken from a group of employed individuals, excluding self-employed persons, retirees and unemployed individuals. This will therefore restrict the ability to produce a comprehensive view of all the stakeholders involved.

This study aims to examine the choice behaviour of the Malaysian workforce. It is interesting to note that the private employees are only eligible for one retirement plan which is the EPF scheme. On the other hand, the civil servants have choices to enrol either in EPF or PENSION schemes. The absence of options for the private sector employees means that the population of public sector employees will reflect the choice behaviour made by employees in Malaysia. Thus, it is logical to study the choice made by civil servants instead of the private sector or the Malaysian workforce as a whole. Although there is only 2 percent or 43,000 of civil servants who opted for EPF (CEUPACS, 2008) compared to 82 percent who choose the PENSION scheme, the reasons behind their decision have never been clearly articulated.

Among the various categories of civil/public servants, this study chose to focus on employees under the patronage of the Ministry of Education, specifically the university employees. It is deemed appropriate to use the education sector because this sector contains diverse employment categories and demographic characteristics. To be specific, the differences in levels of education, age, marriage status, race, and gender are more obvious at universities. Earlier in the discussion, it was mentioned that the government was looking seriously into the possibility of lecturers continuing working until the age of 65. Thus, this further highlights the need to study the university employees' retirement behaviour and to explore factors that influence their decision making in choosing their retirement age. This choice is simply unavailable to other categories of civil servants.

Another limitation is the response rate. Since the research depends on questionnaires as the main instrument to obtain the needed data, the completeness of its analysis depends very much on the respondents' willingness to complete the questionnaire and on the level of cooperation from each institution.

1.7 Expected Outcomes and Contributions

This study is important in many ways. The main expected outcomes from this study are: to have a better understanding of selection of choice; and an understanding of factors influencing choice among Malaysian public servants. Empirical evidence on the factors that influence the decision to choose between DB and DC schemes according to individual perspectives will be revealed.

At a more general level, the results from this study will contribute towards the following:

1. This study will give a clear picture of the retirement plans in Malaysia for the public universities faculty. It will serve as an important input for various parties such as the Public Service Department or Ministry of Higher Learning, Ministry of Education, Malaysian National Health Care Systems and National Welfare Systems in the decision making process.
2. The results will be useful to the government as a policy maker as a sub-input to formulate a successful Malaysian retirement system as a whole. The study may

be used as a basis for developing cost control, budgeting and for designing future retirement systems which could satisfy the needs of everyone, according to the economic conditions of the nation.

3. It is hoped that this study will also lead to future related studies and discussions on an ageing population in the Malaysian context. For example, discussions on the threat of an ageing population could focus not only on retirement systems, but also on health and welfare systems.
4. Finally, the findings of this research will contribute to the body of knowledge by adding to the literature and providing empirical evidence from Malaysia.

In addition, this research could specifically be beneficial to:

1. show the real differences between women and men in preparing for their old age.
2. private employers or pension fund providers; it is important for them to understand the pattern of preferences for different pension schemes, and to adjust their company's retirement benefits/plans accordingly.
3. insurance companies who might want to design and introduce new types of retirement products accordingly. This could be in the form of life insurance policies or annuity products.
4. direct the EPF to make necessary adjustments to set a realistic policy and provide a quality service for their clients.

1.8 Conclusion

Like other countries, Malaysia faces problems of an ageing population and the erosion of extended families. Demographic changes related to the increase in the ageing population will definitely put pressure on the retirement systems in Malaysia. This imposes higher risk in the task of ensuring an adequate income for older people. Traditional ways of support from family are no longer a reliable source of care for the elderly in Malaysia. Currently, the public pension scheme is based on the principle of Pay-As-You-Go (PAYG) financing and thus offers by SOCSO will not be accessible to everybody especially to the civil servants. All of these issues could lead to the incidence of poverty. Despite imposing mandatory retirement savings on all Malaysian employees either via EPF or PENSION schemes, the government will have to act quickly to meet these challenges.

With different types of retirement plans and retirement ages, workers are exposed to choices, which could have a big impact on their retirement decisions. However, the ways to reach decisions about their retirement schemes and their satisfaction have not been studied. Action needs to be taken to ensure that all workers are covered by a retirement system that offers them adequate finances and satisfaction. This is the gap to be addressed in this study. Therefore this study could guide employees to make better and more prudent decisions in the selection of retirement plans.

CHAPTER 2: RETIREMENT SYSTEMS AND EMERGING ISSUES

This chapter will explain the retirement systems practiced around the world. This chapter is divided into three parts. The first part begins by defining the related terms before discussing the types, sources and models of retirement systems. The second part offers discussion on the emerging issues currently debated in the field to pin-point the gap in the literature. Finally, the related previous studies on choice to be adopted are presented and discussed.

2.1 Introduction

This chapter reviews the retirement systems in practice around the world and offers definitions of terminologies to be used throughout this thesis. The differences and practices of DB and DC are discussed and the popular pension system models are also explained. The emerging issues surrounding the literature on retirement systems are also discussed in order to underline the need to execute this study. These include issues such as extending work, the appropriateness of the Malaysian retirement age, confidence in retirement income sources and shifting trends towards the DC plans. There are a limited number of studies on retirement systems in Malaysia, and no studies have focused on employees' choice of DB versus DC plan at universities. Previous studies will also serve as appropriate references or are considered in this study in terms of method, sample and results.

2.2 Definitions

Retirement systems actually fall into a larger category, called social security. Scott (2003) defined social security as the comprehensive federal or social welfare program of benefits; providing workers and their dependents with retirement income, disability income and other payments by utilizing the social security tax. Lee (2002) defined social security as programs established by statute that insure individuals against interruption or loss of earning power, and for certain special expenditures arising from injuries, birth, or death. The term is also referred to as social insurance (Rejda, 2011), income maintenance, services for social security and sometimes as basic security.

Asher (2000) described the main function of a social security system as to provide to a substantial proportion of retirees a socially adequate level of replacement rate with a high degree of sustainability which a person can expect to have available after retirement. This replacement rate refers to the proportion of the last drawn salary (or other similar benchmark). He added that for a middle income earner, a replacement rate of around 75 percent is considered adequate for financial security.

Scott (2003) suggested a definition of retirement as the period of a person's life during which he/she is no longer working, or the commencement of that period. Farlex (2006) defined a retirement plan as a plan for setting aside money to be spent after retirement. While Campbell (2009) defined a pension plan as a long term financial contract or promises to secure income for workers in their old age. Davis (2000) clarified that we could distinguish a pension plan from a pension fund:

> *"A pension plan is a contract setting out the rights and obligations of members and sponsor of a pension scheme. A pension fund is comprised of the assets accumulated to pay retirement obligations."*
>
> Davis (2000, p.3)

Mitchell and Fields (1996, p.3), suggested that the term "pension" corresponds to a benefit paid to an employee who retires from work after reaching a prescribed age (for example 65 years old). When the benefit paid is regular and periodical from the time the employee leaves his or her work until death, the pension benefit is called an "annuity". Otherwise, if a single payment is made upon retirement, it is called a "lump-sum benefit". Finally, a payment made to a worker who leaves the company before reaching retirement age is not a pension; it is called a "severance payment". The definition of a pension is therefore a payment which is paid only after the beneficiary has retired.

In conclusion, a retirement plan, which is the focus of this study, is an arrangement to provide people with an income, or pension, during retirement. It is to protect against old-age economic insecurity. It is also a subset of social security. The retirement period commences at compulsory retirement age regardless whether the retiree takes up a new, limited part-time occupation. In Malaysia, retirement plans are commonly known as retirement scheme which covers pension scheme for government servant and employee provident fund (EPF) for private workers.

2.3 Retirement Systems

Retirement plans may be set up by employers, insurance companies, the government or other institutions such as employer associations or trade unions. Reforming any pension system in any country is not an easy task. The pressure of an ageing population means that the government needs to rebalance the retirement income provision in ensuring the adequacy and the sustainability of the system. It definitely involves a long term policy under the situation of uncertainties. Meanwhile, the experiences and examples of good practices from other countries can benefit the policy makers in seeking to reform their own pension systems accordingly.

2.3.1 Types of Retirement Plan

There are two basic types of retirement/pension plans, which may be classified as defined benefit **(DB**) and defined contribution (**DC)** (Rejda, 2011; Baranoff, 2004; Bodie et al., 1988; Cocco and Lopes, 2004; Davis, 1995; WorldBank, 1994) according to the methods of determining benefits. The DC plan is a plan in which the contribution rate is fixed, but the retirement benefit is variable. Contribution rates are usually a predetermined fraction of an employee's salary, for example 23 percent of the monthly salary. Employers and employees make periodic contributions into individual accounts for each employee. A formula specifies the amount of money that needs to be contributed to the plan, but does not specify the benefit payouts. Although the contribution rate is known, the retirement benefit will vary depending on the worker's age, earnings, contribution rate, investment return and normal retirement age (Rejda, 2011; Trieschmann et al., 2005). The pension fund consists of a set of individual investment accounts, one for each covered employee/participant. The employees own these accounts and make investment choices and bear all the investment risk (Mitchell, 2002) while the retirement account is fully funded by the contributions. Upon maturity, the employee gains access to the total accumulated value of the account or fund including its earnings. The fund could be used to purchase an annuity or taken in the form of a lump sum amount. In OECD countries, the accumulated fund is usually converted into an annuity type of payment (Queisser and Whitehouse, 2006). The option of lump sum payments are more popular in Malaysia (Ibrahim, 2004).

The DB plan contradicts the DC plan; the retirement benefit is known, but the contributions vary depending on the amount to fund the benefit. An actuary determines the plan to produce the desired benefit and specifies formulas for the cash benefits to be paid after retirement. It would take into account several factors such as years of service, level of wages and others (Rejda, 2011). The employer has the obligation of being the sponsor. The retirement benefits would normally be an annuity type from the retirement age to the date of death. For example, an employee would enjoy a monthly retirement benefit of 50 percent of his last drawn salary[6] or a worker aged 55 may be entitled to a retirement benefit at the normal high estimated five years of earnings (amount of average salary for that employee at any 5 consecutive years recorded his or her highest salary throughout the employment). These plans favour older workers who enter the plan at an older age since the employer must contribute a relatively larger amount for this group than for younger workers.

Note that in this study the DC scheme refers to the "EPF" scheme while the DB refers to the "PENSION" scheme**.**

Davis (1995) also classified pension funds according to DC and DB types. However, he stressed differentiating them according to the distribution of risk between the member and the sponsor. In addition, Cocco and Lopes (2004) also had a similar view. Davis (1995) had drawn the distinction as:

> *"Defined-Contribution fund is a pension fund providing benefits dependent solely on returns on assets invested, usually based on regular contribution of a fixed proportion of salary; while a defined-benefit fund provides benefits dependent on a formula fixed in advance, usually based on years of service and average or final salary. ……. DC is the rule for personal pensions in all countries, whereas social security is invariably DB."*
>
> Davis (1995, p. 230-231)

The DB and DC plans are not mutually exclusive. Many employers adopt a mandatory DB retirement plan and at the same time encourage a voluntary DC plan. Moreover, some plans combine the characteristics of DB and DC, often known as "hybrid" plans. Examples include the "Cash Balance" plan (Bodie and Davis, 2000; Rejda, 2011; Baranoff, 2004). In a cash balance plan, each employee has an individual account that accumulates interest, and if they leave a company, they are allowed to take that amount

[6] "Last drawn salary" is the actual last drawn monthly salary of an officer before his death or retirement (Pension Adjustment Act 1980 Laws of Malaysia Reprint Act 238, 2006).

with them. Rejda (2011) clarified that a cash balance plan is also a DB plan but the benefits are defined in terms of a hypothetical account balance; actual retirement benefits will depend on the value of the participant's account at retirement. The account is hypothetical because the contributions and interest credits are bookkeeping credits. Additionally, Treischman, et. al. (2005) added that the cash balance plan is chosen because the traditional DB plan structure was difficult to understand for employees since they cannot see the dollar value of their accounts. A variation of this design is the "floor" plan (Bodie and Davis, 2000), which is a DC plan with a guaranteed minimum retirement annuity determined by a DB formula.

Many countries, particularly in Western Europe, have long histories of major social insurance systems that provide DB based on PAYG financing methods. Some countries have DC plans; they are either managed by the government like the cases of Malaysia and Singapore, or privately managed but closely regulated by the state, for example in Chile and Argentina (Ross, 2000). Over the last two decades, the DC plan has continued to grow rapidly while the number of DB plans has dwindled considerably (Kapoor et al., 2001).

Table 2.1 draws attention to the main feature of funded pension schemes in different countries. Coverage (proportion of employees covered by pension plans) is obviously important. The table shows that coverage by country varies greatly with the highest being France (100%), follow by Australia (92%), Switzerland and Sweden (both at 90%).

Similarly, Arza and Johnson (2004) maintained that the worldwide development of public pension policies was not based on a single model. They argued that many retirement systems are in the balance between private and public administration, flat rate and earnings-related benefits, universal, employment-based and means-tested access. Accordingly, **Table 2.2** sets out the institutional characteristics of mandatory pension systems in a number of selected countries.

Table 2.1: Features of Funded Pension Schemes

Country	Form of benefits	Coverage	Maturity
USA	Primary cover largely DB based on a final salary; increasing share of primary and secondary DC plans.	46% (voluntary)	Mature
UK	Largely DB based on years of service and final salary.	50% (company) 25% (personal); (voluntary)	Mature
Germany	Largely DB with flat-rate benefit based on years of service; some schemes use career earnings or final salary.	42% (voluntary)	Immature
Japan	Largely DB based on years of service and career earnings or final basic salary.	50% (voluntary)	Immature
Canada	Largely DB based final salary or flat-rate benefits.	41% (voluntary)	Mature
Netherlands	Almost exclusively DB based on final salary.	83% (voluntary)	Mature
Sweden	DB based on best-income years.	90% (ATP compulsory; ITP/STP voluntary)	Mature
Denmark	Largely DC.	50% (voluntary)	Mature
Switzerland	Majority of schemes DC but with replacement ratio target to which contributions adjusted.	90% (compulsory)	Mature (pre-BVG) Immature (post-BVG)
Australia	Largely DC	92% (compulsory)	Immature
France	ARRCO/AGRIC DB, Pay-as-you-go	100% (compulsory)	Mature
Italy	Negligible scope (certain banks etc.)	5% (voluntary)	Immature

Notes:

ATP = National Supplementary Pension Scheme,
ITP = White-Collar Workers, STP = Blue-Collar Workers
BVG = Compulsory Occupational Pension Schemes
ARRCO = Supplementary Pensions
AGIRC = Supplementary Pensions for Middle Managers
Maturity of plans = whether the plan has a long-run ratio of contributing to benefiting members.

Source: Davis (1995, p. 59)

Table 2.2: The Structure of Pension Systems in Selected Countries

Country	Contributory		Non- Contributory		Provident funds	Occupational retirement schemes	Individual retirement schemes
	Flat-rate	Earnings-Related	Means-tested	Flat-rate universal			
Europe							
Germany		■					
United Kingdom	■	■	■				
France		■	■			■	
Sweden1		■	■				■
Italy		■	■				
Netherlands	■		■				
Spain		■					
Poland	■	■					■
Greece		■					
Ocenia							
NewZealand			■	■			
Australia			■			■	
Latin America							
Argentina	■	■					■
Brazil		■	■				
Chile2		■					■
Costa Rica		■					
Mexico		■					■
North America							
Canada3		■		■			
United States		■	■				
Asia							
Japan	■	■					
Turkey		■	■				
China	■						■
India		■			■		
Singapore					■		
Saudi Arabia		■					
Pakistan		■					
Africa							
South Africa			■				
Egypt		■					
Tunisia		■					
Nigeria		■					
Ethiopia		■					
Kenya					■		

Notes: 1 The Means-tests benefit is a guaranteed minimum pension
2 The earnings-related scheme is closed and being phased out
3 The universal pension is increased by income test.

Source: Arza and Johnson (2004, p. 13)

Table 2.2 shows that most countries have tended to organise old-age income security on the contributory earning-related schemes. In some cases, non-contributory benefits complemented the non-contributory schemes. Malaysia, like its neighbouring country Singapore, has a pension policy which was built on the legacy of the British Empire, which set up DB pension schemes for government employees and provident funds for industrial and urban sector workers (Linderman, 2002).

The top five world pension funds in terms of assets are enjoyed by government workers. According to Carvalho-Pinheiro (2004), among the twenty world's largest pension funds, thirteen cover public sector employees, accounting for 76.5 percent of the accumulated assets (see **Table 2.3**). He added that in most countries where civil servants are covered by funded schemes, their pension funds are the largest in terms of assets and number of participants. In addition, Malaysia's provident fund scheme is ranked sixteenth on the list with assets amounting of €61.4 billion. It can also be concluded that the pension fund is more popular in the USA compared to other countries, which may explain the reason why most of the literature is in the context of the USA.

Table 2.3: The 20 World's Largest Pension Funds in 2002

Ranking	Pension Fund	Country	Assets (€ billion)
1	California Public Employee's Retirement Systems	USA	152.2
2	ABP	Netherlands	135.6
3	California Teachers' Retirement System	USA	115.4
4	Federal Thrift Savings Plan	USA	113.6
5	Florida State Board of Administration	USA	109.7
6	General Motors	USA	101.4
7	New York City Retirement Systems	USA	96.8
8	Norwegian Government Petroleum Fund	Norway	85.0
9	New Jersey Division of Investments	USA	84.0
10	Verizon Investment Management Corporation	USA	83.6
11	National Public Service Mutual Association	Japan	79.3
12	General Electric	USA	77.7
13	Boeing	USA	72.6
14	IBM	USA	67.7
15	Central Provident Fund	Singapore	63.5
16	Employees Provident Fund	**Malaysia**	61.4
17	Wisconsin Investment Board	USA	58.2
18	Michigan Department of Treasure	USA	58.1
19	Georgia Division of Investment Services	USA	57.8
20	Lucent Technologies	USA	56.1
		Total	**1729.7**

Source: Investment and Pension (2003)

2.3.2 Sources of Retirement Systems

Retirement income is typically derived from three sources, although different countries rely more heavily on some sources than others. The sources are social security, employer-provided pensions, and personal/private savings. Social security is referred to as a public fund, designed to guarantee a minimum income standard during retirement through governmental transfers. This is supported by Devaney and Su (1997) who analysed the factors that predict the most important source of retirement income in the USA. They concluded that traditionally, retirement income had been viewed as a three-legged stool consisting of social security, employer-provided pensions, and private savings. They stated that many people believed that the legs of the stool have weakened and that a fourth leg, earnings, is becoming increasingly necessary to support retirement. They also noted that older workers, tended to rely on employer provided pensions or social security, while younger workers preferred working contributions or their personal savings and investments to be the most important source of retirement income. Specifically, an international survey on retirement security by AARP (2005) showed the proportion of these sources in the USA as displayed in **Table 2.4**.

Table 2.4: Expected Sources of Retirement Income

Sources of retirement	Percentage
Public pension	81%
Employer-provided/occupational pensions*	26%
Earnings from employment*	28%
Workplace retirement savings programs*	26%
Personal savings	26%
Inheritance	7%
Family support	4%

Source: AARP (2005, p.1)

Table 2.3 shows that a majority (more than 80 percent) of the retirement income source comes from public sources or the social security type of pension. There are three sources (*) which are work related, and only a small percentage comes from the inheritance and family support sources. It is also worth mentioning that the retirement system could be funded or unfunded. Ramesh (2003, p.1) explained that in funded accounts, the members' benefit is equal to the balance in their personal account, imposing no actual or accrued liability on the government. This is in total contrast to the

DB plan. In addition, the plan would also be set up either publicly or privately, implying the involvement of options between government and private companies' sponsored plans. In many countries, creating public and private retirement schemes involves many issues that need to be addressed, including the influence of political matters.

2.3.3 The Pension System Model

Various retirement systems have been established in countries around the world. It is easy to discuss the various retirement plans according to the so-called "multi-pillar systems" as discussed by the World Bank, Geneva Association and also by many authors such as Fox (2000), World Bank (1994), Asher and Nandy (2006), Heller (1998), James (1998), Mitchell (2002), Orszag and Stiglitz (1999), Reday-Mulvey (2003) and Yermo (2002). The plan consists of four-pillar systems. The first three pillars have been discussed more often compared to the fourth one. This might be due to the fact that most countries are funding their pensions based on the first three pillars. Additionally, the ILO Tiered Model will be discussed.

2.3.3.1 The World Bank Multi-Pillar Model

There is a growing consensus among experts that multi-pillar approaches are desirable because each form has its own strengths and weaknesses. The debate revolves around the relative size and details of the approaches rather than whether or not such approaches should be part of a system (Ross, 2000).

Ross (2000) mentioned that in advising developing and transitional economies, the World Bank tends to utilise a multi-pillar model that has a basic social safety net pillar. It begins with a relatively small means-tested[7] or flat benefit that is as limited as possible, and evolves to become a feasible, mandatory DC, fully-funded, privately-managed pillar. The bank then recommends that the better-off group should top up their mandated retirement income through voluntary arrangements, generally favouring

[7] A **means-tested pension** is a pension paid to eligible persons whose family income, assets, or both fall below designated levels. It is generally financed through government contributions, with no contributions from employers or employees.

individual-account approaches but accepting employer-provided approaches either separately or in combination with individual-account approaches. However, there is no rigid formulation, and any advice is adapted to circumstances (Holzmann, 2000). On occasion, PAYG reforms have been recommended rather than a DC model. Moreover, there appear to be some re-evaluations of the basic position that may lead to a more open approach (Orszag and Stiglitz, 1999). The models as depicted in **Table 2.5** set forth a multi-pillar model, in stylised form.

Table 2.5: Multi-Pillar Model for Retirement Income

i. Voluntary savings plans with tax incentives; Privately managed; government regulated; (supplemental role)
ii. Employer-provided pensions; DC or DB or hybrid; Employee matching; privately managed; government regulated; (supplemental role)
iii. Individual-provided pensions; DC/funded; privately managed; government regulation; Structural promotion of saving and investment, (primary or supplemental role)
iv. Social security- DB/PAYG; Public management; Alternatives of flat benefits; minimum income guarantees; progressive benefit formulas; (formal public social insurance arrangements
v. Mean-tested allowances and benefits; (formal public safety net arrangements)
vi. Family and community support; (informal private arrangements)
vii. Earnings from work; (part time or transitional jobs)

Source: Ross (2000, p.6)

The seven categories model in **Table 2.5** can be re-grouped into four main pillars as below:

The First Pillar

This is a compulsory PAYG government pension system that guarantees all workers a minimum retirement benefit (Ryan, 2003). While Reday Mulvey (2003) preferred this pillar to be referred to as social security pensions, James (1998) referred to this pillar as a public tax-financed responsibility. In addition, the APEC (2004) defined it to be a public DB scheme aimed at poverty reduction through redistribution. Pillars (iv), (v) and (vi) in **Table 2.5** fall in this group.

The Second Pillar

The second pillar is characterized as: the supplemental employer-sponsored pension plan (Ryan, 2003); the occupational funded pensions (Reday Mulvey, 2003); a privately managed fully funded arrangement (James, 1998) or a mandated, privately managed DC scheme aimed at smoothing consumption (APEC, 2004). Pillar (ii) in **Table 2.5** fall in this group.

The Third Pillar

The third pillar is a voluntary pillar, also referred as workers' private pension or workers' private saving (Reday Mulvey, 2003; Ryan, 2003; James, 1998; Beattie, 2000). APEC (2004) confirmed that the third pillar consists of voluntary savings accounts. It is aimed at consumption smoothing. The third pillar has become increasingly important due to increases in individual longevity and aging population (Banks and Blundell, 2005; Blundell, 2006; Davis (2000). This situation led to higher burden to the public pension fund in terms of its sustainability. The research from the Institute for Fiscal Studies shows that not only do those currently retiring face less generous pensions than their predecessors, but also that this pattern will continue, thus creating the need to have this pillar (Blundell, 2006). Section 3.3 provides further discussion on this pillar. Pillars (i) and (iii) in **Table 2.5** fall in this group.

The Fourth Pillar:

This pillar combines income from part-time work, for people wishing or needing to extend their working life with partial pensions after the official retirement age (Reday Mulvey, 2003). However, studies like Klaauw and Wolpin (2006) indicated that the patterns of extending working life after retirement were influenced by health, wealth and labour market opportunities. James (1998) noted that all 3 pillars co-insure against the many risks and uncertainties that are inevitable given the long-run nature of an old age program. Here, security is provided through diversification by having a fourth pillar. Reday Mulvey (2003) has indicated the importance of supporting this fourth pillar. He claimed that for the last 15 years, The Geneva Association with its Four Pillars Research Programme has the two main objectives: first, to consolidate the future of pensions by proposing a new balance between the three pillars; and second, to design a fourth pillar. This fourth pillar, which allows a transition between work and full retirement for both the individual and the firm, implies a more flexible labour market, and is suitably adapted to working conditions at career end, in particular life education

and training and the development of qualified part-time workers. Pillar (vii) in **Table 2.5** falls in this group.

2.3.3.2 ILO Tiered Model

Alternatively, the International Labour Organisation (ILO) emphasised a substantial mandatory, DB, PAYG pillar, providing 40 percent or more of pre-retirement income. It also favours a substantial means-tested social safety net and voluntary supplemental DC pillars as well as individual arrangements (Ross, 2000). Since the ILO advice is based on international conventions, it is often more formulaic than that of other international organisation. However, it has become more flexible in recent years to accommodate concerns for a more balanced, multi-pillar approach.

In contrast to the ILO, the World Bank is inclined to advise that the replacement of earnings should depend on growth in the economy and financial markets. Furthermore, there should be only a mandatory safety net of perhaps 20 to 30 percent of average lifetime earnings, an amount which in some countries is well below the poverty line and the minimum wage for active workers (Ross, 2000). The International Monetary Fund (IMF) generally takes a more flexible view than both the World Bank and the ILO, tending to emphasise considerations to assist countries in making their retirement programs as socially effective and financially sustainable as possible, utilising various formal arrangements (Heller, 1998). A major concern is cost-effectiveness; how well do the mechanisms work in a given social, economic, and political context.

The IMF often emphasises that there is a fundamental need for governments to evaluate arrangements based on pragmatic criteria rather than adherence to doctrinal preferences. In reality, only a few countries designed their systems in accordance with the World Bank, ILO, or IMF prescriptions. Categories tend to be vague and may be seen as satisfying various approaches. Systems tend to be unique and have distinctive national characteristics (Ross, 2000).

2.4 Emerging Issues

Emerging issues surrounding retirement systems have come from employers, employees and governments. Many studies have tried to address issues relating to the retirement systems. Some of the highlighted issues include the decision on the appropriate retirement age, willingness to extend working years, the ageing population effect, adequacy perception, elderly care, retirement income sources, gender differences, mobility issues and others. In addition, the national pension provision is another debated topic which covers issues such as the need for pension reform, the shifting trends to DC plans, choice, sustainability, satisfaction and others.

In chapter one, these issues have been highlighted to explain the significance of this study. Next, some of these issues will be elaborated on and discussed within the boundary of this study's focus - the choice of the retirement schemes in the Malaysian public universities.

2.4.1 Retirement Age

It is interesting to note that there are a variety of retirement age differences in each country worldwide. In Malaysia, the compulsory retirement ages for civil servants are at 55 or 56 (Public Service Department, 2009). However, effective from 1st July 2008, the government decided to raise the compulsory retirement age to 58 (Public Service Department, 2011, online available http://www.jpapencen.gov.my/dasar_baru.html). Alternatively, the civil servants could request an early retirement age at the minimum age of 40 under the "Optional Retirement under Section 12A Act 227/239". However, the period of reckonable service of not less than 10 years is required to enable pension benefits be paid to employees who choose early retirement. Payment for service gratuity is made on the date of retirement while the pension would be paid when attaining the eligible age as stipulated in the Pension Laws. In conclusion, the retirement age for public sector employees could be divided into three categories as the following (Public Service Department, 2011):

i. Appointment before or at 1/10/2001 - compulsory retirement age is 55 years old.
ii. Appointment on or after 1/10/2001 - compulsory retirement age is 56 years old.
iii. Appointment on or after 1/07/2008 - compulsory retirement age is 58 years old

Note that during the data collection of this study, the maximum compulsory retirement age was at 56 years old.

2.4.1.1 Appropriate Malaysian Retirement Age

As highlighted above, there is no default retirement age. Instead, civil servants in Malaysia need to decide their own retirement age which is either at 55 or 56. This evokes another concern of whether an employee is able to choose the most appropriate retirement age for them, since the decision will only be made once throughout the service period. The retirement age of 58 (Public Service Department, 2011) has just been introduced recently, as announced by the Prime Minister, Datuk Seri Abdullah Ahmad Badawi during the public sector Worker's Day celebration on the 10th May 2008 at the Putrajaya International Convention Centre (PICC). This introduced a new retirement and pension policy with the details as per Service Circular 6/2008 (retirement opt of mandatory retirement age to 58 years). This official announcement extends the mandatory retirement age for civil servants in Malaysia from 56 years to 58 years, effective from 1st July 2008. This means that the civil servants may stay on for another two years if they opted for it. Some issues arise such as the problem of maintaining "deadwood" and issue of stagnation in the civil service. On the contrary, there are also claims that such a move can be advantageous as it can help employees to have additional income and enable them to pay for their personal/home loans easily. Additionally, employees could benefit from the calculation of the pension benefit which is based on a maximum of 30 years of service, effective on 1st January 2009, instead of the previous plan of 25 years (BERNAMA, 10/05/2008). The derivative pension would be maintained at 100 percent effective on the same date.

There have been many discussions to indicate that the retirement age plays a significant role such as Mitchell and Fields (1984), Burtless and Moffitt (1985), Lozier and Dooris (1991), Foster (1998), Yuh (1998), Bieker (2002), Blundell, et al. (2002), Disney and Emmerson (2002), Clark et al. (2003), Conde-Ruiz, et al. (2003), Reday-Mulvey (2003), Salter (2003), Banks and Blundell (2005), Klaauw and Wolpin (2006), Loretto and White (2006), Palacios and Whitehouse (2006), Manchester, (2007) among a host of studies. In addition, the studies that have been conducted in Southeast Asia or

specifically in Malaysia have shown a growing concern about the outdated retirement age adopted especially for civil servants which is considered very low (Narayanan 2002; Ibrahim, 2004; The Star 31/07/2001; Sim, 2002; Muhamad and Kamis, 2002).

2.4.1.2 Extending Work and Retirement Plans

Special category civil servants, such as lecturers, are given options to extend their services beyond their compulsory retirement age. The decision to extend retirement age could also affect employees' decisions in choosing their retirement plans. The issue of extending work has been discussed with the ageing population problems. For example, Foster (1998) confirmed that under the employer-provided retirement plans, the retirement age together with other variables such as benefit formula, length of service, and pre-retirement earnings influenced the choice for DB, while the contributions amount and investment earnings influenced the choice for DC.

Specifically, Lozier and Dooris (1991) studied the implications of the different retirement ages under different retirement plans in faculties. They found that working conditions and policies do have statistically different effects on the retirement decisions of women in a library science faculty. Women also felt that administrative pressure and interaction with co-workers affect the desirability of continued employment. The effects of less tangible elements of professional satisfaction are not as uniform or consistent, but they do matter nonetheless.

Loretto and White (2006) also revealed that many employees expected to continue working, but are hampered by constraints, especially the over-rigidity in employers' approaches. The study confirmed the complex array of factors - namely personal, financial and institutional - which interact to influence older employees' expectations of work and retirement. It also highlighted the importance of choice, or lack of choice, in influencing individuals' preferences. On the other hand, Kim and Devaney (2005) found that health status is negatively related to full retirement, meaning that older workers with very good health are more likely to continue full-time work.

Similarly, Mitchell and Fields (1984) also revealed that extension of working years patterns depend on the retirement plans (called pension rules). Furthermore, they

showed that retirement age differences are due to differences in worker's preferences and income opportunities.

Manchester (2007) proved that preferences over career length double the effect of retirement plan incentives. She found that individuals who elect to enrol on a DB plan expect to retire sixteen months earlier than those in a DC plan. This finding seems to contradict the Malaysian scenario.

Blundell et al. (2002) attempted to model the probability of time to retire with different retirement schemes, focusing on the incentives behind different plans and other socio economic factors. These plans belong to the State Earnings Related Pension Scheme (SERPS) and private schemes. The results were able to distinguish between SERPS and private schemes and eligibility to disability benefits is modelled. The results highlighted significant retirement incentive effects derived from the pension system. Similarly, French (2005) established that the tax structure of the social security system/retirement schemes is the key determinant of the frequently observed job exit rates at ages 62 and 65.

At the other extreme, for early-retirement ages, Dorn and Sousa-Poza (2005) indicated that generous early retirement provisions of the social security system do not only make voluntary early retirement more attractive for individuals, but also induced employers to encourage more employees to retire early. In particular, employers seem to use early retirement to reduce the number of staff during economic recessions and as a means to circumvent employment protection legislation. Similarly in the UK, Higgs et al. (2003) analysed how individuals make their retirement decisions. They argued that decisions about early retirement are not made in a vacuum, neither are they free from pressures. Decisions were influenced by either organisational restructuring, financial offers, or by the opportunities for leisure and self-fulfilment that early retirement offers.

Using logistic regression, Szinovacz and Davey (2005) found that nearly one third of older workers perceived their retirement as forced. Such forced retirement reflects restricted choice through health limitations, job displacement, and care obligations. Other predictors include marital status, race, assets, benefits, job tenure, and off-time retirement.

Overall, previous studies suggested that there is a relationship between the choice of retirement age and the retirement plans.

2.4.2 Confidence on Retirement Income Source

The type of retirement income source has been identified in section 2.3.2 above. Issues of retirement adequacy will always be discussed together with retirement income sources. It mainly falls into two basic retirement plans: DC and DB (the comprehensive literature on choices between DB and DC will be explained in section 2.4.3). Awareness level of retirement planning will also play an important role in ensuring adequate future retirement income streams. Due to the existing DB (PENSION) scheme, civil servants in Malaysia do not have to set-up their own retirement income sources. Blank (1999) found that workers with a DB scheme appear to have more retirement income sources than those who either have no pension or have a DC scheme pension. Subsequently, individual savings are generally insufficient. Thus, this study attempts to ascertain the levels of satisfaction perceived by Malaysian civil servants on their future retirement income streams.

Many studies found that employees have a higher reliance on employer-sponsored retirement plans (Shuey and O'Rand, 2004, Childs et al., 2002 and Gustman et al., 1994). Thus, another issue to look at is to verify if Malaysian employees might also perceive that the burden of providing secure retirement incomes lies solely on the government's shoulder, instead of the workers' themselves, as mentioned by Dan (2004, p. 189). She confirmed that in terms of workers' attitudes, the government workers could easily be differentiated in having more confidence in their future retirement benefits compared to non-government workers.

2.4.3 Shifting Trends to Defined Contribution Plans

DC and DB plans have been mentioned repeatedly as the two basic retirement plans. According to Coggburn and Reddick (2007), the DB plans are the dominant pension models in the public sector; approximately 90 percent of government workers are covered by DB plans. However, there is a trend to shift from DB to DC plans. This is supported by findings by authors such as Ippolito and Thompson (2000), Ross and Wills (2002), Chen (2006), Bryne (2007), Even and Macpherson (2007), Yang (2005a), FitzPatrick and Chu (2007), Craig and Toolson (2008), Bryne et al. (2009), Kruse (1995), OECD (2002), Milevsky and Promislow (2004), Mottola and Utkus (2008), Coggburn and Reddick (2007), Sweeting (2007), Papke (2004), Schieber and Shoven (1996), and Ross (2000). They agreed that DC pension plans are becoming increasingly popular or dominant in many countries, including in the UK and the USA. Therefore it is high time for Malaysia to study these schemes. Malaysian employees' perceptions should be considered. Choice and satisfaction are arguably the two most important issues to start with.

2.5 Previous Studies on Choice of DB versus DC Schemes

In the USA, Alkove (1999) acknowledged that much of the pension literature focuses on the institutions' choice between DB and DC plans at university faculties. On the other hand, this study focuses on members of the university faculties and aims to examine this issue from the workers' perspective. At present, there are a limited number of studies on retirement systems in Malaysia, and no studies have focused on employees' choice of DB versus DC plans at universities. The choice of study was made based on the following criteria: individual level (not employer side), method (logistic model), and sample of university (higher learning institutions) which served as appropriate references to this study (in sections 2.5.1 to 2.5.3). Additionally, the literature is easier to discuss by grouping it according to countries such as the UK, USA, and others. The UK is selected because Malaysia inherited its retirement systems from the British before it became independent in 1957. The USA, with the extensive literature on its retirement system, is also included for comparison purposes.

2.5.1 The UK

Besley and Prat (2003), Burtless and Moffitt (1985), Clark-Murphy et al. (2002), Cocco and Lopes (2004), Sweeting (2007), Duflo and Saez (2002), Modigliani and Muralidhar (2004), Power and Hira (2004), Valdes-Prieto (1999) and Dorn and Sousa-Poza (2005) are among a few studies on pension choice related to the UK. Cocco and Lopes (2004) provided empirical evidence on pension choice in UK. They studied individual pension choice between DB and DC plans and identified several criteria to differentiate between both plans. They also linked labour income characteristics to pension plan choice. They set up a life-cycle model of consumption and pension choice to investigate the relation between pension choice, earnings characteristics, and preference parameters using a sample of UK individuals covered by the Family Resource Survey (FRS). They found that:

i. individuals who face higher income growth are more likely to choose a DB final salary plan, and less likely to choose the DC plan.
ii. individuals who face higher earnings volatility are less likely to choose a DB final salary plan.
iii. individuals with higher earnings are more likely to choose either the DC or the DB final salary plan (either one[8]). These results constituted evidence of individuals' self-selection into different pension plans, an important issue for pension fund providers and for those involved in pension reform.

On the other hand, Besley and Prat (2003) studied the interaction between the DB/DC choice and three areas of control rights: funding decisions, asset allocation, and asset management. It is an analysis of pension fund governance from a contract-theoretic perspective. They used the contract theory to analyse the interplay between residual claims and control rights in private pensions. Higgs et al. (2003) examined some of the broader issues of early retirement in terms of the individual's decision making among British civil servants. It was qualitative research. A semi-structured interview was conducted from a drawn sample of British civil servants who participated in the Whitehall II[9] study. The sample included participants who chose early retirement and

[8] Occupational and personal pensions are more attractive for individuals with higher earnings. Conversely, state pensions are more attractive for individuals with lower earnings.
[9] The Whitehall II study was conducted in 1985 by Professor Sir Michael Marmot to investigate the importance of social class for health by following a cohort of 10,308 working men and women in British civil services. It is also known as the Stress & Health study. (UCL, 2010, www.ucl.ac.uk/whitehallII)

those who did not. Individual life histories are drawn upon to show how responses to the issues surrounding retirement feature in people's lives. It is argued that decisions about early retirement are not made in a vacuum, neither are they free from pressures or inducements. Some of the influential variables found were: organisational restructuring, financial offers, and opportunities for leisure and self-fulfilment that early retirement offers. The paper concluded by arguing that early retirement needs to be studied as a process involving the interplay between structure and agency.

Disney et al. (2001) also carried out a study on retirement saving in Britain. However, they focused on the issue of pension provision and household saving. Choices are available to individuals - particularly about opportunities to opt out from the public pension scheme, known as 'contracting-out' which are discussed using a range of time series analysis and Britain household micro-data. The paper highlighted disparities in retirement saving behaviours across types of pension provision and different households.

In contrast, Sweeting (2007) studied the factors influencing the choice of DB versus DC schemes but from a firm's point of view. They looked at the characteristics of UK firms' offering and failing to offer DB pension schemes using quantitative methods. Additionally, Byrne, et al. (2009) studied the financial sophistication and pension plan decisions. They examined the contribution and investment decisions made by members of a large UK-based DC pension plan. Their findings were related to plan default arrangements and communicating strategies in savings and investments in the fund.

2.5.2 The USA

Compared to the UK, there are more studies on pension choice in the USA. Studies found to discuss either the decision making or choice between DB and DC in the USA include Butler and Teppa (2003), Blundell (2006), Bodie et al. (1998), Burtless and Moffitt (1985), Clark (2003), Clark and Pitts (1999), Clark-Murphy and Gerrans (2001), Duflo and Saez (2002), Hatcher (2002), Iyengar et al. (2003), Klaauw and Wolpin (2006), Lim (2001), Loewenstein (1999), Papke (2004), Venti (2004), Dorn and Sousa-Poza (2005), Loewenstein (1999), Hatcher (2002), FitzPatrick and Chu (2007), Huberman, et al. (2007), and Mottola and Utkus (2008).

The studies that specifically targeted university employees include Alkove (1999), Clark et al. (2004), Clark and Pitts (1999), Duflo and Saez (2002), Dulebohn (2002), Lewis (1996), Lozier and Dooris (1991) and Power and Hira (2004).

Early work by Clark and Pitts (1999) tried to analyse the preference between DB and DC plans by university employees at North Carolina State University (NCSU). The study is limited only to the newly-hired university employees who must decide between the state retirement plan (a final pay, DB plan) and one of the three DC plans (TIAA/CREF, VALIC, Lincoln National). Both the university employment records and a faculty survey were used to examine the factors that determine the choice of pension plan. They used campus mail to contact all university employees employed by NSCU and ordinary mail to contact all tenure-track faculties. They also utilised the HR division in performing the task. Out of 1652 questionnaires distributed, 675 were completed and returned. The choice of a pension plan is estimated using a Probit model with the dependent variable equalling 1 if the individual enrolled in the state plan and 0 if one of the ORPs (additional optional retirement plans) was chosen. The results indicated that the older-new-hires [10] are more likely to enrol in the DB Plan. Alternatively, recently-hired university employees are significantly less likely to choose the state DB plan than those hired earlier. Clearly, there is a strong tendency to enrol in DC amongst new hires. Furthermore, mobility expectations and labour market conditions (actual job changes), college appointments, faculty rank, and type of appointments do influence the probability of selecting the DB plan.

Subsequently, Clark et al. (2004) extended the previous study by investigating the decision to choose between the DB versus DC plan among the newly-hired university employees and introducing the *Economic Model of Pension Choice*. Data used in this study were derived from the employment records of fifteen campuses in the University of North Carolina (UNC) system awarding tenure. The census reported general characteristics and employment information about each university employee. The findings from this study were:

i. Newly-hired university employees who are older, female, and non-white are found to be more likely to choose the DB plan.

[10] Older- new-hires represent employees who start employment at older age.

ii. Some differences across university the Carnegie classification [11] are also observed.
iii. A declining trend in DB participation is shown.

Duflo and Saez (2002) also used individual data from university staff to investigate whether peer effects play an important role in retirement savings decisions. They aimed at answering the question of whether individual decisions to enrol in a Tax Deferred Account plan sponsored by the university (and the choice of the mutual fund vendor for people who choose to enrol) are affected by the decisions of other employees in the same department. The results suggested that peer effects are important. There is a significant own-group peer effect on participation and on vendor's choice, but no cross-group peer effects.

Alkove (1999) studied pension choice in the East Carolina University. The study examined the choice between DB and DC plans from the workers' perspective. It determined the important factors that influence individuals in making pension decisions. It uses the sample from East Carolina University Faculty/University of North Carolina which involves the 1986 newly hired full time faculty. The two choices are:

1. DB = North Carolina Teacher's and State Employees' Retirement System plan (STP).
2. DC =Lincoln Life Insurance Company, the Variable Annuity Life Insurance Company (VALIC), Teachers Insurance and Annuity-College Retirement Equities Fund (TIAA-CREF) = Optional Retirement Plans (ORPs).

Alkove (1999) used the probit model in his study. The alternatives of ORP or STP presented to faculty were discrete choices. Therefore, a model that can estimate choice probabilities within the [0, 1] interval is desired. The findings from this study were:

i. Age, salary, rank and tenure statues at the date of hire are found to be significant determinants in the choice of pension plans.
ii. Large differences are found between university employeess in the medical school and the rest of the university.

[11] The Carnegie Classification of Institutions of Higher Education is a framework for classifying, or grouping, colleges and universities in the USA. Starting in 1970, the primary purpose of the framework is for research and policy analysis, and used to identify groups of roughly comparable institutions (The Carnegie Foundation for the Advancement of Teaching, 2010)

Dulebohn (2002) also used college and university employees as the sample. He investigated the determinants of investment risk behaviour in employer-sponsored retirement plans. The study examined the significance of demographic and attitudinal variables on employees' risk behaviour in selecting among investment allocation options provided by DC pension plans. Questionnaires were mailed randomly to a sample of 4000 college and university employees in the Midwestern state who actively participate in the major state-sponsored retirement system. 795 questionnaires were returned, representing a response rate of approximately 20 percent. The results from this study identified primary causes of risky investment behaviour including income, age, other retirement plan participation, self-efficacy, knowledge of investment principles and general risk propensity. The term "Self-efficacy" refers to the judgments an individual makes about his or her abilities to mobilise the cognitive resources, motivation, and courses of action needed to engage in performance on a specific task. The "Knowledge of investment principles" represents an individual's or a layperson's understanding of the generally accepted investment principles communicated by providers of financial products, and the term "risk propensity" refers to an individual's tendency to take or avoid any risks.

Lozier and Dooris (1991) also study individual faculty retirement behaviour. They tried to answer the questions of: "What are the factors that influence individual university employees' retirement decisions?; How important are financial and non-financial considerations?; Why does faculty in private institutions work to a later age?; and Are there other systematic (e.g. gender) differences as well? The paper utilised data collected as part of a comprehensive national study that projected faculty retirements throughout the year 2003 for over 35,000 faculties at 101 doctoral research, comprehensive, and general baccalaureate institutions. They used data from a broader institutional survey and from a survey of 747 university employees aged 55 and over who had separated from this same set of 101 institutions. There were 518 usable responses. The findings are:

i. Virtually all factors that affected retirement decisions are relevant to some faculty but not to others. This implies that retirement is a very personal decision.
ii. Money as a factor matters to nearly everyone.
iii. Variables which cannot be controlled by the institution are health or health of spouse, other professional accounting and employment opportunities, and the need for more personal time.

iv. Variables which can be influenced by the institution are discipline and/or gender factors. This means that, women's decision to extend their retirement ages could be influenced by their employer. For example, the study found that working conditions and policies do have statistically different effects on the retirement decisions of women in library science faculty. Women also noted that administrative pressure and interaction with peers affect the desirability to continue employment.

Lewis (1996) conducted a study to look at the decision making of the university employees in the higher education sector. This study examined the structure of retirement programs in the context of providing incentives for retirement as well as for continued employment. He used the survey to observe whether the individual's objective is wealth accumulation or provision of income for years of leisure. He revealed that many senior professors are in a unique position to determine what they will be doing during the workday and, in some situations, may be able to reduce hours of work significantly without affecting compensation or job security. He found that about one-half of the colleges and universities surveyed either have or have had programs designed to encourage retirement before age 65. With both the value of the retirement fund and potential retirement income increasing exponentially with time, the DC plan provides strong incentives for continuing to work. Thus, he suggested that institutions which seek to encourage retirement at the traditional age of 65 (or earlier) should consider the proposal of additional incentives to retire.

Power and Hira (2004) used data on retired university employees to analyse the effectiveness and adequacy of institutional-provided information and advice on retirement planning decisions and their satisfaction with financial resources during retirement. The study explored differences in behaviours due to gender, job classification, and time of retirement. In their sampling frame, a list of 1,609 eligible employees who retired in 1975 or later from a major Midwestern university was used. 660 individuals were selected using fractional systematic sampling and 478 responded. Data collection was taken via telephone using a multi-item survey instrument. Selected retirees were contacted first by letter, and then interviewed by telephone. The findings from this study were:

i. Retirement planning should begin at the inception of an employee's career. Employer-provided retirement information and advice is highly needed.

ii. Gender, planning practices, job classification, and age are significant predictors of satisfaction with financial resources during retirement.

iii. Targeting women and union employees with retirement information and advice that focuses on allocating contributions using a balanced portfolio approach should result in significant increases in satisfaction with financial resources during retirement.

iv. Regulatory objectives should focus on reducing retirement accumulation and liquidation risks, improving the delivery of professional financial advice, and expanding qualified retirement plan choice for all labour force participants.

v. To encourage employer participation in employee retirement planning, employers acting in "good faith" should be federally protected from liability for providing retirement planning information and advice to employees.

Papke (2004) focused on the pension plan choice in the public sector. The paper surveyed the event and analysed the choice made by corrections workers [12] who constitute about 25 percent of Michigan public employment. In 1997, the State of Michigan closed its DB pension plan to new state employees. New employees are automatically enrolled in a 401(k) plan with a mandatory state contribution. Existing employees have to choose between staying in the DB plan and transferring the present value of their invested pension benefits to a DC plan. She used a heterogeneous sample of Michigan public employees. Data on corrections workers who participate in the Supplemental or Covered Employee Plan from the Office of Retirement Systems for the pay period prior to and following the switch were taken. She estimated a linear probability model[13]. The evidence suggested that individuals are more likely to opt for an individual account if they can transfer the present value of accrued benefits to a self-directed plan. Participants in the heterogeneous jobs sample group were more likely to switch than workers employed in corrections.

Yang (2005b) explored many issues in pension plans using a sample of employees in a non-profit organisation in the USA. She focused on DB plan investment, governance, and funding, as well as on employee choices between DB and DC plans. Her last

[12] Employees who switched to other plans

[13] The equation assumed linear relationships in tenure and age, and in the switching probability, He estimated this linear probability model separately for men and women

objective is related to this study, which is to investigate the choices made by employees in a non-profit firm when offered the option of switching from a DB to a DC plan. The major findings from her research were:

i. Overall, half of the employees switched to a DC plan and the balance remained with the DB plan.
ii. Both demographic and economic factors affected employees' switching decisions and also changed employees' saving behaviour.
iii. The default option (by making no active selection and remaining in the DB plan) had an important impact on some employees' retirement savings.
iv. Surprisingly, half of the employees under 40 years old who could potentially benefit more from the DC plan defaulted to the DB plan, and the DB defaulters were more similar to the DC switchers than the DB choosers.
v. Given the actual behaviour of those who switched, there was virtually no change in employer pension expenses after the switch.

Unlike other studies, Childs et al. (2002) tried to solve the problems of interrelated issues of optimal employee and employer plan choice. They used USA employees and employers aspects in creating a simulation model. These interrelated issues were based on arguments that when choosing among employment options, employees must consider the impact of their choice on total compensation i.e. the current and future salary earnings and retirement plan benefits. On the other hand, employers offering retirement plans must decide whether to offer the employee the ability to participate in an employer sponsored defined contribution (DC) or defined benefit(DB) plan, or in some cases, both. Thus, the employer's decision on type of plan(s) and plan design will affect not only the salary needed to attract an employee, but also the expected tenure of the employment. In turn, employees' tenure of service affects the level of employer hiring costs incurred to replace employees as they exercise their option to switch employers. The outcome was that in most circumstances DC plans were superior (optimal) for both employer and employee. This was consistent with the increased preference and prevalence of DC plans observed in practice.

Joo and Grable (2000) looked at the decision model of USA workers. This research presented a model that can be used to examine the retirement investment decision process of individuals. The data were taken from 1999 Retirement Confidence Survey. Logistic regression analysis was used to identify the factors influencing decisions to

establish a retirement investment or savings program. This study found that respondents with higher education, higher income, a lower number of financial dependents, favourable financial attitudes, and those who are exposed to workplace financial education were more likely to have a retirement investment program. It was also determined that having a retirement investment program positively influenced retirement confidence. The retirement confidence was measured with a series of questions on confidence about retirement income prospects. It focused on respondents' confidence about:

i. their ability to live comfortably in retirement,
ii. the financial preparation that that they were engaging in as pre-retirees,
iii. their ability to cover medical expenses during retirement
iv. their ability to cover basic expenses
v. their ability to cover expenses throughout their life expectancy

Joo and Pauwels (2002) did another similar study to determine the factors affecting male and female workers' retirement confidence. Similar analysis was performed using the same data set. The data source was also taken from 1999 Retirement Confidence Survey data. The sample size was 1,002 individuals who were interviewed via 22-minute telephone calls. It was found that working men, who were younger, had higher levels of education, higher levels of income, positive financial attitudes and behaviours, lower levels of risk aversion, received employer financial education and were savers, had higher levels of retirement confidence compared to women.

Hardya and Shuey (2000) used data from the Health and Retirement Study. In this study, gender differences in pre-retirement, access to and disposition of accumulated pension assets were examined. The "disposition of pension assets" refers to what happened to the accumulated pension assets when workers changed jobs. Here, there were four possible outcomes: respondents could take cash settlements, initiate pension receipt[14], defer benefits, or lose benefits. The authors used the data to model pension participation, disposition of pension assets, and use of cash settlements derived from a pension plan in a previous job. Logit models provided estimates for the implications of gender differences on access to pensions and the preservation of pension funds for retirement. The outcomes showed that women were less likely to participate in employer-sponsored pension plans, were more likely to cash in accumulated pension

[14] Start the process of pension payment (first instalment of pension payment)

assets when they changed jobs, and when job changes occurred at relatively young ages, equally likely to spend the settlement. However, by their late 40s, women were more likely to save the settlement, a net gender difference that increased with age at which the settlement was received.

In contrast, Yuh and Devaney (1996) focused on the decision making of couples. The study examined factors associated with the amount of DC retirement funds. It used data on USA Couples from the 1992 Survey of Consumer Finances. The sample consisted of 1,961 couples and was analysed using Tobit analysis. The findings were:

i. Couples with larger amounts of income and smaller amounts of non-financial assets had larger amounts of DC funds.
ii. The funds increased with years of employment and the employer contribution rate increased.
iii. Couples with lower levels of education, less skilled occupations, who were unwilling to take financial risks, or who were Black and Hispanic had smaller amounts of DC funds, all other things being equal.
iv. Most couples were 30 years or older.

Bodie et al. (1998) studied the real trade-offs between the choice of DB versus DC plans while FitzPatrick and Chu (2007) discussed the rise and the demise of DB Plans and Loewenstein (1999) tried to answer whether more choice is always better by using proposals for social security reform.

Mottola and Utkus (2008) did an analysis of choice in DB pension payouts. The article examined the lump-sum versus annuity payout choices made by participants in two DB plans[15] in their different age's cohort. The study showed that 27 percent of lump-sum-eligible participants in the traditional plan chose an annuity compared to 17 percent in the cash balance plan. Additionally, older participants were much more likely to opt to annuitize than their younger counterparts. In addition, male participants were less likely to annuitize.

Huberman, et al. (2007) studied the determinants of participation in DB Plans. The main findings were:

i. Participation rates, contributions and savings rates increased with compensation;

[15] One a traditional final average–pay–plan; and the other is a cash balance plan

ii. Women's participation probability was 6.5 percent higher than men's and they contribute almost $500 more than men;
iii. Participation probabilities were similar for employees covered and not covered by DB plans, but those covered by DB plans contribute more to the DC plans (strong usage of 401(k) plans);
iv. The availability of a matched contribution by the employer increased employees' participation; the effect is strongest for low-income employees;
v. Participation rates, especially among low-income employees, were higher when company stock is an investable fund.

Hatcher (2002) studied wealth and the decision to retire via a model of retirement wealth choice. It was related to the timing of retirement. Economic theory was used to generate hypotheses concerning how an individual's characteristics determine his or her reservation wealth. It studied the wealth accumulated at point in time; whether one or more year of work will add to the wealth sufficiently to make work worthwhile from the financial viewpoint. In another words, if actual wealth was less than the reservation wealth then an individual will continue working, if actual wealth was greater than reservation wealth then an individual will retire. The study tried modelling the retirement decision as if people retire when the marginal benefit of working another year equals marginal cost. This strategy was employed using the 1992 Survey of Consumer Finances. The findings implied that individuals respond fairly conservatively, with respect to their retirement planning, to changes in their income. It was also found that married men and women choose their reservation wealth[16] in very different ways. Also, wives may view shared time with the husband as adding to the quality of their own leisure time (Hatcher, 2002, p.182).

2.5.3 Other Countries

Similarly, in Australia, Brown et al. (2004) investigated employees' choice of superannuation plan at Australian Universities. They explored why the majority of SSAU (Superannuation Scheme for Australian Universities) members chose to remain

[16] Reservation wealth is defined as the level of wealth at which an individual is indifferent between retiring and not retiring.

in the DB Plan when offered the option of transferring to the accumulation-style Investment Choice Plan (ICP). They proposed that 'risk transfer costs'[17] (independent variables) explained the low ICP acceptance rate. The study involved 620 academic staff randomly selected from 14 Australian universities. They carried out the survey using questionnaires via email. The respondents were asked thirty two questions (required to answer 9 to 27 only), with 5-point Likert scales on the choice decision, where 1= strongly agree, 5= strongly disagree. They applied a dichotomous dependent variable on choice (1, 0), and a trichotomous dependent variable on the investment option. The research findings showed that:

i. Those who chose to stay in the DB plan (DBP) and those who elected to transfer to the ICP were prepared to accept trade-offs in their choice.
ii. DBP members were prepared to forego a higher amount of expected benefits for greater security of benefits expected in the DBP.
iii. ICP members were prepared to forego such security and accepted higher investment risk in return for a higher expected amount and greater control over their benefits.
iv. Differences in financial proficiency and academic disciplines confirmed that risk transfer costs were a key reason why the majority of SSAU members rejected the ICP choice.

Another study on Australian employees was conducted by Clark-Murphy et al. (2002), using a qualitative approach. They endeavoured to investigate the decision making process of deciding about retirement savings in Australia on two fund types: DB and DC plans. Factors complicating their decisions were also explored. The study used members' data from the UniSuper/ Superannuation fund. A sample of 10,000 members

[17] The independent variables were various dimensions of the perceived costs of a member transferring from the DB plans to the ICP. The first group measured perceptions of risk and return from the choice: perceived benefits of the choice, perceived security of benefits, aversion to investment risk, uncertainty about the implications of the choice and level of control over benefits. Risk transfer costs were likely to be greater for members who consider the ICP returns to be lower and/or ICP risks to be greater. The second group measured the perceived ability of a member to make a superannuation investment choice: confidence in choosing an investment strategy, and self-assessed financial proficiency in superannuation matters. It was expected that risk transfer costs will be greater for those who have greater difficulty in making such a choice. The third group measures member characteristics: age, academic discipline, gender, and length of SSAU membership. Risk transfer costs were likely to be greater for members closer to retirement, and for those who do not have formal training or who are actively employed in teaching finance and accounting-related subjects. Also, if women are more risk averse than men, risk transfer costs are expected to be greater for women than for men.

was randomly selected from 48,000 members in the fund. A total of 2399 useable responses were received, representing a response rate of 24 percent. They found that while the amount of choice offered to fund members was rising there is evidence that individuals feel ill-equipped to deal with such decisions. The results also indicated that gender and age were relevant to the difficulties experienced by Australian employees in deciding on their superannuation.

Gallery (2002) stressed the importance of information disclosure on superannuation funds choice. They highlighted that an informed choice was essential for the fund's objectives to be met but significant barriers to informed choice presently exist. These barriers include the absence of relevant information disclosures by superannuation funds and the greater problem of members who were unable or unwilling to exercise choice. While the first barrier could be overcome by establishing standardised measures of fund performance, the potential problem of large numbers of workers not exercising choice requires rethinking the default option. A possible solution was the establishment of a universal default fund. Gallery et al. (2004) discussed the importance of default options on the superannuation fund. They argued that the principle of choice was generally supported but there were considerable disagreements among policy makers about the form of the choice model and implementation issues in the fund.

Drew and Stanford (2002) examined whether employees should have a choice of superannuation fund and whether this choice should be unrestricted. The main examination was to see how a contributor to a superannuation fund can maximise their retirement balance. In doing so, they reviewed the decisions that had to be made about investment in superannuation fund balances and examined whether these decisions by trustees and managers of superannuation funds were efficient, rational and likely to maximise the retirement benefits of contributors.

Fry et al. (2007) studied if investors are willing to change their superannuation fund given the choice. They argued that although expected-utility-maximising investors might tend to change their fund once given the choice, loss-averse investors would favour the status quo. Using a survey of over 1,600 Australian investors, they found support for inertia (status quo) - suggesting that, with respect to superannuation choice, individual Australian investors were loss averse.

Elsewhere, for example in Switzerland, Butler and Teppa (2003) analysed individual choice between an annuity and a lump sum capital option upon retirement within the mandatory Swiss occupational pension system. Nine active Swiss companies, both public and private, were used. From the dataset that consists of 2129 observations, each company provided data about individuals after retirement or workers who have already chosen the option of the annuity or lump-sum capital. The three options are full annuity, partial, or full lump sum. The research findings were:

i. More than 60 percent chose annuity.
ii. Females chose the lump sum payment more frequently than males.
iii. Marital status did not seem to have a significant impact on choice.
iv. The data analysed clearly exhibits an "acquiescence bias", referring to the majority of retirees who chose the standard option offered by the pensions fund or suggested by common practice.
v. Those who deviated from the standard option do so as predicted by theory.
vi. The probability of choosing the capital option showed a U-shaped dependence on total capital at retirement.

Similarly, Butler and Teppa (2007) analyse the choice between an annuity and a lump-sum from the Swiss employer-based pension funds data. They found a strong and robust impact of a utility-based measure of the annuity's value (computed within a life-cycle framework) on individual annuitization rates. Low accumulation of retirement assets was strongly associated with the choice of the lump sum, presumably due to the availability of means tested social assistance. The sponsor's default option, in most cases the annuity, was also found to be highly influential in the decision to annuitize.

Finally, Pillai (2008) studied the options of annuity focusing on choice values in India. He highlighted that the following were the major types of annuity/pension options in India:

1. Pension for life.
2. Pension for five years certain and thereafter for life.
3. Pension for ten years certain and thereafter for life.
4. Pension for 15 years certain and thereafter for life.
5. Pension for 20 years certain and thereafter for life.
6. Joint life pensions, covering pensioner and spouse.

7. Pensions, increasing at the rate of 3 per cent every year, for life.
8. Pensions for life, with return of capital (ROC) on death to nominee.

He found that the options given under annuity plans need not be exercised by annuitants on the basis of returns, but they were more influenced by societal values. He specified that individuals (and their dependents) who had other income sources such as from land property, rent, interest, dividend, pension from government, etc would opt for life pensions/annuities. Others would prefer 'annuity for life with return of capital'. They were ready to pay a high premium for reclaiming the capital, by way of reduction from the life pension. Individual pension/annuity policy annuitants exercise annuity/pension options that respond to both returns on investment as well as societal values. He added that ROC is a great motivator of pension plans.

2.6 Conclusion

This chapter has presented a discussion of definitions and a literature review on retirement systems. After explaining the issues surrounding retirement systems, the various forms of the retirement benefits (systems) adopted in different countries are apparent. Experiences from the UK, the USA and other countries related to the individual choice of DB versus DC are discussed as a basis for the methodology description in chapter 5. The study in this thesis uses a sample of university employees from the 20 public universities listed in the Ministry of Higher Education Malaysia (MOHE) webpage. The last section of the review in this chapter therefore is dedicated to the previous studies in this area. It is apparent that employees' choice of pension plans in Malaysia has not been given its due attention. There is no evidence from the literature on the determining factors that affect individuals' decision making in their choice of retirement plan in Malaysia. As one of the potential retirement plan options is the private retirement plan, this research is undoubtedly vital. The next chapter will discuss in detail the three types of Malaysian social security, namely SOCSO, pension and EPF.

CHAPTER 3: THE MALAYSIAN RETIREMENT SYSTEM

This chapter discusses the literature related to the Malaysian retirement system in detail. It starts with the historical perspective before going into the distinguishing features of Malaysian public sector retirement schemes, which include the DB and the DC types of plans. Special focus is then given to clarifying the two compulsory types of retirement plans - EPF and government pension fund (PENSION) - before discussing the voluntary retirement scheme sources.

3.1 Introduction

There is a variety of social protection systems in Malaysia (Asher, 1994; Croissont 2004). The Public Service Department (2011) and Wong (2006) described the formal social protection system in Malaysia as including the Employees Provident Fund (EPF), the public-pension scheme offered only to civil servants (known as PENSION), the armed forces superannuation fund and Social Security Organisation (SOCSO). The EPF and the PENSION schemes are the two main retirement plans for old age in Malaysia, while SOCSO provides protection on disability. As SOCSO mainly relates to disability coverage, it will not be covered in this study. Besides, public sector employees are not entitled for the SOCSO coverage. Thus, throughout the study, the pension (retirement plan) will be referred to as retirement schemes, and the compulsory schemes are divided into EPF and PENSION only.

The Malaysian retirement system is dominated by the government. This reinforces the notion that the government indeed plays a significant role in Malaysian retirement systems. Ramesh (2002) indicated that in the Southeast Asia region, Malaysia is the largest spender on social security as a percentage of its Gross Domestic Product (GDP). **Table 3.1** presents differences in the social security programs across four main countries in Southeast Asia. The table shows that social security programs in all four countries are led by the government. The programs provide retirement benefits for both the public and private workers. Pension benefits in all four countries are financed by the government for public servants, while retirement incomes for private sector employees are financed through compulsory provident fund except for Thailand. Retirement

income for private sector workers in Thailand is financed by a compulsory social insurance program.

Table 3.1: Main Types of Social Security Program in Southeast Asia

Country	Government Finance	Compulsory Provident Fund	Compulsory Social Insurance	Privately-Funded Tax-Assisted
Indonesia	Pension and health benefits for public sector employees	Retirement income for private sector employees	Health benefits for employees in public sector and large private firms	Optional provident fund for private sector employees
Malaysia	Pension and health benefits for public sector employees (PENSION)	Retirement income for private sector employees (EPF)	Employment injury and invalidity benefit for private sector employees	Optional occupational pension for private sector employees
Singapore	Pension and health benefits for public sector employees	Retirement income for private sector employees, and `Medisave'		Optional occupational pension for private sector employees
Thailand	Pension and health care benefits for public sector employees	Retirement income for public sector employees	Pension, health, and Family benefits for private sector employees	Partially Optional provident fund for private sector employees

Adapted: Ramesh (2002, p.143)

It is compulsory for private employees in Malaysia to sign up for an EPF account but the civil servants have the option to choose the government pension besides the EPF option. The self-employed or unemployed individuals could also enrol in EPF on a voluntary basis. However, due to the lack of data about these informal sectors, it is not possible to assess the extent of protections available for them (Sim, 2002).

It is important to know that the Malaysian Ministry of Human Resources manages labour issues related to Malaysian government agencies (U.S Bureau of International Affairs, 2002). In addition, the MEFG is the central organisation for private sector employers. Conversely, MTUC acts as the representative of most workers' organisations in the country. Likewise, CEUPACS represents the civil servants.

CEUPACS normally negotiates with the Public Service Department regarding matters such as wages or retirement proposals. Their recommendations will normally be sent to a parliament hearing for final jurisdiction or determination.

Historically, a number of studies presented supporting evidence that the retirement schemes in Malaysia were inherited from its colonial past i.e. from the British. Linderman (2002) presented evidence that in Asia, while dismantling their empire in the 1950s, the British left behind their pension legacy consisting of two elements. One was a budget-supported conventional DB pension scheme for the government workers, and the other one was a provident fund for those in the industrial and urban formal sector. Similarly, Beattie (2000) also claimed that in Asia and the Pacific, countries formerly under British colonies would generally have provident fund schemes while the others have social insurance pension schemes. Meanwhile, reflecting on the multi-pillar system introduced earlier, it could be said that the Malaysian government pension belongs to the first pillar, while the EPF belongs to the second pillar system (Fox and Palmer, 2000).

Malaysia has introduced a dual system of social security for its workforce. Civil servants are mostly covered by the PENSION scheme while private sector employees are covered solely by the EPF. However, civil servants are also permitted to choose EPF instead of the PENSION scheme. This will be elaborated on later in this thesis.

3.2 Government Provider (Compulsory Source)

There are three sources of pension plan in Malaysia which are available for the workforce: SOCSO, PENSION and EPF.

3.2.1 SOCSO

Malaysia has incorporated social risk pooling in its work related sickness and disability schemes which is administered by the Social Security Organisation (SOCSO). This organisation was set up in 1971 (Asher, 2000) and is primarily legislated under the

Employees' Social Security Act 1969 (SOCSO) (Zin, 2005). The locals used the abbreviation PERKESO which stands for "*Pertubuhan Keselamatan Sosial*" for this organisation. However, SOCSO is very different from EPF and PENSION both of which cover old age retirement benefits. SOCSO only provides protection on contingencies such as disability and death. There are two basic schemes in the SOCSO: the Employment Injury Insurance Scheme and the Invalidity Pension Scheme (SOCSO, 2009). Both schemes were created by the Employees' Social Security Act 1969 and were implemented in 1972 and 1974 (Peninsular Malaysia) respectively (Caraher, 2000).

SOCSO can be classified as a PAYG social insurance-based scheme (Caraher, 2003b, Lee, 2002). Under the Act, SOCSO covers all employers employing one or more persons and employees earning less than RM2000 a month. According to Caraher (2003b) and Sim and Hamid, (2010), employees under the scheme will remain insured against work-related injury, invalidity or death, even after their earnings' rise above the qualifying threshold. Currently, the Employment Injury Scheme is fully financed through employers' contributions at a rate of 1.25 percent of the employees' monthly salary. The Invalidity Pension Scheme is financed through contributions from both employers and employees, currently set at 0.5 percent of monthly wages. In short, Caraher (2003b) argued that SOCSO is more or less similar to a workers' compensation scheme, and as such cannot be regarded as a main contributor to income in old age. Thus, this study shall exclude the SOCSO scheme from the analysis.

3.2.2 Government Pension Plan (PENSION)

The government pension plan is publicly known as the "PENSION" scheme. PENSION is a type of DB plan, since there is no contribution from employees to the funds needed. This scheme is a privilege only extended to civil servants and the scheme is funded by the government through annual allocation from the budget. There are several types of retirement benefits offered by the PENSION scheme, such as service pension or service gratuity, derivative pension or derivative gratuity and the disability pension. Statistics from the Ninth Malaysia Plan indicated that the scheme accounts for a mere 9 percent of the total workforce (Wong, 2006). The PENSION scheme also

provides security to dependents of those in the civil service who have passed away while in service or after retirement.

Exclusively, the PENSION scheme provides retirement benefits for officers in the public service, employees of Statutory and Local Authorities, Members of Parliament and the Administration, Political Secretaries, Judges and the Armed Forces (Public Service Department, 2011) with the objectives of:

- being a reward from the government in recognition of the officer's loyal and dedicated service;
- being an inducement to officers to remain in Government service;
- providing financial security for those who retire from Government service;
- providing financial security for dependents of those in Government service who die while in service or after retirement; and
- providing compensation to officers who are forced to retire or die due to injuries or sickness in the course of performing their official duties.

However, the retirement benefits are granted only to pensionable officers who retire in accordance with the provisions of the pensions laws. This means that a permanent officer may be conferred pensionable status if he/she fulfils the conditions of confirmation in his/her present appointment and has completed not less than 3 years of reckonable service. It is important to note here that if an individual left public sector employment, then he or she is no longer entitled to the scheme. In this sense, the opposite option of EPF is more valuable due to its flexibility or the mobile nature of the plan.

The retirement benefit in the PENSION scheme is paid out using the PAYG mechanism, which is a non-contributory plan (Caraher, 2000, Zin, 2005). Prior to service confirmation, all employees contribute to the EPF. Upon confirmation, employer contributions to the EPF will be returned to the PTF (s*ee section 1.2.6 for more explanation on PTF*). That is once the employee chooses the government pension scheme category, or in the case of death. Consequently, the employee's personal contributions remain within the EPF scheme. Due to the increasing burden of retirement benefits payable to public sector employees, the Malaysian government established the PTF in 1991 where 5 percent of the annual civil service bill is met by the PTF (Caraher,

2000). The government gave an initial fund injection of RM500 million to PTF in order to provide for a better return of investment for the schemes (Sim and Hamid, 2010). The contributions to PTF are made at a rate of 17.5 percent out of the salary of pensionable employees by statutory and local authorities.

Sim (2002) stated that the types of retirement benefits offered in the PENSION scheme include a service pension, and a service gratuity (a lump sum payment granted upon retirement). Caraher (2000) also said that the monthly pension received could be up to a maximum of 50 percent of last drawn salary. The service gratuity is also known "*golden handshakes (GCR)"* benefit (Public Service Department, 2011). It is an award to those employees who are not utilising their holiday due to the needs of the organisation. Starting from January 2009, employees with more than 30 years services are entitled to 60 percent of the last drawn salary. Those with less than 30 years services continue to receive 50 percent, while those who have served for at least 10 years are entitled to receive a life-long monthly pension which is one-fifth of their last drawn salary (Sim and Hamid, 2010).

The PENSION scheme will also provide benefits to employees' dependents in the event of death in service or after retirement. The other type of benefit is in the form of derivative pension and a gratuity, granted to the dependents (child) of permanent and confirmed officers who pass away during service. Caraher (2000) categorized this as survivor and disability pensions. In 2002, the derivative pension was extended to widow/widower who remarried - a provision which was not accorded earlier. Sim (2002) further claimed that it is a safety net for widowed spouses and is particularly beneficial in providing for females who experience a higher incidence of widowhood. In 2004, this was further extended to cover parents of employees who die without leaving a widow/ widower or children (Sim and Hamid, 2010). Hence, it suggested that in terms of the coverage, the derivative pension has become more inclusive compared to when it was first introduced. Accordingly, **Table 3.2** verifies that the Malaysian government has made some great improvements to the pension systems during the 36-year period from 1968 up to 2004. As PENSION covers employees as well as their dependents, it is a challenge in terms of sustainability of the scheme to provide adequate benefits, since as a DB scheme, the sponsor (government) bears all the risk the scheme is exposed to.

Table 3.2: Upgrading of Malaysian Pension Benefits (1968-2004)

Date	Upgrading of Pension Benefits
01/08/68	Implementation of pension benefit scheme endorsed by the Royal Suffian Commission for Public Service officers. Gratuity award as additional benefit and separate from pension/derivative pension. Derivative pension is given for a period of 12 ½ years from the date of retirement or death of a serving officer.
01/05/69	Implementation of pension benefit scheme endorsed by the Royal Harun Commission.
01/01/74	Cash Award in lieu of Leave (GCR) at the rate of 1/30 last drawn salary for each day of expired leave not taken up to a maximum of 90 days.
01/01/76	Conferment of lifelong derivative pension (100% from the original rate for 12½ years from the date of retirement or in-service death, 70% thereafter).
01/01/76	Child is provided with pension till the age of 21 years or upon completing or ceasing to receive education for a first degree at an institution of higher learning, whichever the later, as long as not married.
01/01/76	Implementation of retirement in the interest of the public service and retirement after being appointed to serve in an organisation (privatization / corporatization retirement).
01/07/80	Pension adjustment with every public sector salary review, on condition the pensioner or pension recipient resides in Malaysia.
01/07/80	Derivative pension given to widower if the deceased wife has been in service after 1/7/1980.
01/07/80	Disability pension and dependant's pension given where an officer is required to retire or dies as a result of an accident during a journey.
22/10/82	Gratuity is exempted from income tax.
01/01/84	Cash Award in lieu of Leave is computed based on the last drawn emolument (basic salary + fixed allowances).
12/04/91	Computation factor for gratuity increased from 5% to 7.5% of last drawn salary.
12/04/91	Option to choose Pension or EPF Scheme when opting for separation remuneration from Government Remuneration System (SSB/SSM), without backdating the employer's contribution to EPF but given pension benefit for the service period before the separation.
12/04/91	The minimum age for optional retirement reduced to 40 years for all personnel; with pension awarded from age 45 years (for females and males in certain posts) /50 (male) or 55/56 (all personnel appointed on or after 12/4/1991, in accordance with compulsory retirement age.
01/01/92	Option for employees to choose the EPF when opting for separation remuneration from SSB/SSM.
01/01/92	Taking the period of interrupted past service due to allowed reasons and in between the service in the private sector before rejoining the Government.
01/01/92	Cash Award in lieu of Leave is exempted from income tax
01/01/95	Computation factor for gratuity increased from 5% to 7.5% of last drawn salary for each completed month of service.
01/12/97	Option to choose Pension or EPF Scheme when opting for separation remuneration from SSB/SSM, without backdating the employer's contribution to EPF but given pension benefit for the service period before the separation.
01/10/01	Compulsory retirement age increased from 55 years to 56 years.
01/01/02	Derivative pension given to widow/widower who remarries.
01/08/03	Maximum Leave accumulated for Cash Award increased from 90 to 120 days.
01/01/04	Derivative pension given to mother or father of personnel who dies without leaving a widow/widower or children who are eligible for derivative pension.
01/11/04	Cash Award in lieu of Leave given to personnel who choose EPF Scheme.

Source: Public Service Department (2011)

3.2.2.1 PENSION Popularity

Civil servants/government employees have the alternative to choose either the EPF or PENSION scheme as their retirement plan. However, the number of civil servants who opted for EPF is only 43,000 (CEUPACS, 2008) out of the two million total of all civil servants or around 2 percent of the total civil servants. This is a small fraction compared to those opting for the PENSION scheme. Notably, civil servants who opt for the EPF scheme are not entitled to the PENSION scheme and the decision is one-time and is irrevocable.

Despite the fact that the PENSION scheme is not portable which means the civil servants will lose their benefits if they move to private institutions, the PENSION scheme still proves to be popular among Malaysian civil servants. This is consistent with other studies that suggest a DB plan is more favourable compared to a DC plan. For example Brown and Weisbenner (2007) acknowledged that a DC scheme is inferior to the DB scheme. Meanwhile, Milevsky and Promislow (2004) also found that the DB scheme is still the one which dominates employees' decisions if they are asked to switch between DB or DC schemes.

3.2.3 Employee Provident Fund (EPF)

The second type of plan is the employee provident fund (EPF) scheme. It is a DC plan in which employees mostly from the private sector contribute a certain amount from their salary into the account/fund. The EPF organisation, known as either "EPF" or KWSP (Kumpulan Simpanan Wang Pekerja) among the locals, is also a government agency. The KWSP's primary mission is to provide retirement benefits to its contributors, by aiming to manage of their savings in an efficient and reliable manner. From the employers' viewpoint, KWSP also tries to provide an efficient and convenient system to ensure that they meet their responsibility and moral obligations of contributing to the EPF for their employees. Since its inception, the implementation of EPF has been fairly successful in ensuring its mission. Ramesh (2003) argued that as a provident fund, the EPF had only limited success in the overall goals in income maintenance, health care, housing and economic development in Malaysia.

EPF members consist of private and non-pensionable public sector employees. EPF funds are invested in a number of approved financial instruments to generate income. These include Malaysian Government Securities, Money Market Instruments, Loans and Bonds, Equity and Property, with a guaranteed 2.5 percent minimum of dividend payment annually. Thus, it is known that the EPF also contributes to the country's socio-economic development through prudent investments (Wong, 2006). As at 31st December 2004, EPF has a total of 10.72 million members, with 5.07 million active and contributing members (EPF, 2009). This is equivalent to 49 percent of the total workforce (Wong, 2006).

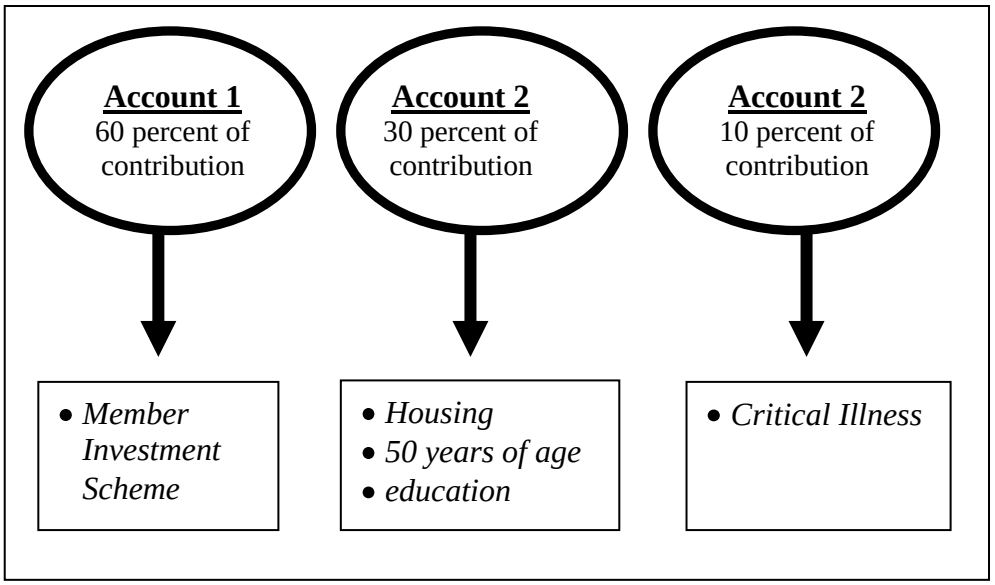
EPF is among the world's oldest statutory provident fund schemes. It was established 55 years ago on 1st October 1951 (Ibrahim, 2004; Wong, 2006). This shows that Malaysia has had provident funds long before the USA's "individual retirement savings account" (IRSA) became popular following the publication of the World Bank's *Averting the Old Age Crisis* (1994). EPF is similar to IRSA in every respect. According to Ramesh (2003), the only difference is that it is managed by the government rather than private managers. Otherwise, both are compulsory DC arrangements which specify the level of contribution rather than the promised future benefits. EPF (Caraher, 2003b; Ramesh, 2003) and IRSA (Ramesh, 2003) are also fully funded in the sense that members' benefit is equal to the balance in their personal account, imposing no actual or accrued liability on the government.

The EPF contributions comprise of two different parts: 11 percent from the employee and another 12 percent from the employer (Asher, 1998, 2000). This totals 23 percent of the basic wage with no ceiling imposed, but there is a ceiling for tax deduction purposes on individual income. The contributions are channelled into three accounts (Caraher, 2003b; Ramesh, 2003; Ibrahim, 2004). This is summarised in **Figure 3.1**.

Account 1:

The main purpose is for retirement. Savings in Account 1 could be withdrawn upon attaining the retirement age of 55 or 56. For instance, Caraher (2003b) pointed that at age 55, members can withdraw their funds either as a single lump-sum, part lump-sum with the balance paid in periodic payments, periodic withdrawal, or annual dividend withdrawal leaving the principal in the account.

Figure 3.1: EPF Accounts



Source: Ibrahim (2004, p.5)

Account 2:

The main purpose is for housing. Pre-retirement withdrawals are allowed for purchasing a building or building a house, or the payment of housing loans. The rules also permit withdrawals for major housing renovations. The balance of this account may be withdrawn at age 50.

Account 3:

The main purpose is for healthcare since there is no health insurance scheme. For that reason, this account simply acts as a medical savings account, with no risk pooling features. Pre-retirement withdrawals are allowed. This account may only be taken to meet the costs of certain defined critical medical conditions.

Numerous studies have discussed the three accounts. However, according to Caraher (2003b, p.29), there is another newly initiated account, namely Account 4:

> *"Account 4 allows members to transfer a maximum of 50 per cent of the balance held in Account, providing Account 4 has a minimum balance of RM24,000, upon reaching the age of 55, members will be able to opt to withdraw monthly payments for a maximum period of 20 years. If the balance held in Account 4 is below the threshold and the member opts not to top up the balance with monies from Accounts 1, 2 or 3 then all four accounts are merged and the total withdrawn in a single lump sum"*
>
> Caraher (2003b, p. 29)

Finally, it is worth mentioning that EPF and PTF funds are expanding due to the increased number of contributors/members. Thus, it is essential for the Malaysian government to evaluate both EPF and PENSIONS as resources to provide adequate retirement incomes. Subsequently, this study will help to provide information on choice behaviour related to both schemes.

3.2.3.1 EPF Problems

The EPF does have limitations in achieving its objectives. The issues have been primarily discussed in Chapter 1. Among the concerns is the adequacy of funds, taking into account longevity and inflation risk. Malaysia has been analysing the adequacy of its retirement system. For example, Beattie (1998, p.70) reported that a survey conducted by Professor Mokhtar Abdullah for the EPF in 1995 showed that the EPF lump-sum retirement benefits were deemed inadequate to sustain life after retirement by the majority of retirees. In most cases, the benefits were exhausted within three years of receipt after the age of 55. EPF has also been subject to criticism on the abuse of the pre-withdrawals scheme, and limited freedom for members to manage their savings due to stringent requirements. For example, a member who wishes to participate in any investment scheme is only allowed to do so with the approval of fund managers from the Ministry of Finance (Wong, 2006).

There was also controversy on the conflict of interest between EPF and the government as the biggest borrower from the EPF regarding the lack of public accountability. There was criticism on the questionable investments by the EPF which has been discussed in Section 1.2.2, Section 1.2.3 and Section 1.3. Additionally, the issue of low pension fund dividends has also sparked anger from contributors. Furthermore, pre-retirement withdrawals have also diminished the EPF funds. Additionally, the lack of retirement plan coverage for the informal sector such as self-employed or unemployed workers has also been discussed.

3.3 Voluntary Sources

Voluntary retirement sources can represent the 3rd Pillar from the World Bank Multi-Pillar model. It is a private pension similar to the commercial/ personal/ voluntary retirement scheme. In this study, it is referred to as additional retirement plans or personal savings set-up by individuals voluntarily, aimed as a means for retirement income later. It is beyond the employer-provided retirement plans. This includes purchases of private annuities and life insurance policies offered by private insurance or Takaful companies. Alternatively, personal savings could be in the form of bank savings accounts, and ownership of real estate or investment assets.

In the USA, this is known as the Additional Voluntary Contributions (AVC). It is an additional payment to a tax-deferred savings account or an occupational pension scheme initiated by an employee to boost the pension at retirement. 'Free-Standing AVCs' (FSAVCs) are essentially a private version of an AVC and can be used to top-up contributions independently (Finance Glossary, 2010). It is an employee's pension scheme which is additional and independent from the occupational pension scheme. In the UK, the maximum amount which may be contributed to an employee's pension fund is 15 percent out of salary (which includes benefits in kind) including the company scheme. For example, if an employee is contributing 10 percent of his or her salary to a company scheme, a further 5 percent can be paid by that employee in each tax year into FSAVCs or AVCs. However, the employer and employee contributions when combined must not produce benefits in excess of the Inland Revenue maximum.

An individual's decision about savings for retirement is complex; it involves consideration of current circumstances and predictions of future conditions. According to a series of studies on ageing published by the Population Reference Bureau (2007), these decisions reflect the personal individual decision making choices - between saving and spending and the regulatory, insurance, and pension environment which are extremely complex and constantly change. Normally, individuals purchase voluntary schemes to supplement/diversify their compulsory retirement sources arrangements. This is supported by Manchester (2007) who found that individuals chose individual accounts (type of voluntary retirement plans) to diversify their sources of retirement income.

There are many studies covering voluntary or private pensions especially from the developed countries. Davis (2000), Disney et al. (2001) and Banks and Blundell (2005) studied private pensions in the UK; Yermo (2005) and Srinivas et al. (2000) focused on the private pensions of OECD countries; Antolin (2007) worked on longevity risk and private pensions; Todd and Davis (1994) discussed the factors influencing the decision to participate in a voluntary retirement plan. Meanwhile in Malaysia, the issue was addressed indirectly by Wong (2006) and Asher (2000d).

3.3.1 Insurance Companies in Malaysia

The Malaysian media has placed much attention on educating and promoting life insurance products in 2005 and 2006 (New Strait Times, 21/04/2006; The Malay mail, 7/10/2005; The Star, 1/10/2005). However, the ownership of the insurance coverage products among Malaysians is still considered low as verified by the president of the Life Insurance Association Malaysia (LIAM, 2010). Based on Bank Negara Malaysia's Insurance Annual Report, the percentage of Malaysians who have insurance policies increased from 36.8 percent in 2003 to 37.9 percent in 2004 (The Malay Mail, 7/10/2005). The rate is still low compared to more developed markets such as Singapore, South Korea and Japan, which have reported rates of the insured population between 87 percent and 141 percent. Statistics from the Central Bank of Malaysia (2012) reported that Malaysian life insurance business recorded number of policies of 10,909,194 units, with sum insured of RM723,00.7 million, and annual premiums of RM 14,530.2 million in year 2007. In term of percentage changes, the number of policies recorded in 2003, 2004, 2005, 2006, and 2007, were 8.5 percent, 5.4 percent, 4.3 percent, 3.8 percent, and 3.6 percent respectively. This suggested a decreasing rate as regards to the number of policies by years from Malaysian experience. There are various factors that contribute to the low penetration rate; among them is lack of awareness and understanding of the benefits of life insurance. LIAM agreed that the lower disposable-income[18] (compared to Singapore and Japan) is also a contributing factor. Additionally, the Malaysian public has the perception that life insurance is expensive and they tend to delay their purchase of such insurance. On the other hand, Malaysians are satisfied with just having life and motor policies (New Strait Times, 21/04/2006).

[18] The amount of income left to an individual after taxes have been paid, available for spending and saving (http://www.investorwords.com)

There are many insurance companies operating in Malaysia offering products for voluntary retirement schemes such as annuity and life insurance policies. The Islamic-based insurance companies known as *Takaful* operators also provide Islamic-based insurance products. As on 23 January 2010, the companies under LIAM include Allianz Life Insurance Malaysia Berhad, AmAssurance Bhd, American International Assurance Co Ltd, AXA AFFIN Life Insurance Berhad, CIMB Aviva Assurance Berhad, Etiqa Insurance Berhad, Great Eastern Life Assurance (Malaysia) Berhad, Hannover Life Re, Malaysian Branch, Hong Leong Assurance Berhad, ING Insurance Berhad, Malaysian Assurance Alliance Berhad, Malaysian Life Reinsurance Group Berhad, Manulife Insurance (Malaysia) Berhad, Mayban Life Assurance Berhad, MCIS Zurich Insurance Berhad, Prudential Assurance Malaysia Berhad, TM Asia Life Malaysia Berhad, and Uni.Asia Life Assurance Berhad (LIAM, 2010).

This area has not been explored much in Malaysia and more specific research in such fields including health insurance issues is rather lacking (Bakar et al., 2006). For example, Yakob and Isa (2000) explained the demand for life insurance in Malaysia by focusing more on the macroeconomic factors rather than individual characteristics. They found that personal savings and short term interest rates have a significant negative relationship with the demand for life insurance while the GDP and income tax relief have significant positive relationships with the amount of life insurance purchased. Manab et al. (2004) conducted a study to determine the awareness and the factors that affect the ownership of Islamic life insurance products called "*Takaful*". They found no significant relationship between demographic factors such as age, gender, number of children, level of education, income and occupation with the ownership of Takaful products. Additionally, no study that reveals the level of satisfaction perceived by public servants on commercial retirement schemes appears to exist.

A national retirement system needs to balance government intervention to provide universal coverage and the competitive market for equitable coverage. The demographics of the different plans of retirement systems can provide a foundation for exploring the demand for private retirement systems in Malaysia. Understanding the ways in which the various employee characteristics relate to private insurance ownership is very important to predict future decision making on retirement plans. This analysis will be beneficial not only to the government in developing the National

retirement system, but also to the industry players in targeting potential customers for their retirement products.

3.3.2 Own Personal Savings

Apart from buying commercial retirement scheme products offered by the insurance companies such as annuities or life insurance, an individual could also set up his or her own savings for retirement via savings accounts in banks. Adequate savings are strongly believed to be the ultimate goal for an individual/family in ensuring their well being during the retirement phase (Engen et al., 2005; Wakabayashi, 2005; Banks et al., 2002; Hauser, 1999; Yuh, 1998).

Some authors indicated that the savings rate for Malaysian was considered low compared to other countries especially after the economic crisis (Thanoon and Baharumshah, 2005; Zin, 2003). Zin (2003) also emphasised the income-inequality problem in Malaysia. Shari (2003) suggested the urgent need for a new social security policy in Malaysia due to the economic insecurity related to globalisation. In contrast, Tang (2008) indicated that the savings rate in Malaysia was the second highest among the Newly Industrial Economies. He concluded from a 35-year study on savings behaviour and found that the major determinants of savings in Malaysia are the real income and the dependency ratio and the relationship is elastic. On the other hand, the effect of the real interest rate on savings in Malaysia is less important. Although there is a bilateral causality in savings and interest rates, it is not an effective macroeconomic policy instrument to encourage savings in Malaysia. In addition, the study found that households in Malaysia are very protective and their savings behaviour is driven by precautionary motives. They are protective in the sense that savings are mobilised and financed into productive activities only.

Earlier, Hamid and Kanbur (1993) conducted a study to investigate savings behaviour in Malaysia over the period 1970 to 1990. The study found that gross national savings are determined by real disposable income, the dependency ratio and growth rate. However, the authors concluded that the real interest rate of the commercial banks is not an effective policy instrument to increase the savings rate in Malaysia.

Historically, Malaysia had managed to sustain a high level of the savings rate. Overall, the country saved an average of 35.3 percent of GDP annually for the past three decades (Tang, 2008). However, the financial crisis spread to Malaysia in 1997, leading to serious depreciation of the Ringgit Malaysia and triggered a massive outflow of foreign capital in late 1998. Consequently, savings rates in Malaysia declined tremendously. In 2008, Malaysia is still classified as a medium income country with PPP per capita GDP of USD 14,081 in 2008 (IMF, 2009). Currently, the National Bank of Malaysia, the BNM, announced a GDP growth of 7.25 percent for year 2010 (Central Bank of Malaysia, 2011).

Wong (2006) extracted some statistics from the Department of Social Welfare to show that the number of elderly who receive assistance from the government has nearly doubled from 11,340 in 2002 to a total of 22,000 cases in 2004. In terms of geographical segregation, Wong (2006) also identified that rural areas, such as Kelantan, have a large number of chronically poor older persons in the peninsular of Malaysia. Furthermore, with the deterioration of filial care, which has long been a tradition of Asian culture, more and more older persons are left to fend for themselves. Thus, it could be said that setting-up private savings for retirement purposes will be important for Malaysia.

3.4 Conclusion

This chapter has reviewed the literatures relevant in defining the main dependent variables in the chapter 4. Initially, social security systems in Malaysia were introduced, stressing the dominant role played by the government. Features and issues related to the two main sources of retirement systems namely the compulsory (mandatory) and the voluntary retirement scheme were discussed. The scope and issues of three types of compulsory retirement plans in Malaysia, namely SOCSO, PENSION and EPF were discussed with the focus on the last two sources. Next, the third pillar, which is the voluntary retirement sources of retirement system is also discussed including matters surrounding insurance companies and also private personal savings in Malaysia.

CHAPTER 4: THEORETICAL FOUNDATIONS

This chapter describes the theory that assists in understanding the behaviour of Malaysian public universities' employees in making their choice of retirement scheme. It starts with a review of the related decision making theories. Then, the selected theory, namely, the Bounded Rationality theory, is discussed and then applied to the research framework for this study. Subsequently, the framework itself will be presented together with the research hypotheses to be tested. Finally, the construction of variables for the empirical analysis will also be explained.

4.1 Introduction

Exploring individuals' behaviour in making their choice of retirement scheme is a complicated task. This is because their decisions are mostly accompanied by varying degrees of risk and uncertainty, yet the outcomes of these decisions are vital in ensuring sufficient income during retirement. The unique features of Malaysian retirement systems, which are provided either by the government or private insurance companies, make the study more complicated. Studies of the determinants of retirement scheme choices made by Malaysian employees need to be explored. Furthermore, with this complexity, adopting other systems from developed countries might be misleading.

In this chapter, the literature on decision making is discussed first. The Bounded Rationality theory (BRT), which is the adaptation of the economic Rational Choice Theory (RCT) to the behavioural sciences, is laid out as the theoretical framework to gain a better understanding of employees' choice. The selection of explanatory variables are based on the results of previous empirical studies and aided by findings from other fields.

4.2 Basic Theory of Choice

Many studies tend to relate decision and choice with **utility theory** (Savage, 1954). Generally, the standard economics model on how people make choices is based on expected utility theory (Von Neumann and Morgenstern, 1947). This theory acts as a foundation to economic reasoning with the assumption that individuals have stable and coherent preferences. Furthermore, they are assumed to know what they want and their preference for a particular option does not depend on the context. Individuals who face

a choice will go through all available alternatives before selecting one that they judge to be the best.

This theory is based on the premise that alternatives with the highest utility are chosen. It is logical in the sense that people make choices which could make them happy or lead to gain of something of value. The decision maker selects the alternative in the choice set with the highest value or utility (Ben-Akiva and Bierlaire, 1999). Applying utility theory to this study, individuals potentially trade-off financial benefits against other matters (such as extension of working years and health care), and choose the plan that offers the greatest utility (or least disutility).

4.2.1 Rational Choice Theory (RCT)

Decision making theory has become a natural meeting ground for economics and psychology. Economic views tend to assume that an individual must behave as a rational entity. On the other hand, psychologists have always been concerned with the debate of rational versus irrational behaviour. RCT has been widely applied in many social sciences (Sugden, 2004, 1991), and often referred by economists as the rational optimisation approach.

In addressing RCT, many authors referred back to Von Neumann and Morgenstern. *Expected-utility theory* which provides the foundation of standard economics models on how people make choices (Von Neumann and Morgenstern, 1947, Green and Shapiro, 1994). A rational person will select the alternative (option) that maximises his or her expected utility. RCT theory involves psychological (emotion) and individualistic (personal) factors. According to Satz and Ferejohn (1994), RCT is considered as a *psychological* theory that explains a person's actions in terms of mental states. A rational choice or action is one in which the agent (individual) takes as the best available action given his or her preferences and beliefs. RCT is also an *individualistic* theory since it applies directly only to individuals, because only individuals have preferences. RCT could help with understanding social life based on rationality.

One disadvantage in RCT is that it reduces the whole complexity of social life in terms of economic calculations and transactions. It is suggested that RCT is only adequate

under precise conditions. The models of RCT seem obviously appropriate as a guide to intelligent action, but RCT becomes problematic for predicting human behaviour. Hanan (1992) supported this by claiming that RCT would not always be a comprehensive social theory and it can remain vital only by incorporating other theories, at different levels of operation.

In many cases, individuals can become emotional and irrational when faced with many obstacles/tasks leading to the right decision. There are many critiques of RCT. Evidence exists to prove that most people are partly-rational and in fact emotional (irrational) in part of their actions (Cox, 1999; Elster, 1993; Friedman and Hechter, 1988, Friedman, 1996; Jones, 1999; Pingle, 1995; Radner, 2000; Simon, 2000; Sugden, 1991; Augier and Kreiner, 2000; Greene and Shapiro, 1994; Loomes and Sugden, 1982; Rubinstein, 1998 and Stanovich and West, 1998). There are discussions among scholars who argue that rationality is just a myth. The irrationality concept might explain why some individuals might not make a maximising-decision and end up choosing the one that is merely satisfying. Depending on the circumstances faced by the decision makers (because each decision is unique), e.g. the complexity of the problem faced and the ambiguity of the decision making process, the decision makers could arguably be irrational in their decisions.

4.2.2 Bounded Rationality Theory (BRT)

Bounded rationality is a central theme in the behavioural approach to economics. It is concerned with the ways in which the actual decision making process controls the decisions that were made. This theory was introduced by Simon who explored the boundaries of human decision making in dynamic environments and contributed significantly to the literature of management, economics, cognitive psychology and artificial intelligence. Simon developed BRT during the 1940's, 50's and 60's in a series of textbooks on public administration and journals. Bounded rationality, which is a general theory in decision making, could also be extended to other applications such as to individuals, firms, economic and consumer research (Simon, 1978, 1979, 1986, 1991, 1997, and 2000). Simon emphasised the application of bounded rationality as follows:

> *"..... is used to designate rational choice that takes into account the cognitive limitations of the decision maker - limitations of both knowledge and computational capacity".*
>
> (Simon, 1997, p. 291)

Simon debated the assumptions behind a RCT process where individuals clearly define the problem, generate and evaluate all alternative solutions and select the best approach before implementing it. He pointed out that people acted rationally only in a limited number of situations. They made choices according to their interpretation of the situation which is often a simplification. Rationality is "bounded" - e.g. people seldom have access to all relevant information and must rely on a "strategy of satisfying" to make the best decision out of limited information. They tend to choose the first opportunity that seems satisfactory rather than seek the best solution.

Some of Simon's important arguments showed that human rationality is restricted due to the following:

1. Information is incomplete, imperfect or even misleading;
2. Problems are complex;
3. Human information processing is limited;
4. Time spent on decision making is limited;
5. Decision makers often have conflicting preferences for certain goals.

The above five points could be seen as critical points. The first argument that information is incomplete, imperfect or even misleading is related to "Restriction of information"; the second argument - "Problems are complex" - is related to "Complexity of situation"; the third argument - human information processing is limited – is related to "The problem of maximisation "; the fourth argument - Time spent on decision making is limited - is related to "The problem of achieving the high-setting aims"; and the last argument - decision makers often have conflicting preferences for certain goals - is related to "The influences of values, attitudes and traditions to the decision making process". Under the theory of rational choice, restriction of information occurs due to the high costs and the time needed to possess full information. In addition, there is another problem to deal with, i.e. in terms of the adequacy and validity of information, that could hamper the final decision. There is also an argument about the lack of information and limits on personal analytical skills which can create maximisation problems. This will lead to problems in examining given

alternatives and their consequences, to evaluate costs and to estimate the value of the information itself. For example, an employee will face difficulties in deciding between EPF and PENSION if at the same time he or she holds a government-housing-loan, due to the different implications imposed in different retirement schemes.

Simon perceived humans as information processing entities where uncertainties arise from lack of information. Simon's theory stressed the fact that perfectly-rational decisions are often not feasible in practice due to the fact that (infinite computational resources) is actually unrealistic to be obtained. This implies that knowledge (and information) is vital to the discussion since Simon mentioned "the lack of information" in relation to uncertainty.

Specifically, Simon's BRT placed more emphasis on satisfying (called the **satisficing alternative**) instead of utility maximisation as is in common RCT. This is mentioned in his book:

> *"Faced with a choice situation where it is impossible to optimize, or where the computational cost of doing so seems burdensome, the decision maker may look for a satisfactory, rather than optimal, alternative. Frequently, a course of action satisfying a number of constraints, even a sizeable number, is far easier to discover than a course of action maximizing some function"*
>
> Simon (1997, p. 295)

Simon's BRT suggested that an individual uses heuristic's (common sense) to make decisions rather than a strict rigid rule of optimisation. For example, this theory can be applied in finding out about an individual's decision to choose between compulsory and voluntary retirement schemes by looking at the statistically significant variables. It could distinguish between decisions that could satisfy preferences which were based on either simple-heuristics and theoretically-optimal procedures. Accordingly, employees' perceived satisfaction is an important variable to be included in this research to gain full understanding of the choice making. Thus, the satisfaction variables are related with Simon's BRT in understanding the reality of Malaysian retirement schemes choice in public universities.

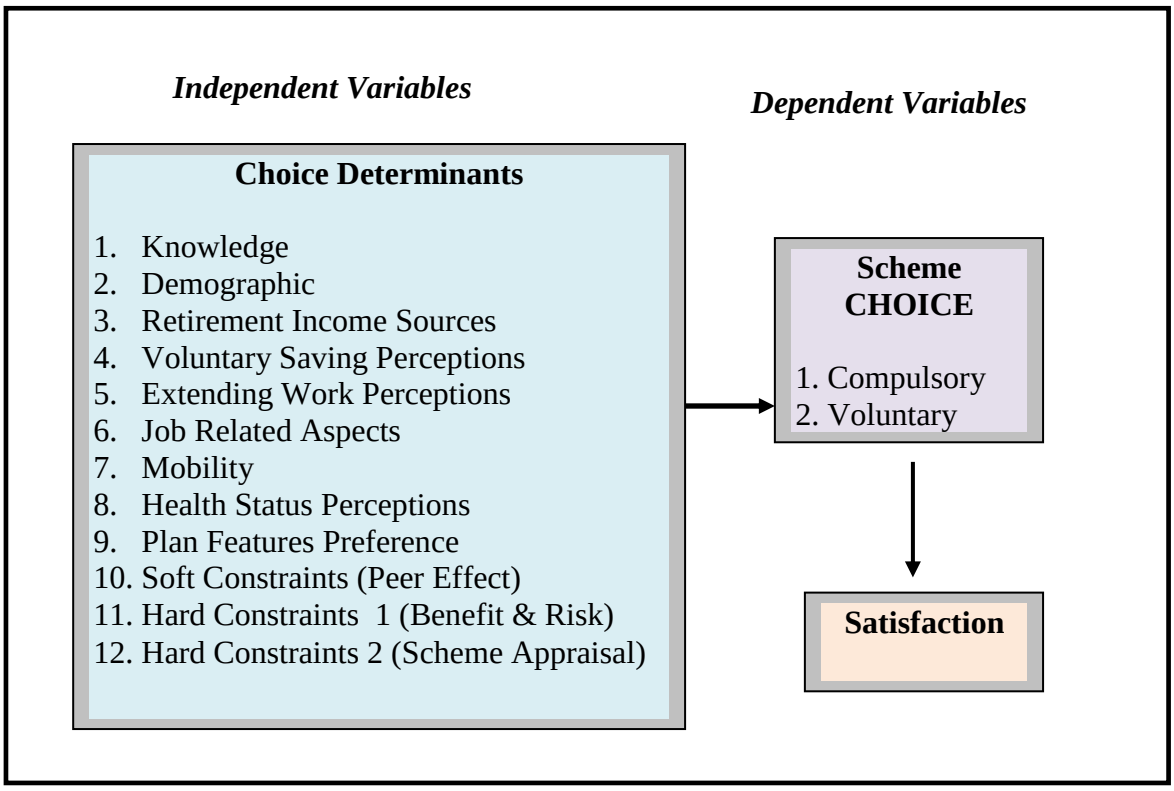
4.3 BRT and Retirement Scheme Choice Studies

This study uses BRT as the framework to understand the Malaysian civil servants' decision making behaviour. Previous literatures using BRT in retirement schemes includes Tapia and Yermo (2007) and Hedesstrom, Svedsater and Garlin (2004). Although these more relevant to investment decision making on retirement funds, they could also be beneficial in explaining individuals' retirement scheme choice between DB and DC. Hedesstrom, Svedsater and Garlin (2004) discussed heuristic choice rules identification in the Swedish Premium pension scheme. Additionally, Tapia and Yermo (2007) highlighted a significant view on the application of bounded rationality characteristics in relation to choice and information overload, framing effects, procrastination and inertia, overconfidence and freedom of choice issues. Those who are faced with an information-overload problem tended to choose the default-option. The percentage of contributors who make use of this default choice were high in Chile (approximately 74 percent) and in Central and Eastern European countries (over 85 percent) rather than in Australia or Sweden (less than 10 percent). Thus, it could be said that although standard economic theory assumes that individuals act rationally to maximise their self-interest, there are limitations to cognitive abilities and behavioural challenges that hinder their efforts to make effective choices.

4.4 Framework and Hypotheses

In this study BRT provides a basic framework for understanding the civil servants behaviour on their choice of retirement schemes as depicted in **Figure 4.1**. This study aims to identify and understand the factors that may influence employees' decisions in choosing their retirement schemes (plans). In this framework, BRT is incorporated with elements of: first, satisfaction in the dependent variables; second, soft and hard constraints in the independent variables; and finally, knowledge (information) as independent variables.

Figure 4.1: Theoretical Framework: BRT and the Retirement Scheme Choice in Malaysian Public Universities



In order to answer these research questions as listed in Section 1.5, specific research hypotheses have been developed. Research questions 1 and 2 will be answered via H1 and H2 (1 to12) and research questions 3 and 4 will be answered by H3. The **research hypotheses** that will be tested are:

H1: Knowledge level, demographic characteristics, plan features, retirement income sources, job related aspects, mobility, extending work perceptions, health status, perception, plan's features preference, soft constraints perceptions and hard constraints perceptions influence the choice of retirement plans.

H2: There is a relationship between the influencing factors on choice and the selection of retirement plans:

$H_{2,1}$: There is a relationship between **knowledge level** and the choice of retirement plans.

$H_{2,2}$: There is a relationship between **traditional and extended demographic factors** and the choice of retirement plans.

$H_{2,3}$: There is a relationship between **retirement income sources** and the choice of retirement plans.

$H_{2,4}$: There is a relationship between **voluntary savings perceptions** and the choice of retirement plans.

$H_{2,5}$: There is a relationship between **job related aspects (job type & job satisfaction)** and the choice of retirement plans.

$H_{2,6}$: There is a relationship between **mobility** and the choice of retirement plans.

$H_{2,7:}$ There is a relationship between **extension of working years perceptions** and the choice of retirement plans.

$H_{2,8:}$ There is a relationship between **health status perception** and the choice of retirement plans.

$H_{2,9:}$ There is a relationship between **plan's features preference** and the choice of retirement plans.

$H_{2,10:}$ There is a relationship between **soft constraints perceptions (peer & family effect and realistic level (nature of decision behaviour))** and the choice of retirement plans.

$H_{2,11:}$ There is a relationship between **hard constraints 1 perceptions (risk and benefits)** and the choice of retirement plans.

$H_{2,12:}$ There is a relationship between **hard constraints 2 perceptions (scheme appraisal)** and the choice of retirement plans.

H3: There is a significant difference in the satisfaction levels perceived by employees across the different retirement schemes choice.

4.5 Construction of Variables for Empirical Analysis and Hypothesis Testing

The construction of variables selected for the hypothesis testing was based on two main sources – the literature review and suggestions from a pilot test. Reviews of the relevant literature on choice making and retirement systems provide an early indication of the possible variables to be used. Next, the pilot test played a big role in deleting and adding variables, as per respondents' suggestions. The pilot test also ensured that the questionnaire is tailored to the Malaysian scenario. The majority of responses (more than 80 percent) from the pilot test revealed that they were of the same opinion that the drafted questionnaire is able to capture many issues which are currently debated in Malaysian retirement schemes' choices. As there were no existing questionnaires available, the developed questionnaire has helped to enhance the originality of the model used. Although the constructed variables were taken from the previous literature, the questionnaire was generated to cater to the Malaysian retirement systems.

4.5.1 Dependent Variable: Choice & Satisfaction

The dependent variables can be divided into two categories:

Dependent Variable 1: CHOICE

As presented in Figure 4.1, this model places greater emphasis on choice (relative to satisfaction) as one of the dependent variables. It is argued that given choice, an employee will choose the pension plan that matches his or her individual preferences or needs (Dulebohn et al., 2000; Cable and Judge, 1994; and Caplan, 1987). The main focus of this study is the choice of the **compulsory retirement scheme,** i.e. "EPF" versus "PENSION". The second focus is the choice of "ownership" of the **voluntary retirement schemes** bought by the respondents, i.e. "OWN" versus "NOT-OWN". EPF refers to Employee Provident Fund scheme while PENSION refers to the public-pension scheme offered to civil servants. OWN relates to employee owned/ bought/ purchased any voluntary/ commercial/ private retirement scheme such as annuities and life insurance offered by commercial insurance companies, while NOT-OWN is the opposite of owning any voluntary scheme. In the "Retirement Information Section",

(the Demographic sub-section in the questionnaire: see **Appendix B**); questions are asked to extract vital information about the chosen retirement schemes, retirement age and purchase of annuities and life insurance policies. Among the studies used for retirement information and demographic variables were Dulebohn et al.(2000), Childs et al. (2002), Clark et al. (2004), Papke (2004), Power and Hira (2004) and Craig and Toolson (2008). These studies were conducted either in universities or in the public sector using plan choice as their dependent variable, but none of these studies focused on the Malaysia context.

Dependent Variable 2: SATISFACTION

This is to test hypothesis H3. The variable is incorporated to evaluate the level of **satisfaction** perceived by the respondents with their choice of retirement scheme. It serves as a final output which will be analysed to reveal the satisfaction perceived by civil servants in Malaysian public universities. There are questions measuring satisfaction with: the choice made, the acts (provisions) governing the schemes and the personal and surrounding (public) retirement systems. The "personal retirement-systems satisfaction" evaluates satisfaction with: first, the individual right to make choices; second, the length of time available for making the choice; and third, the quality of the chosen scheme. While the "surrounding retirement-systems satisfaction" evaluates satisfaction with: first, government efforts to improve the retirement scheme; second, the availability of family support when employees retire; third, prospects (expectations) of the Malaysian health care system; and fourth, expectations of the Malaysian elderly care system.

Satisfaction is a very important variable to study for a number of reasons. First, satisfaction resulting from retirement arrangements provided by employers is one aspect of job satisfaction. Job satisfaction was measured through overall satisfaction towards the job, including retirement benefits. This is supported by studies such as Donohue and Heywood (2004) and Power and Hira (2004) that included the availability of retirement plans from employers as one of satisfaction determinants in their model.

Second, satisfaction is very important, since as mentioned by Bay and Pederson (2004), the success of national pension systems depends on employee's satisfaction about its

promised benefits. Thus, public support will be jeopardised if their confidence in the system and the benefits decline. Bay and Pederson asked questions about confidence, which leads to perceived satisfaction, by defining it as:

> *"a person is said to have confidence in National insurance (old-age pension) if she or he believes that the system will in fact fulfil its obligations towards the individual and provide the benefits that (according to perception of the individual) are being promised under the current benefit plan*"
>
> (Bay and Pederson, 2004, p. 113)

A lack of confidence in retirement schemes implies that the individual does not believe that the scheme will fulfil its obligations which then lead to dissatisfaction. However, dissatisfaction does not mean that an individual is less confidence on the promised benefits. An individual may be confident that the scheme will fulfil its obligation but is not satisfied with the adequacy of promised benefits. Bay and Pederson (2004) also added that in public conversations (discourse), the terms 'lack of confidence' and 'dissatisfaction' are frequently being confused with one another. This could be associated with the fact that they both have similar consequences; people who have a lack of confidence and are dissatisfied will be more likely to look for private alternatives as sources of income provision in retirement. They also agree that dissatisfaction would clearly be a matter of concern, both in terms of individual welfare, and from the standpoint of society in general.

Third, another reason for specifying satisfaction as one of the dependent variables is due to the application of Simon's BRT in understanding Malaysian retirement schemes choices. The theory of BRT focused on the satisfying (satisficing alternative) instead of utility maximisation as in common RCT (Simon, 1997).

Respondents in this thesis can be related whether they have more than one utility function. This is done by detecting the occurrence of situations where they tend to have limits in formulating and solving complex problems and in processing information as suggested by Simon (1991). His theory considers the fact that perfectly rational decisions are often not feasible in practice due to the absence of infinite computational resources required for making them. He also suggested that individuals employed the use of heuristics (common sense) to make decision rather than a strict-rigid rule of optimisation.

There are many studies which employed satisfaction as a variable in their study of retirement; hence it is adopted in this study. For example, Williams (1995), Dreher et al., (1988) and Wilson et al., (1985) studied employee benefit satisfaction which includes retirement plans as one of their variables. Power and Hira, (2004) analysed the role of information and advice on employees' retirement planning decisions and their satisfaction with financial resources during retirement. The study found that gender, planning practices, job classification, and age were all significant predictors. While Calasanti (1996) attempted to clarify the relationship between life satisfaction in retirement and gender, Luchak and Gellatly (2002) and Donohue and Heywood (2004) tried to address the relationship between pension plans and job satisfaction. Bay and Paderson (2004) studied the confidence and satisfaction with national pension systems at the individual level, while Childs et al., (2002), and Papke (2004) studied satisfaction on the employers' side. Specifically, studies were also conducted on universities' retirement savings satisfaction (Dulebohn and Murray, 2007) and on retirement plan choice satisfaction from the retiree's perspectives (Sundali et al., 2008). However, only a few studies are found to specifically mention satisfaction variables in the context of retirement plan choice (Dulebohn et al. 2009; Dulebohn et al., 2000, Danehower and Lust, 1995) and voluntary/private retirement plan satisfaction (Iyengar et al., 2003; Todd and Davis, 1994; Danehower and Lust, 1995). Findings from these studies have motivated the researcher to measure and test if the satisfaction levels of the Malaysian public universities' employees are perceived differently. In other words, differs by different types of schemes chosen: DB or DC. It is then proposed in hypothesis 3:

> **H3**: There is a statistically significant difference in the satisfaction level across employees' different retirement schemes choices.

The variables used to measure satisfaction were adopted from the literature and a pilot test and are adjusted to fit into the Malaysian context. Danehower and Lust (1995) measured university retirement plan satisfaction (alpha[19] =0.873) using four items: the amount of money the university contributes to employees' pensions, the pension-related information provided, the amount of the compensation package which goes with the

[19] Known as the Cronbach-alpha (α). It examines the internal consistency reliability based on the division of variables in the questionnaire. The values vary between 0 and 1, where the higher number indicates greater reliability and the generally-acceptable α are recommended at 0.70 (Robinson et al.,1991; DeVellis, 2003; Pallant, 2007; Hair et al., 2010; Robinson et al., 1991; Cavana et.al., 2001). See formula in **Appendix A1a**.

scheme, and the overall level of satisfaction with the pension scheme provided. They also tested satisfaction with life insurance (alpha =0.863) by measuring it against 2 items: basic and optional life insurance plans. In addition, Todd and Davis (1994), with 5-point Likert scales, measured employees' satisfaction with voluntary retirement plans but they focus more on demographic characteristics. They found four significant factors which affect satisfaction: being older, having a working spouse, having planned for retirement, and having spent more time than their spouses planning for retirement income. Iyengar et al. (2003) studied satisfaction with investment choice in 401(k). Specifically, they analysed how individual and plan characteristics affect individual participation, and in particular, whether more funds offered (i.e. more choices) correlated negatively with participation rates. They found a preference towards the default option (option in which employees "choose not to choose"). Thus, although extensive choice seems appealing, it may hinder the motivation to buy and decrease subsequent satisfaction with purchased goods (voluntary schemes). They acknowledged that, in attempting to provide employees with a generous number of 401(k) options, employers may actually intimidate rather than induce employees into investing in personal retirement plans. One way to combat the dangers of choice-overload, in which employees "choose not to choose," is to implement "libertarian paternalism," a phrase recently coined to describe institutional efforts to affect individuals' behaviour while respecting their freedom of choice.

In the questionnaire (see **Appendix B)** developed and analysed in this thesis; satisfaction is measured by asking direct questions to evaluate respondents' feedback on their level of satisfaction with the choice surrounding welfare systems and with the overall retirement system for civil servants. There were a total of 14 questions: 12 in section 2 (retirement provision) and 2 in section 4 (attitudes and perceptions) to address this issue. Specifically, it is under the sub-heading of *Retirement Systems Satisfaction* in section 2B and Overall Satisfaction in the section 4D.

Questions in section 2B (**Appendix B)** focused more on the individual aspect of satisfaction on right[20] (power) to make choice, length of time available for making choice, quality of the chosen (tentative[21]) scheme, variety of the retirement systems

[20] Permission granted as stipulated by law to an employee on his/her privilege to choose the retirement scheme (EPF or PENSION).
[21] As employees are normally obtained their "confirmed/permanent'" status after 3 years of services, they are yet to decide on their future retirement schemes choices.

available, promised benefits, financial sufficiency, asset management on retirement scheme, flexibility, government efforts to improve the retirement scheme, availability of the family support prospects of the Malaysian healthcare system and elderly care system.

Section 4D (**Appendix B)** is designed to evaluate respondents' satisfaction with choice and provision through the following questions:

1. Overall, I am satisfied with the current choice of my retirement scheme (EPF versus PENSION).
2. Overall, I am satisfied with the current provision (act) of the retirement system (arrangement) for Malaysian civil servants.

All of the variables used here are anticipated to capture the extensive aspects of satisfaction regarding the Malaysian retirement systems choice.

4.5.2 Independent Variables: Choice Predictors

Independent variables include plan feature preference, retirement income sources, voluntary schemes perceptions, health status, extension of working years willingness, mobility perceptions, job related aspects, soft and hard constraints perceptions and the demographic factors. These are the predictors as in hypothesis H1 and H2 below:

H1: Knowledge level, demographic factors, plan features, retirement income sources, job related aspects mobility, extending work perceptions, health status perceptions, plan's features preference, soft constraints perceptions and hard constraints perceptions are the factors that influence the choice of retirement plans.

H2: There is a relationship between the influencing factors on choice and the selection of retirement plans

Literature reviews from earlier chapters (i.e. the first three chapters) indicate the relationship between these predictors and retirement related decisions, which help to produce:

$H_{2,2}$: Demographic features

This is covered by Section 6 of the questionnaire with 29 itemed questions. Most of the questions (20) are measured as categorical variables and the rest (9) are on continuous scales. First, it captures personal details such as gender, nationality, age, ethnicity, religion, residence, education, individual income and marital status. As for married respondents, they are also requested to specify the number of dependents and family income. The work information includes university, faculty, year appointed as a civil servant, age appointed as a civil servant, length of service in the university, length of service in the civil service, total number of previous employers, employment grade code, job status (tenure), chosen retirement age and size of their faculty. Lastly, spouse-related retirement information is sought after. Enquires into spouse retirement information include whether the spouse is also working, working as a civil servant, has their own company retirement scheme, ownership of any voluntary scheme and whether the respondent is entitled to spouse retirement benefit. Several of these demographic items are deliberately redundant, in order to aid the process of checking logical or missing answers. For example, the item asking "year appointed as civil service" is checked against "length of service in the civil service".

There are many studies that examine the significance of demographic variables in retirement related decisions (Brown et al. 2004, Clark-Murphy et al. 2002, Lakwijk 1986, Dulebohn 2002, Dulebohn et al. 2000 and 2004, Byrne et al. 2009, Yang 2005a, Byrne 2008, Byrne et al. 2009, Peggs 2000, Mitchell and Fields 1984, Childs et al. 2002, Alkove 1999, Cocco and Lopes 2007, Power and Hira 2004, Papke 1998 and 2004, Hardya and Shueye 2000, Duflo and Saez 2002, Clark and Pitts 1999, Clark 2003, Clark et al. 2004, Todd and Davis 1994). However, many of these studies focus on investment decisions for DC plans rather than the retirement plan participation choice made by individuals. Studies by Bakar et al. (2006), Manab et al. (2004) are among the Malaysian studies of demographic variables, limited to the scope of health insurance and Islamic life insurance (takaful) products. Specifically, "marital status" is expected to be an important variable. Previous studies by Gustman and Steinmeier (2004), Moen et al. (2001), Kim and Moen (2002), Smith and Moen (1998), Blundell et al. (2002) and Craig and Toolson (2008) have revealed a significant effect of spouse/couples/family on retirement related decisions.

$H_{2,3}$: Retirement income sources and $H_{2,4}$: Voluntary savings perceptions

Retirement income typically comes from three sources, although different countries rely more on some sources than others. The sources are social security, employer-provided pensions, and personal/private savings. Discussions have been presented earlier in Table 2.4. Relevant previous studies can be found in Devaney and Su (1997), Shuey and O'Rand (2004), Childs et al. (2002), Gustman et al. (1994), among others. Asher (1998), Subrahmanya (2002), Beattie (2008) and Caraher (2003a, 2003b) have briefly addressed the informal family support system in Malaysia. The results of these studies suggest and confirm that retirement income sources as well as voluntary savings have effect on the choice of retirement schemes.

$H_{2,6}$: Job related aspects and $H_{2,7}$: Mobility

Disney and Emmerson (2002) examine the choice of pension schemes and mobility in Britain. They have found that individuals who subsequently moved job, selected pension arrangements that impose lower costs on mobility. Whereas Dulebohn et al. (2000) relate mobility to the selection among employer-sponsored pension plans which they call "portability" in their study. Sundali et al. (2008) determined the conditions where employees always considered whether the benefits gained by shifting to DC plans exceed the associated costs. Clark and Pitts (1999) adopt actual service-length as measured in administrative records as a proxy for mobility expectations. Similarly, Mitchell and Mulvey (2004) investigate the potential implication of mandating choice in corporate DB plans, and Manchester (2007) assesses the effect of mobility in the expected utility of DB plans. Empirically, O'Rourke (2000) has found that with increased job mobility, employees may be faced with decisions more than eight times during their working career in the US. This makes choice among retirement plans more crucial, due to the irrevocable decision made only once during employment as in Malaysia. Thus, mobility should be addressed in this study to analyze the impact of retirement scheme choices on employees' expectations regarding job changes and retirement funds.

$H_{2,5}$: Extending work perceptions

Extending work has been debated together with the ageing population problems, which have impacted on the retirement system system (Schulz, 2002, Dorn and Sousa-Poza, 2005). Extending work is a logical predictor to be adopted in this study. Earlier study by

Foster (1998) confirms that under the employer-provided retirement plans, the retirement age, together with other variables such as benefit formulae, length of service, and pre-retirement earnings, influences DB choice, while contributions amount and investment earnings influenced DC choice. Similarly, Mitchell and Fields (1984) reveal that extending work patterns depend on the retirement plans and vice versa. Specifically, Lozier and Dooris (1991) study the implications of different retirement ages under different plans in the faculty. Manchester (2007) has found that individuals who elect to enroll in a DB plan expect to retire sixteen months earlier than those in a DC plan. Kim and Devaney (2005) claim that older workers with a DB plan or with both DB and DC plans are more likely to retire entirely. In contrast, Blundell et al. (2002) model the probability of time to retire with different individuals' retirement schemes, focusing on the incentives behind different plans and other socio economic factors. A similar model by French (2005) shows that the tax structure of retirement schemes is the key determinant of the high job exit rates at ages 62 and 65. On the contrary, for early-retirement ages, Dorn and Sousa-Poza (2005) indicate that generous early retirement provisions of the social security system do not only make voluntary-early retirement more attractive to individuals, but also induces employers to encourage more employees to retire early. All these show that extending work and retirement age do have some influence on retirement schemes' choice among employees.

$H_{2,8:}$ Health status perception

Health care remains an issue during the retirement phase as retirees normally need more health care compared to the average population. Thus it is an important variable to be included in this research. In this regard, French (2005) relates health to retirement decisions, Johnson et al. (2003) analyze health insurance costs of early retirement, while Klaauw and Wolpin (2006) examine health status and health insurance coverage, in relation to social security, pensions, retirement behavior of households. Empirically, Szinovacz and Davey (2005) utilize health limitations as predictors for involuntary retirement decisions. The importance of health in retirement related discussions in Malaysia are documented in Wong (2006), Goh (2005), Sim (2002) and Arokiasamy (2000). Bakar et al. (2006) report that 96% in their Malaysian sample who bought health insurance has a satisfactory level of health. This surprisingly contradicts the notion that those with bad health should seek health insurance to get better services. This matter could be related to the study by Rahman and Daud (2010) when they highlight the existence of "adverse selection" in the Malaysian health insurance market.

Bakar et al. (2006) also claim that variables such as age, household income, occupation, and health status have influence on health insurance policy choice. Whereas Propper (1989) alleges that health status has no relationship with such purchases and that private employees are more likely to own health insurance compared to civil servants.

$H_{2,9:}$ Plan features

It is common to cover plan features in most studies on choice of retirement plans. However, most studies pay attention to employer choice rather than employee choice; and to a less extent, pay attention to investment aspects rather than plan participation. Dulebohn et al. (2000) state that plan features include lump-sum, benefit determination, investment choice, portability and survivor benefits. In order to suit the unique conditions of Malaysia's retirement systems, pilot input has been applied to tie in with the Malaysian retirement provision. Additionally, representatives from EPF institutions and PENSION departments have advised on the design of the questionnaire used in this study.

$H_{2,10:}$ Soft constraints & $H_{2,11\ \&\ 2,12:}$ Hard constraints

Dulebohn et al. (2000) investigate risk preference, involvement, self-efficiency and others personal characteristics in their study. Later on, Dulebohn and Murray (2007) claim that the attitudinal preference towards risk and a perception of opportunity serve mediators for the relationship between employees' characteristics and their retirement savings behavior. Related studies examining the influence of these factors and variables also include Dulebohn (2002) and Peggs (2000). The perceptions are divided into two in this study, labeled as "soft" and "hard" constraints. The soft constraints includes perceptions on peers and family. The variables are related to the individual's decision-making behavior, where soft variables indicate whether the employee's decision is made independently (on his/ her own), or is dependent (influenced) by others such as by peers, spouse or family. On the other hand, hard constraints measures preference, comfort and confidence level, covering risks and benefits perceptions and scheme appraisal.

$H_{2,1:}$ knowledge level

Knowledge is an important predictor for choice. There are many relevant studies on retirement systems that include knowledge as factor of influence. Chan and Stevens (2008) make inquiry into pension knowledge and retirement decision making, while

Choi et al. (2001, 2004) and Clark (2003) relate financial education with pension plan choice and Choi et al. (2004) study the effect of 401(k). Information is perceived to be critical to knowledge acquisition. Hence, Clark-Murphy and Gerrans (2001) address information on retirement savings in the university superannuation funds and Duflo and Saez (2003) examine the role of information and social interactions in retirement plan decisions. Dulebohn (2002) explores knowledge as a determinant of investment risk behavior in employer-sponsored retirement plans and Dulebohn and Murray (2007) allege that investment knowledge exerts direct effect on risk taking behavior in the university sponsored DC pensions plans. Gallery (2002) and Gallery et al. (2004) analyze information disclosure and the importance of the default option on the superannuation fund choice. Luchak and Gunderson (2000) focus their study on the knowledge of employees about their pension plans and have found low levels of understanding among employees, whereas Peggs (2000) work on the quality of pension information and pension choice and pension risks for women. Recently, Sullivan (2009) investigates the employer's role in helping employees to understand the types of annuities available to them.

4.6 Conclusion

This chapter starts with an explanation of the basic theory of choice and behavioural economics where RCT is briefly discussed. The discussions of the concept of restricted (bounded) rationality justify the selection of the BRT to provide a context to this study of the Malaysian public sector employees. The theory was linked to the dependent variables of "choice" and "satisfaction". This was depicted in the research framework, followed by the list of hypotheses which will be tested later. The chapter finished with a discussion of the definitions of the dependent and independent variables to be included in the empirical analysis. Specifically, it covers the literature on factors affecting choice namely demographics, retirement income sources, voluntary savings perceptions, job nature and job satisfaction, mobility, extending work perceptions, health-status perception, plan features preferences, soft and hard constraints, and knowledge level.

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CHAPTER 5: RESEARCH METHODOLOGY AND DESIGN

This chapter discusses the methodology used in this study, outlining the research philosophy, strategy and data collection method. The main goal of this research is to study the factors which influence retirement plan choice amongst Malaysian public university employees. The multi-dimensional quantitative method which is associated with the positivist paradigm of conducting research is applied by using a survey supported by interviews. This study requires the development of a new/original questionnaire for the survey, supplemented by semi-structured interviews.

5.1 Introduction

The chapter will describe the methodological procedures followed to achieve the research objectives in this study. The best method to achieve the objectives and testing the hypotheses is chosen accordingly. This chapter explains the two focuses of discussion of the thesis. The first deals with the research philosophy (also known as research design or research paradigm), discussing the positivist approach. The multi-dimensional quantitative method, which is associated mostly with the positivist paradigm, is used in this research, and subsequently justified. The second section lays out the research strategy, i.e. the approach that will be undertaken. A questionnaire survey has been developed and conducted which falls under quantitative methodology. Issues relating to the sampling procedures, validity, reliability, pilot testing and administration of the questionnaires will be presented.

Basically, research design is a general plan to guide a researcher on how research is to be carried out in order to get valuable findings. Punch (1986) claimed that the centre of the design of a study is the rationale, which refers to the reasoning by which the study intends to proceed in order to answer its research questions. The rationale for selecting a particular research philosophy can be easily answered using the "research process onion' introduced by Saunders et al. (2003, p.83). Based on the 'onion', the chosen approach in this study is positivism, deductive, cross-sectional, using questionnaires and interviews in the survey method.

The adoption of positivism means that this study emphasises objectivity (Hussey and Hussey, 1997). Objectivity is considered by many quantitative researchers as the most important element of social sciences. Accordingly, the answers should be objective and

singular, researchers are independent from what is being researched, value free and unbiased.

According to Saunders et al. (2003), one of the important characteristics of the deductive approach is that it seeks to establish correlations between variables. This is appropriate to the present research, as it is consistent with the objectives and hypotheses, aiming to test whether a particular relationship exists between the variables and the choice of retirement plan in Malaysia. This is the primary aim of quantitative research. The deductive approach places greater emphasis on scientific principles, highly-structured research, and establishing a representative sample in order to generalise conclusions. This is supported by Bryman and Bell (2003, p. 91) - "*in order to be able to generalise your findings from your sample to the population from which it was selected, the sample must be representative*".

Crotty (1998) and Silverman (1993) agreed that the use of surveys is consistent with the quantitative method of statistical analysis. Clark and Pitts (1999), Dulebohn (2002), Lozier and Dooris (1991), Lewis (1996), Brown et al. (2004) and Clark-Murphy et al. (2002) all studied pension choice or decision making using surveys.

This research is a cross-sectional study where information is collected at a single point in time. It is not a longitudinal study because longitudinal studies are useful in research aiming at 'change and development' (Saunders et al., 2003), which is arguably not suitable for this research. For example Bryman and Bell (2003) indicated that with a longitudinal design a sample is surveyed and is surveyed again on at least one further occasion and it is often not much used in management research due to the lengthy time and high cost involved.

Data collection is divided into four principal components: the type of data collected; the method used; the nature of both the observation field and the sample; and data sources (Thietart, 1999). Each of these components must be appropriate to the research question and the data analysis method selected.

5.2 The Questionnaire

The most established method of collecting primary data for quantitative research is using a questionnaire. A questionnaire is a list of carefully-structured questions, chosen after considerable testing, intended to draw out reliable responses from a chosen sample (Hussey and Hussey, 1997). This study employs questionnaires as a main method since they are reliable and frequently used in management, marketing and consumer research (Easterby-Smith et al., 2002).

In the USA, the study by Clark and Pitts (1999) on university faculty choice of DB versus DC used the questionnaire method. Similarly in Australia, Brown et al. (2004) and Clark-Murphy et al. (2002) who studied the choice of DB versus DC of Australian University employees also used questionnaires. In the UK, Gough and DSozou (2005) also utilised questionnaires in their study of pension and retirement savings behaviour. In Canada, studies were conducted by Luchak and Gellatly (2002) on pension plans and employees' job satisfaction and Luchak and Gunderson (2000) on how much employees knew about various features of their occupational pension plan and all used questionnaires in their studies.

Furthermore, there are many benefits of employing questionnaires. First, under the positivistic paradigm, questionnaires are suitable for large-scale surveys and are also economical (Saunders et al., 2003). Second, doing a questionnaire is an economical way of overcoming financial constraints, and is quicker in terms of the time involved relative to the interview method.

Next, Denscombe (2003) argued that questionnaires have the advantage of supplying standardised and pre-coded answers that provide consistent and uniform measures which allow for speedy collation and analysis of the data. The questionnaire is less costly than personal interviews and puts less pressure on respondents as they have more time to fill in the questionnaire. Additionally, respondents could also complete the questionnaire during their own time.

In this study, questionnaires are regarded as appropriate because the aim is to extract information on both ‘facts’ and ‘opinion’ as suggested by Denscombe (2003). Factual information will be gathered from respondents via the demographic section (e.g. age,

retirement age, gender, race, residence, income level, tenure, marital status, spouse information, chosen scheme, insurance ownership etc.). On the contrary, opinions will be sought from respondents on knowledge, mobility, retirement income sources, peer effects, extension of working years, health status, rationality and other perceptions.

However, questionnaires do come with limitations. The information gathered is descriptive and sometimes shallow, as the researcher cannot probe to get further information or detailed explanation. Another drawback is that questionnaires usually receive low response rates as warned by Sekaran (2000) and Cavana et al (2001). The reality is that people do not allocate enough time to concentrate on answering questionnaires, especially when there are many complicated questions. Thus, the questionnaire needs to be designed to be brief and precise.

5.3 Sampling

Sampling is the process of selecting a sufficient number from the population so that by studying the sample, and understanding the characteristics of the sample subjects, it would be possible to generalise the properties of the population elements (Cavana et al., 2001). The sampling unit for this study is individuals - it refers to individuals who choose between EPF and PENSION, and individuals who purchase a private retirement scheme or not.

The Malaysian Higher Education sector is chosen for this study to represent civil servants. The sector is well-known to represent a high standard of knowledge, due to the number of academic staff. It is common for Malaysians to refer to public universities for consultations and other professional advice. Decisions made by universities are often referred to, considered by and followed by Malaysian citizens with confidence.

The sampling frame was obtained from the list of public universities in Malaysia. Since this research studies the choice of retirement plan, private institutions are excluded due to the non-existence of such choice elements in their compulsory retirement system. Private institutions only have a DC scheme. The choice of DB versus DC scheme is only available to government employees, which implies that the sample will be taken only from public universities (IPTA). The list of IPTAs is taken from the Ministry of Higher Education (MOHE) which was established on 27th March 2004 (MOHE, 2008).

Prior to its establishment, the supervision functions of higher education rested solely with the Ministry of Education. The establishment of MOHE indicated that the government is trying to give more attention to the higher education sector in the country.

The population here can be defined as faculty staff in the public Malaysian universities. The list of twenty public universities obtained from the MOHE webpage is shown in **Table 5.1**. From the list, eleven are full-fledged universities (number 1 to 11) and the rest are university colleges. Eight out eleven of these full–fledged universities have academic staff exceeding one thousand. The table also shows that UiTM recorded the highest number of staff. In terms of gender there are only 7 out of 20 universities which indicate higher number of females compares to males. The population consists of 17,886 academic staff for the IPTA academic session 2003/2004, while for academic session 2006/2007 it was increased to 23,567 (MOHE, 2008).

Table 5.1: The List of Public Universities

	Abbreviation	Universities	Year Established	Academic staff Total (Males: Females)
1	UM	Universiti Malaya	1962	2035 (1018 : 1017)
2	USM	Universiti Sains Malaysia	1969	1668 (1001 : 667)
3	UKM	Universiti Kebangsaan Malaysia	1970	2136 (1012 : 1124)
4	UPM	Universiti Putra Malaysia	1971	1920 (972 : 948)
5	UTM	Universiti Teknologi Malaysia	1975	1842 (1145 : 697)
6	UIAM	Universiti Islam Antarabangsa Malaysia	1983	1706 (884 : 822)
7	UUM	Universiti Utara Malaysia (UUM)	1984	1177 (565 : 612)
8	UNIMAS	Universiti Malaysia Sarawak	1992	634 (309 : 325)
9	UMS	Universiti Malaysia Sabah	1994	625 (347 : 278)
10	UPSI	Universiti Pendidikan Sultan Idris	1997	564 (309 : 255)
11	UiTM	Universiti Teknologi MARA	1999	6001 (2505 : 3496)
12	UDM	Universiti Darul Iman Malaysia	2005	272 (143 : 129)
13	USIM	Universiti Sains Islam Malaysia	1998 (2006)	395 (166 : 229)
14	UMT	Universiti Malaysia Terengganu	1999 (2006)	384 (184 : 200)
15	UTHM	Universiti Teknologi Tun Hussein Onn Malaysia	2000 (2006)	797 (467 : 330)
16	UTeM	Universiti Teknikal Malaysia Melaka	2000 (2006)	564 (358 : 206)
17	UMP	Universiti Malaysia Pahang	2001 (2006	366 (210 : 156)
18	UNIMAP	Universiti Malaysia Perlis	2001 (2006)	354 (240 : 114)
19	UMK	Universiti Malaysia Kelantan	2006	55 (27 : 28)
20	UPNM	Universiti Pertahanan Nasional Malaysia	2006	72 (36 : 36)
			TOTAL:	**23,567** (11,898: 11,669)

* Note: The year in brackets is the year it changed to university status (from college status).
* The statistics were updated only until 2007.

Sources: MOHE (2008)

5.3.1 Sampling Technique

This research will employ **probability sampling**, namely the **stratified random sampling** method. Saunders et al. (2003) clarified that stratified random sampling is a modification of random sampling in which the researcher divides the population into two or more relevant and significant strata based on one or a number of attributes. Collis and Hussey (2003), Cooper and Schindler (2006), and Sekaran (2003) also argued that stratified random sampling could overcome the problem of under or over representation of members of the population as compared to the simple random sampling.

The stratified random sampling method is based on the hypothesis that there is a correlation between the phenomenon under observation and the criteria chosen for segmenting the population. The sample frame for this study will be divided into four strata, according to the segregation of universities' categories. The researcher has also tried to have a roughly similar proportions for gender (females versus males), residence (rural versus urban) and academics versus non-academics. Dividing the population into a series of relevant strata means that the sample is more likely to be representative, as the researcher can ensure that each of the strata is represented proportionately within the sample.

Thus, surveys were administered to a stratified random sample of active employees in Malaysian public universities. The participating universities are divided by the researcher as below:

1. New universities = UniMAP, UMK, UMP, UMT, USIM, UTeM, UTHM, UDM, UPNM
2. Old universities 1 = UKM, UPM, UM, UTM
3. Old universities 2 = UUM, USM
4. Special purpose universities = UiTM, UPSI, UIAM, UMS, UNIMAS

Category 1 belongs to new universities which have been established for less than 2 years. The second and third are old universities which have been established for more than 10 years (as in year 2008). Both categories differ in terms of location; the second group is those located in the middle peninsular of Malaysia and the third group is

located at the northern part. The last category consists of special purpose universities: distinguishable either by purpose (e.g. teacher training), location (e.g. east Malaysia) or by special characteristics of the university pension plan. Samples are stratified according to the above categories of university. The sampling procedure involved oversampling the academics due to the poor response rate from this stratum.

5.3.2 Sampling Size

The researcher decided to distribute 3000 questionnaires throughout four stratums of the universities. Clegg (1990) suggested that in order to determine the sample size, the following needs to be considered:

1. What kind of statistical analysis is to be undertaken?
2. What is the expected variability within the samples and the results?
3. What are the traditions in this particular research area regarding the appropriate sample needed?

Regarding the first consideration, the researcher planned to use means tests (Mann Whitney U Test), factor analysis and multivariate tests (logistic regression). All of the above tests and related procedures could be done with the minimum of 150 cases (see discussion below). Thus, the researcher aimed to have sufficient responses around 300 cases after the removal of unusable ones. Specifically, based on the guidelines, the consideration of the sample size determination could be discussed as below. Even if the strictest rule is applied to this study, the final sample size of 348 cases which has been obtained has met the minimum requirement for statistical analysis.

1. In determining the sample size:
    i. Referring to Krejcie and Morgan's (1970), table (See **APPENDIX A3**), given a population of 30,000 (see N in **Table 5.1** above is 23,567 staff), a sample size of 379 is needed. Even if we go to the end of the table, with N=1,000,000, a sample size of 384 would be needed to represent a cross section of the population. Accordingly, a sample size of **300** appears suitable for this study.

2. With reference to the factor analysis:
    i. Nunnally (1978) suggested that at least 10 cases per item (variable) are necessary.
    ii. Tabachnick and Fidell (2007) suggested 5 cases for each item are adequate (sufficient to run the factor analysis) in most situations. Furthermore they (p. 640) agreed that to achieve less fluctuate results at least 300 cases are needed for the factor analysis. Similarly, Coakes (2005) suggested that a minimum of 5 subjects per variable is required and a sample of 100 subjects is acceptable, but sample sizes of more than 200 are preferable.
    iii. Arrindell and Van de Ende (1985) suggested focusing on the stability of factor patterns with a fixed number of factor/components. Thus, the appropriate sample is 20 times the expected factors. Since this study expects twelve factors in explaining the choice of retirement scheme, then 20*12= **240** of observations will be enough.
    iv. Many authors suggested that the sample size needs to be more than 150 cases. Comrey and Lee (1992) put forward a rational guideline regarding sample size: 50 cases is very poor, 100 is poor, 200 is fair, 300 is good, 500 is very good and 1000 or more is excellent.
    v. Hair et al. (2010) suggested that number of observations to the number of variables ratio should be at a minimum of 5 per variable. In addition, Comrey and Lee (1992) suggested as a rule of thumb, a bare minimum of 10 observations per variable is necessary to avoid computational difficulties. All of these requirements have been fulfilled in the study.

3. Moreover, based on regression analysis:
    i. Field (2005) suggested 15 observations per independent variable in the regression. This study expects twelve independent variables in explaining the choice of retirement scheme, then 15*12= **180** is the sample size needed.
    ii. Grenn (1991) suggested the acceptable-minimum-size of sample with the formula of 50 +8*k*, where *k* is the number of independent variables. Thus in application to this study, 50 + 8(12) = **146** observations needed.

5.4 Validity and Reliability

It needs to be considered that whatever procedure that is selected for collecting data, it should always be examined to assess the extent of its reliability and validity. Collecting data in surveys involves three major steps (Thietart, 1999). They are: initial drafting of the surveys and choosing scales; pre-tests to check the validity and reliability of the survey; and the actual administering of the final version. All steps need to follow certain procedures to obtain the maximum amount of relevant and usable data. Therefore, to ensure the validity of the questionnaires, the researcher distributed questionnaires randomly among a group of Malaysian lecturers and interested respondents located in the University of Hull. Eighty percent of the Malaysians who came to this university who are postgraduate students are still employed as lecturers in Malaysian universities. They are sponsored by either the Malaysian government or the universities at which they are employed.

Output from a pilot or pre-testing is very important. The early stage of the pilot work is likely to be exploratory. The necessary modifications were made to the final questionnaire. Results from the pilot study will be discussed and the questionnaires were revised and rewritten to ensure that it is closely-tailored to key issues.

At the fieldwork stage, in distributing the finalized questionnaires to selected respondents (based on strata), notifications or reminders were sent either by internal-mail systems or via email, before and after completion of questionnaire. This was possible, because all university staff have university email accounts. The previous study on choice of DB versus DC in superannuation by Brown et al. (2004) also used questionnaires distributed via email. The researcher contacted the human resource department or the heads of departments in the selected universities, via telephone or in person to get permission to distribute questionnaires. The research's purpose and the confidentiality of the process were explained to the above parties and also to the respondents, by means of a cover letter and email.

Prior studies using questionnaires conducted in USA, by Dulebohn (2002), Danehower and Lust (1995), Clark and Pitts (1999), Lozier and Dooris (1991), Power and Hira (2004), reported various response rates of 20 percent, 34 percent, 40 percent, 69 percent, 72 percent, respectively. In Australia, Clark–Murphy et al. (2002) reported a moderate

response rate of 24 percent. In the UK, Gough and DSozou (2005) conducted a study on pension and retirement savings and sent out 1,900 postal surveys and received 540 responses, representing a response rate of 28 percent. Surprisingly in Canada, Luchak and Gunderson (2000) reported a rate of 52 percent which they describe as a "low response rate" from a total of 1,000 questionnaires distributed. In Malaysia itself, the Malaysian culture encourages less cooperatiion to participate. For example, Armstrong and Mahmud (2008) achieved a response rate of 31.8 percent, out of 1120 personnel in the Malaysian public sector, and ended up with 356 usable responses; being granted full access to the institutions being studied. As for this study, which concentrates on a sub-population of the public sector (public universities), one should expect a lower response rate. There are several studies in Malaysian universities to compare with, for example Ahmad (2006) who studied communication satisfaction among Malaysian Academic staff in public universities, with 252 responses, while Hei and Sohail (2006) received 174 responses in their study of private universities. Regarding a general Malaysian sample, Bakar et al. (2006) indicated that they received an "unsatisfactory" response rate via ordinary mails. Finally, they were able to collect 333 respondents which they considered high due to the use of "personal-contact[22]" approach as opposed to the ordinary mail method used in this study. Thus looking back at the above previous studies, the researcher would expect that a response rate of 20 percent should be acceptable for this study based on first, the above lower limit (see Dulebohn (2002) with a 20 percent response rate) and secondly, based on the Malaysian culture which appears to be less cooperative in taking part in surveys as highlighted by Bakar et.al (2006).

To attract more responses, entry to a lucky draw with a cash price of £140 (RM1000) was offered to those who participate. The completed questionnaires were collected with a contingency plan implemented due to a low response rate. Thus, more questionnaires were sent out as required to the academics sample. Here the replacement exercise was performed to match with the non-respondents.

It should be noted that with the construction of a new questionnaire, validity and reliability of this specific instrument and its questions had not been tested. Consequently, further analysis was needed once the data collection phase had been

[22] The respondenst were approach personally and explained in detail about the study including its purposes, meaning of the term/items, confidentiality and expected answers)

completed. The Cronbach-alpha values are reported below to examine its internal consistency.

5.5 Level of Measurement and Data Analysis

Level of Mesurement

Choice, the main construct of this study, and satisfaction were drawn from the economic and psychology fields. Within this, the data is measured by using 5-point Likert scales. Although few studies implemented the 7-point option, a much related study on choice of DB versus DC by Brown et al. (2004) used 5-point Likert scales, where 1= strongly agree, 5= strongly disagree. Brown defined a dichotomous dependent variable for choice (1, 0), and tri-chotomous dependent variables for the investment option. Similarly, Power and Hira (2004) also used 5-point Likert scales in their study of the retiree financial satisfaction in universities. The study on retirement investment choices by Dulebohn and Murray (2007) also used similar scales. Thus, this study will also do the same. Additionally, the pilot study suggested higher preferences on 5-point as opposed to 7-point Likert scales. This is because it was found that 100 percent of the respondents' indicated preferences for 5-point Likert scales. The modification will help to avoid confusion, is less complicated and may speed up the process of completing the questionnaires.

The 9-page survey instrument includes questions to measure all components in the research framework. Although space was limited, multiple indicators of constructs were included whenever possible. Priority was given to constructs that were of central interest and that were not likely to be as reliable with one or two items (such as age versus retirement plan knowledge). Extensive pilot testing was conducted because previously-validated measures for many components did not exist. Many questions were adapted from individual choice studies and altered to suit the Malaysian scenario. Furthermore, the questionnaire itself is an original instrument developed by the researcher and thus has never been tested due to the absence of a "ready-made instrument (questionnaire)".

The pilot work proved invaluable in producing a final survey that is more accurate to measure constructs and is user friendly for the respondents.

Data Analysis

In this section, influences from predictive variables (from questionnaire survey data) that determine the dependent variables will be examined. Just like Brown et al. (2004), this study will analyse a dichotomous dependent variable on choice (1, 0) of DB versus DC schemes, and another dichotomous model for a dependent variable on the choice of owning any voluntary retirement scheme. Alkove (1999), Clark and Pitts (1999) and Hardya and Shueya (2000) also used *Probit* or *Logit Models* in their methodology. Specifically, the logistic regression is used which is quite similar to the studies of Clark-Murphy and Gerrans (2001), Szinovacz and Davey (2005), Martin (1989), Joo and Grable (2000) and Dulebohn et al. (2000).

Specifically, the logistic regression function in SPSS 16.0 will be used to estimate and analyse nonlinear models for limited dependent variables in this study. In addition, some descriptive analysis, cross-tabulations, factor analysis, normality, and comparison of means will also be applied before the final analysis of logistic regression for the quantitative results in this study.

5.6 Data Collection

Individual universities were contacted to participate in this study. The researcher also used help from "contact people" in certain universities upon their consent. They might work as public relation officers or staff from the human resource department. There was also one person appointed by the researcher as her "representative" in case respondents needed to ask additional questions or clarification on certain issues regarding this study. The researcher has also asked permission from the Economic Planning Unit of Malaysia to conduct this study.

Initially participants were contacted by general mail and email (upon their availability) and invited to participate in the study. Then, using the internal-mail systems (circulating mail systems inside the universities), hard copies of questionnaires were sent straight away by the contact person. The questionnaire was made in booklet form to make it more attractive and in two different versions English and Malay Language (Bahasa Malaysia). The respondents have also been advised to visit the host web site if they prefer to complete an online version of the questionnaire at http://www.tarm121.

karoo.net. The soft copy version could be downloaded in both languages. The English version is at http://www.tarm121.karoo.net/qenglish.doc, and the Bahasa Malaysia version is at http://www.tarm121.karoo.net/qbahasa.doc. The various means gave options to respondents in choosing the best method to suit their preferences. They were then given 3 weeks to complete the survey. In an attempt to avoid low response rates, respondents were invited to participate twice after the initial email and provided the same information as the original invitation. The survey was initially distributed in February 2008, reminder emails were sent on March 2008 and the survey was concluded on May 2008. Due to a poor response rate, another reminder was made, and the final closing date was prolonged to early July 2008.

5.6.1 Target Population

In order to have a diversified representation from the population, the sample was set to consist of multiple universities based on their location, purposes, and years of establishment. The population of this study comprised of public universities in Malaysia as shown in **Table 5.1**.

The target population for this study consisted of employees in the Malaysia public sector in the public higher education sector focusing on the university level. Thus, surveys were administered to a stratified random sample of active employees in the Malaysian public universities. As explained in Section 5.4 (sampling) and 5.4.1 (sampling technique); the participating universities are divided by the researcher into 4 strata: New Universities, Old universities1, Old universities2 and Special purposes universities.

5.6.2 Research Sites

In accordance with the sampling technique, there were four research sites or locations specified throughout the country, including west and east Malaysia. However, the main concentration is on universities in peninsular Malaysia (west Malaysia) and focuses on the main campus instead of branches due to higher concentrations of employees.

5.6.3 Questionnaire Design

The questionnaire was designed by the researcher based on variables discussed in relevant studies and input from the pilot test. The construction of the questionnaire was very much oriented by the need to keep it as simple and short as possible to maximise the participation rate. The exclusive use of closed-ended questions was considered important to fulfil the aim. However, after incorporating the pre-test output, the questionnaire was nevertheless, longer than ideal, because it was necessary to account for a wide variety of the public universities in terms of nature, location, objectives, operation, and activities in Malaysia. The different pension plan features in practice also made the questionnaire complicated.

5.6.3.1 Development of the Questionnaire

A 149-question instrument was developed in the 9-pages, drawing from variables extracted from similar studies in the retirement literature. This instrument (questionnaire) gives an opportunity to contribute in terms of the originality of the research. Two dependent variables (choice and satisfaction) and 12 independent variables (voluntary scheme, age & extension of working years, mobility, health status, peer and family effects, retirement income sources, plan feature preference, benefit and risk perception, scheme appraisal, demographics, job related aspects and knowledge level) are examined in this study. Drawing from various choice and retirement studies and BRT, the instrument includes questions in six subsections - section 1: knowledge and decision behaviour, section 2: retirement provision, section 3: retirement income, voluntary schemes, health status, retirement age and extension of working years, section 4: attitudes and perceptions, section 5: job related characteristics and lastly section 6; demographics and retirement information.

The research commenced by reviewing the literature on individual decision making, specifically in the area of retirement plan choice. Essentially, Luchak and Gellatly (2002) on retirement satisfaction and also Dulebohn et al. (2000) on individual pension choice provided input in formulating the questions. In addition, other studies pertaining to individual retirement choice, retirement and public sector decision making have been analysed in order to gain preliminary ideas and to choose the variables.

In order to adapt to the conditions of Malaysian retirement systems, the preliminary questionnaire was pretested and then reviewed by two experienced personnel/professionals before performing a pilot test - one represents EPF institutions and the other PENSION departments. They both reviewed the first draft of the questionnaire. Suitability, any vagueness of wording and terms were checked. Their comments increased the validity and reliability of the research instrument (Fowler, 2002).

Instead of phrasing all questions positively, some of the questions were negatively-worded. This is to minimise the tendency of respondents to mechanically point towards one end of the scale (Cavana et al., 2001).

5.6.3.2 The Translation Process

Malaysia is a multi-cultural country with three main races namely Malay, Chinese and Indian. Thus, the researcher needs to consider the different cultural settings in applying the survey. Geographically, Malaysia is as diverse as its culture. There are 2 parts of the country; 11 states in the peninsular of Malaysia and 2 states on the northern part of Borneo. According to Tourism Malaysia (2009), a government agency under the Ministry of Culture, Arts and Tourism, Malaysia has a population of 27.12 million, of which 57 percent are Malays. Although "Bahasa Malaysia" is the official language, English is used widely in Malaysia. Thus, English is considered important and used as a second language.

There is existing evidence that surveys in Malaysia could be conducted in English such as Chan and Pearson (2002) and Le and Koh (2002). However, the questionnaire has been translated into Bahasa Malaysia. The questionnaire has been distributed in Bahasa Malaysia and English, so that respondents should feel comfortable in using any language or re-checking meanings if needed.

The so-called "back-to-back" translation technique has been performed. Douglas and Craig (1983) asserted that this technique is claimed to be able to produce good translation equivalence. First, the original English version was translated into Bahasa Malaysia. Seven Malaysians, mostly postgraduate students, were approached to volunteer for this task. Only five translations were completed, useful and received on

time. The five translations were reviewed sentence-by-sentence, and then improved in order to have the best translation to ensure that the meanings are well communicated. This procedure resulted in a single translated version of Bahasa Malaysia. The next step was re-translating from Bahasa Malaysia back to English, as required by the back-to-back translation technique. This time, 5 more postgraduate students (Malaysians) were involved. Some of them also participated in the pilot test. Modifications and changes were made to the Bahasa Malaysia's version accordingly. Finally, the researcher used two certified translators who work in Malaysian public universities to complete the ultimate task in ensuring both languages reveal the same meaning, and vice versa. Both translators were qualified and certified from the ITNM (Malaysian National Institute of Translation). ITNM is a government institution owned by the Ministry of Finance and administered by the Ministry of Education, indicating an unbiased and reliable institution. Their comments and the pilot test helped to increase the validity and reliability of the research instrument (Fowler, 2002) since every respondent should be able to easily understand the questions and get the same meaning.

5.6.3.3 Pre-Testing of Questionnaires

It is necessary to make sure that the instruments used can measure the concept to be measured (validity) and also ensure the reliability of the answers received. DeVaus (1996) revealed that a question is of little use if people answer it inconsistently (reliability issue). He added that it is wise to assess the reliability and validity of the indicators before carrying out the actual study. Many problems can be solved by pre-testing. This pre-testing is done by administering the questionnaire to a similar, smaller sample group.

The purpose of pre-testing is threefold:

1. Respondents load

   This is simply to test the respondent timing load; In other words, to find out, on average, how long the respondent is expected to spend time in completing each questionnaire.

2. Appropriateness and clarity

   This is to evaluate the appropriateness, the layout formatting and clarity of the questions. This could help in improving presentation and attractiveness of the questionnaire, and reveals the clarity of the instrument.

3. Reliability

   This is to calculate the internal consistency statistics in order to test the initial reliability of the instrument.

The pilot test was successfully administered to a group of 60 participants in the UK. The process was conducted twice; initially on 11 participants, then on 49 participants all over UK. In the process, the drafted questionnaire was asked to be read and completed. Next, in the presence of the researcher (or phone call), a thorough discussion has been made with each of the participants to clarify meaning, and gather comments. These efforts were made to develop and improve the questionnaire. The process started on 11th December 2007. Then, in January, the "improved" questionnaire was distributed to 49 Malaysians - all civil service employees studying or living in the UK. This group (similar to the first one) could either be an academic or administration staff. Academic staff includes lecturers, senior lecturers, tutors or specialized teachers who are pursuing higher education, while the administration staff includes clerics and other types of government officers. They were staff who are still working in Malaysian public universities but located overseas for particular reasons. There were also a number of respondents taking unpaid leave for specific personal reasons such as accompanying a spouse to study or other reasons.

Respondents were given spaces to record the time they start and end the survey. A split page was inserted at the end of the questionnaire to allow room for comments such as the total number of questions, wording, the quality and layout and also suggestions for improvement. The space provided enabled respondents to voice their comments or views regarding any misunderstanding or to seek clarification.

5.6.3.4 Major Findings of the Pilot Test

There were 60 respondents involved in the pilot test. Roscoe (1975) stated that a minimum of 30 responses is considered adequate for the purpose of statistical analysis. Thus, it is justifiable to argue that the use of 60 responses is sufficient to conduct the groundwork analysis.

Respondent's Load

The respondents spent varying amounts of time to complete the survey during the pilot test. The longest time reported was 2.5 hours. It was found that respondents who took more time showed better commitment and accuracy to the survey. On the other hand, the shortest time recorded was 20 minutes. However, this participant had skipped many questions, resulting in irrelevant usage. Other respondents recorded an average of one-hour period to complete most of the questions. Overall, in terms of respondent's load, the researcher decided to set 30-40 minutes as the normal time needed to complete the survey. Moreover, there was a deletion process of some of the early questions before the final questionnaire.

Clarity and Appropriateness

Positive changes had been made to improve the presentation and layout. The new formats were easier for the respondents to read and complete. Many respondents were put off by the length of the questionnaire. The lengthy questions distract the focus from the main theme. Another complaint was about the repetitions of questions, specifically on Retirement Scheme Feature Preference in section 2 (retirement provisions) and section 4 (attitudes and preferences). Many commented that they were unsure about the specific retirement terms such as the meaning of benefit, annuity, FPB, contributions, etc. They were also not aware of the features and the diversity of the retirement systems. Comments were also received on the irrelevant questions that might not be relevant to all levels of public sector employees. For example, questions such as "What is your chosen retirement scheme?" despite the fact that not everybody had made their decision yet. This is due to the requirement for an employee to be confirmed in the service to qualify them to make retirement scheme selection. Finally, the majority (100 percent) of the respondents indicated that they prefer the 5-point Likert scales compared to the 7-point Likert scales.

As a result, there were a few items which had been added and deleted in adjusting to the comments made in the pilot test.

Some of the questions which have been deleted after the pilot test are:

1. All questions about perceptions "before" and "after" the decision have been removed. Instead, basic questions asking respondents' perceptions were asked. Although this interrupted the initial intention of the researcher to observe if there are changes in particular information prior and after the decisions made, it was deemed as an appropriate action. The judgement is justified based on the following reasons. First, the majority of respondents (90 percent) ticked the same answers for both "before" and "after" decision were made; second, it shortened the lengthy questions; and finally, it could also speed up the respondents' time needed in completing the questionnaire.
2. Repetitions of questions were eliminated. The researcher had to ensure that the information needed could be extracted from the other items (questions) in the questionnaire.
3. Reducing the number of questions.

The new questions added and the changes implemented to the questionnaire are summarised as follows:

1. Most of the questions were set to be in one format, using a "strongly disagree" to "strong agree" type of Likert scale measurement.
2. Definitions of key terms were included in the front page and in footnotes to assist respondents in better understanding the questions asked.
3. Adjustments to meet all conditions for levels of employees in the public sector were made.
4. Clarifications to the wording according to pilot suggestions were made.
5. Modification from 7-point to 5-point Likert scales. Although a 7-point Likert scale is more sensitive in eliciting ranking order, a 5-point Likert scale was utilised to avoid confusion and speed up the answering process as suggested by pilot respondents.

Initial Reliability

To ensure that the instrument was ready to be distributed on a large scale, the researcher conducted a few tests. First, descriptive statistics were calculated to examine the minimum, maximum, and the standard deviation values. All questions in section 1 to section 5, which are in the form of the 5-point Likert scales, have small standard deviations. The majority of the minimum and maximum scores are 1 and 5 respectively. The highest standard deviation (SD) is 1.334 for question Q1C6 asking "My spouse or family have a huge influence on my retirement scheme choice". On the contrary, the lowest SD recorded is 0.80 for question Q5B13 asking "Overall, I feel satisfied with my job". The average SD for all questions is around 0.80, indicating a lower SD. As indicated by Howitt and Cramer (2005), SD is an index of how much scores deviate or differ on average from the set of scores of which they are members. In other words, in examining the scores, the variability in the variables around the mean were in the acceptable range (scores not exceeding 2.00 in the 5-point Likert scales) of scores. Questions in section 6 on demographic variables have various scales of measurement and have also been examined descriptively. They were all in the reasonable range of answers with the lowest and highest SD equivalent to 0.00 to 5.805 respectively. The lowest SD belonged to "Malaysian nationality" - a dichotomous variable where 0=Non-Malaysian and 1=Malaysian. The highest SD of 5.805 belonged to the question asking the "length of service in the civil service in years". This high SD is not surprising due to the range between one to twenty eight years of service answered by respondents.

Second, the internal consistency of the scales was calculated. **Table 5.2** summarises the internal consistency reliability assessment using the Cronbach-alphas based on the division of variables in the questionnaire. See formula in **Appendix A1a.** Statisticians like Robinson et al. (1991), DeVellis (2003), Pallant (2007) and Hair et al., (2010) suggest that a higher number indicates greater reliability. Although it is common practice to aim for values higher than 0.70, some have suggested acceptable values of as low as 0.50, particularly if a small number of items is involved. Note that except for the mobility variable, the Cronbach's alphas were at least 0.70.

Table 5.2: Initial Cronbach's-alpha Values for Pilot Test

	Variables measuring	k	Cronbach Alpha (α)
1	Knowledge	10	0.89
2	Information	9	0.77
3	Peer (soft constraints)	12	0.70
4	Schemes feature preferences	16	0.83
a	*EPF*	*5*	*0.79*
b	*PENSION*	*5*	*0.92*
c	*Overall schemes features*	*6*	*0.77*
5	'IDONT-KNOW" plan features	16	0.77
6	Retirement income	11	0.75
7	Voluntary saving perceptions	13	0.75
8	Health status	12	0.71
9	Retirement age and extension of working years	13	0.70
10	Preference (include mobility) & Confidence	22	0.77
11	Schemes appraisal	12	0.70
12	Job nature & job satisfaction	17	0.84
12	Satisfaction ALL	27	0.91
a	*Retirement systems satisfaction*	*12*	*0.89*
b	*Choice satisfaction*	*2*	*0.70*
c	*job satisfaction*	*13*	*0.89*
d	*All satisfaction (exclude job satisfaction)*	*14*	*0.89*
	Note 1: Mobility in section 4A	8	0.67
	Note 2: Subsection of question S4C9 (a,b,c)	3	0.92
	Note 3: Total (All items*)	167	0.88
	Note 4: Items transpose to it reverse value due to the negative wording.		RcodeS3B5 RcodeS3B6 RcodeS3C8 RcodeS3C9 RcodeS3D9

*All items 167 include the IDONT-KNOW questions

5.6.4 Development of the Final Questionnaire

The 9-page questionnaire booklet contains 184 questions divided into 6 sections. It was prefaced by an explanatory cover letter with the statement highlighting the importance of the study. Two sets of questionnaires were given to each respondent, one in English and another in Bahasa Malaysia. Respondents were free to choose the one that best suited their preference. Even though this resulted in a thicker questionnaire booklet, it

gave the chance for respondents to recheck and clarify the questions in the event of ambiguity.

Respondents were asked to answer all sections. The details on how to complete it are written on the preface page. Attached is the "*Introduction*" indicating the "*assurance of confidentiality*" and definitions of key terms. Definitions of "*choice*", "*retirement systems*", "*retirement scheme*", "*FPB*" and "*benefit*" were defined for better clarification. There are also notes at the end of the relevant pages defining "life insurance", "annuity/Takaful", "retirement benefit" "retirement systems", "tax relief", "impact on government housing loan" and "retirement age" which are relevant in this research.

For postal questionnaires, stamped self-addressed return envelopes were provided. This is to cater for cases where the respondent prefers not to use the inter-department mail system at his or her university.

The division of sections is as follows (refer to the questionnaire in **Appendix B** for details of items):

1. Section 1 asks about the knowledge, information and the decision behaviour.
2. Section 2 is on the retirement provision involving the retirement scheme feature preferences and *Retirement Systems Satisfaction.*
3. Section 3 is more diversified, asking about the retirement income, voluntary savings perceptions, health status, retirement age and retirement age and extension of working years.
4. Section 4 is on attitudes and perceptions asking about employees' preference, comfort and confidence, appraisal of the schemes and overall perception on the satisfaction level.
5. Section 5 includes the job related characteristics to uncover the perceptions on job nature and job satisfaction.
6. Section 6 focuses on socio-demographic characteristics such as gender, age, marital status, job status, and income of respondents. In addition, question related to retirement such as retirement age and chosen retirement schemes for both the respondent and spouse are also included.

5.7 Semi-Structure Interview

The researcher also combined the questionnaire findings with data from interviews to help explain the results. Results from the pilot test indicated that it was not feasible to test some dimensions in the questionnaire. Thus, short 30 minute semi-structured interviews were conducted to gather more information. Interviews were conducted with certain key players among the retirement schemes stakeholders, such as the Dean or Human Resource Department Director at the selected universities. Although some universities gave full cooperation, some were unwilling due to reasons of busy schedule. On the other hand, this will give no effect of the research findings because the researcher is satisfied with the overall cooperation given.

5.7.1 Interview: Research Strategy, Data and Analysis

The study's theoretical perspective is aimed to follow the positivist approach and thus follows Saunders (2003) elements for positivist research. The researcher decided to include deductive approach, survey method, cross-sectional and mainly using a questionnaire as main data collections method; and subsequently supported by interviews. Practically, the researcher terms this method as a multi-dimensional quantitative approach such as that adopted by Lukanima (2009).

The semi-structured interview is a follow-up to the questionnaire survey, thus the findings from the questionnaires served as the foundation in developing interview questions/schedule/protocol. Since this is a multi-dimensional quantitative study, the interviews are an additional tool in giving justifying explanations for factors from the questionnaire analysis. Thus, this supports the findings on the factors that influence employees' decisions in choosing their retirement schemes.

5.7.2 Interview: Process

The results from the pilot test indicated that there were some shortfalls in the questionnaire that could not be totally captured by a survey. Hence, a short 30-minute semi-structured interview was conducted to gather more information.

Interview instruments were prepared prior to field visits. First, the researcher contacted 15 respondents at each university. The requirement was to have five completed interviews. Fortunately, positive feedback enabled the researcher to interview eleven participants who readily gave their cooperation. Thus, total interviews accomplished were eleven. Respondents were contacted via phone or email prior to the session asking for their consent and allowing the opportunity to arrange a convenient date and place for the interview.

The interview schedule containing the list of questions to be asked was sent prior to the actual interview to give them ample time to think before giving their opinion. The themes were similar to the questionnaire yet it tries to capture respondents' explicit and implicit knowledge in elaborating on the themes. The interview focused on identifying the reasons behind their decisions.

Interviews were conducted in a semi-formal setting to create a comfortable effect for participants. Both languages (Bahasa Malaysia and English) were used in the conversations, giving participants' freedom to voice their opinions without language constraints. As ice-breakers, participants were given a brief introduction to the study. This was actually done twice - initially during the phone conversation and later at the start of the interview sessions - enabling them to digest the real need for the interview and to increase the value of the input gained.

5.7.3 Interview: Structure

The interviews employed in this study are to provide comprehensive explanation in understanding the reality behind employees' choice of their retirement scheme. Quantitative data extracted from surveys has been analysed using logistic regressions; its output enables more precise and generalised findings. Subsequently, qualitative data from interviews are exploited to further explain the significant variables and reinforce the overall findings. This research is dominantly-positivistic; the survey is the basis of the interview where the themes are taken. As positivist research, questionnaire output remains superior and there are no new themes uncovered during interview. The interviews were merely a tool to help verifying/explaining the questionnaire results.

It was a **semi-structured** interview, where a set of questions and issues have been prepared based on themes arising from questionnaire, and some additional open questions to elicit more information if required. Creswell (2003) argued that this method used some prior questions that the inquirer wants to know. Moreover, Cavana et al. (2001) highlighted that researchers used interview skills to elicit information, then when information appears to dry-up, the interviewer switches to planned questions based on defined, pre-identified topics, but still based on content (themes). There are clear distinctions between structured and unstructured interviews. In an unstructured-interview there is no planned sequence of questions for the respondent. The objective is to cause some preliminary issues to surface. Yet, the structured-interview, is conducted when it is known at the outset what information is needed. The interviewer has a list of pre-determined, standardised questions which are carefully ordered and worded in a detailed interview schedule, and each respondent is asked similarly using the exact same order (Minichiello et al., 1990). Thus, this study which lies between the structured and unstructured interview is called a "semi-structured interview".

The researcher conducted face-to-face interviews with participants. The respondents were asked the same themes as in the questionnaire but the focus was more on respondents' knowledge in explaining the themes in more detail. It was hoped that the interviews would enable the researcher to identify the real practice behind the decision making choice behaviour of their employees. The interview structure for respondents was in accord with themes/objectives indicated as follows:

- 1st Objective: To consider whether there is a relationship between knowledge (information) level and choice of retirement plans
- 2nd Objective: To consider whether there is a relationship between demographic factors and choice of retirement plans
- 3rd Objective: To consider whether there is a relationship between job related aspects and choice of retirement plans
- 4th Objective: To consider whether there is a relationship between extension of working years/Retirement age and choice of retirement plans
- 5th Objective: To consider whether there is a relationship between mobility and choice of retirement plans
- 6th Objective: To consider whether there is a relationship between health status perception and choice of retirement plans

- 7th Objective: To consider whether there is a relationship between peer/colleagues effect and choice of retirement plans

- 8th Objective: To consider whether there is a relationship between decision behaviour (hard constraints) and choice of retirement plans

- 9th Objective: To consider whether there is a relationship between plan feature preference and choice of retirement plans

- 10th Objective: To consider whether there is a relationship between retirement income sources and choice of retirement plans

- 11th Objective: To consider whether there is a relationship between ownership of voluntary savings and choice of retirement plans

- 12th Objective: To assess the perceived satisfaction (suitability) with the Malaysian retirement system for the Malaysian public universities employees.

Refer to **Appendix C** for the interview questions (interviews schedule/interview protocols) asked during interview session. Therefore, this structure resulted in three main categories (section) and with allowances for additional comments.

The first category was "Section 1"; looking at the factors extracted from hypotheses ($H_{1,2}$ & $H_{2,2}$ to $H_{1,12}$ & $H_{2,12}$) which aimed at ascertaining if the variables do influence the choice. Specifically, these were exploring 10 variables namely: demographics, retirement income, voluntary saving perceptions, job related aspects, mobility, extension of working years, health, plan features, soft constraints and hard constraints.

The second category was to explore variables related to special factors namely, knowledge level. Knowledge level is separated from the first section because initially, this variable was intended to be a moderating-variable, instead of ordinary predictors. The third category was to seek an answer for hypothesis H3, which is to explain employees' satisfaction level with their retirement plan and their choice.

The qualitative analysis is naturally more reflective. Under each variable, the researcher has also a list of questions to ask in order to provoke (probe) respondents for more explanation. These "provoking" questions were not known to them in advance. The researcher did return to the respondents if more clarification was needed. This was usually done through follow-up telephone conversations or emails.

5.8 Ethical Procedures

Proper ethical procedures and actions have been addressed in this study. Prior to the field work in Malaysia, an application has been made to the research ethics committee in the Malaysian Economic Planning Unit (EPU) of the Prime Minister's Department. Bound by this agreement, the researcher was subject to the EPU's Code of Conduct in conducting research in Malaysia. Hence, the field study needed to accord with the listed conditions set by EPU. In addition, the researcher has also obtained a letter from her supervisor (University of Hull) allowing her to conduct data collection. Approval to carry out the field work is also granted by the sponsor, Northern University of Malaysia (UUM) and the government via MOHE. Note that working as a lecturer, the researcher also is obliged under civil servant rules and regulations set by the government of Malaysia.

Applying the ethical procedure, this study complies with the ethical requirements including actions of:

1. Voluntary participation where participants are free not to participate in the study.
2. The research outputs will be used only in statistical summary and will not be disclosed to their own organisation or to any individual or group. This is to avoid easy identification. The outputs will not reveal any particular criteria which could discriminate some people for easy identification based on that criterion.
3. Responses to every part in the questionnaire are strictly confidential. Respondents were assured that information given is confidential and would be solely used for academic purposes.
4. The research benefits were explained to the respondents in order to alleviate any concerns they had about the use of information they provided.
5. The participants were given information regarding the researcher's identity, research nature, research objectives and the time consumed in participating in the survey.

5.9 Conclusion

This chapter has discussed the main method employed in conducting the study. Employing the positivist paradigm using multi-dimensional quantitative methodology, the researcher intends to conduct a survey, using a questionnaire, with a stratified random sample to collect primary data backed-up by semi-structured interviews. Accordingly, research philosophies, strategy, data collection, development of the questionnaire as well as ethical considerations were discussed. Research strategy covers the discussion of the questionnaire, interviews, sampling, validity and reliability, the measurement level and data analysis. The discussion of data collection covered the research target, which is the employees of the Malaysian public universities; research sites are focused on the peninsular Malaysia, the questionnaire design is closed-ended questions and the development of 149 questions, the back-to-back translation process and details of the pilot test.

CHAPTER 6: DATA AND PRELIMINARY STATISTICAL ANALYSIS

This chapter (6) reports the responses of the survey, data screening, transformation process and also the reliability and validity testing that have been employed. The descriptive analysis is also presented. Finally respondents' details from interviews were also revealed.

6.1 Introduction

While the previous chapters have discussed the methodology of this research, chapters 6 to 10 present the detailed results gathered from analysing the data collected through the questionnaire survey. The Statistical Package for the Social Sciences (SPSS) version 16.00 was used (SPSS, 2008).

6.2 Responses to the Survey

The target population for this study consisted of employees in the Malaysian public sector. Specifically, this research focused on individuals working in the higher education sector; namely the universities. As explained in the methodology chapter, the survey was administered to a stratified random sample of active employees among Malaysian public universities. The Malaysian public universities are divided by the following strata:

1. New Uni = UniMAP, UMK, UMP, UMT, USIM, UTeM, UTHM, UDM, UPNM
2. Old Uni 1 = UKM, UPM, UM, UTM
3. Old Uni 2 = UUM, USM
4. Special Uni = UiTM, UPSI, UIAM, UMS, UNIMAS

A justification for each category has been discussed in Chapter 5. Distribution of the questionnaire was mainly aimed at universities situated in peninsular Malaysia as it is more concentrated. **Figure 6.1** shows the highest responses of 48.9 percent that were received from "Old Uni 2" which reflects respondents from well-established universities in the northern part of peninsular Malaysia. Surprisingly, only 14.7 percent of the respondents came from the "Old Uni 1" which also represents well-established universities, but located at a different part of peninsular Malaysia. Responses from the

"New Uni" and "Special Uni" categories were recorded at 16.4 percent and 20.1 percent respectively. The above figures could be compared with the population in Chapter 5 (see **Table 5.1**) where the percentage of the population for each category of "New Uni", Old Uni 1, "Old Uni 2" and "Special Uni" were 13.83 percent, 33.66 percent, 12.07 percent and 40.44 percent respectively. Nevertheless, the overall responses were able to give an adequate balance in terms of representing different geographical areas and different types of Malaysian public universities. More descriptive statistics on respondents' profiles will be explained later.

Figure 6.1: Responses by University Stratum

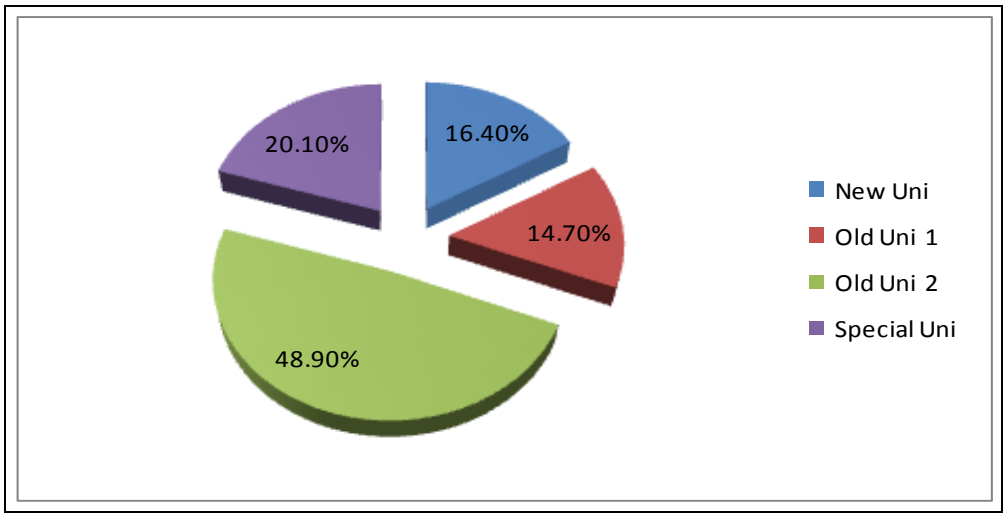
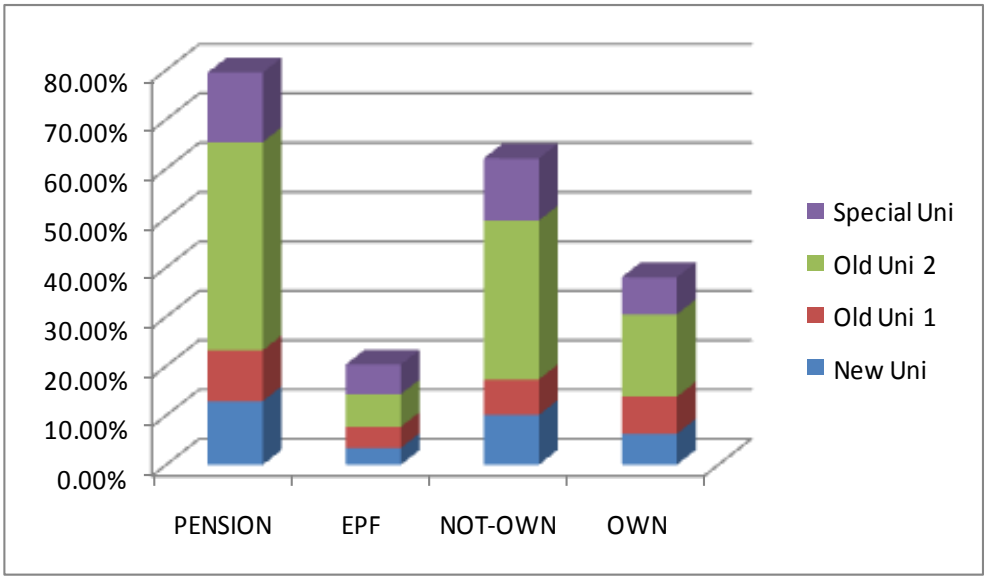


Figure 6.2 depicts the graphical presentation of retirement schemes choices, the first two are on the compulsory retirement schemes choice (EPF versus PENSION) and the other two refer to the ownership of voluntary schemes (NOT-OWN versus OWN). They were plotted against the categories of universities. The figures show that a lower percentage of respondents chose EPF, and have OWN voluntary retirement schemes. This condition ties in with the reality in the Malaysia civil service, where the evidence has been discussed in section 3.2.2.1 and 3.3.1 in Chapter 3.

There were 3,000 questionnaires distributed, an additional 50 were distributed to the participants who requested a soft copy via email. Participants were encouraged to use the language that they best understood. Many participants decided to use the Bahasa Malaysia version instead of the English version. The response is summarised in **Table 6.1**.

Figure 6.2: Survey Responses and the Retirement Schemes Choices



There were 377 questionnaires returned and after deleting the incomplete questionnaires, there were 348 useable responses left, representing a response rate of 12 percent. A lucky draw, personal approaches (e.g. door to door and phone calls) and a follow–up letter were used to boost the response rate.

Table 6.1: Response Rate and Sample Size

	n
Questionnaires distributed	3,000
Returned (undelivered/blank)	44
Responded	377 (*13 %)*
Removed due to insufficient information	29
Usable Response	348 (*12 %)*

The low response rate received was duly anticipated due to the poor research culture in Malaysia. Secondly, it is attributable to the lengthy questionnaire (184 items) and the "reducing" format impact[23] from the original questionnaire. Additionally, the sensitive nature of some questions might contribute to this problem. Despite these concerns, the sample distribution was representative of the population in terms of gender, age, marital status, job category, and scheme selection as explained next in the "sample statistics".

[23] Reducing impact refers to making a booklet form of the hard copy of the questionnaire where two-pages were printed in one-page. This makes the questionnaire smaller than the original size as compared to the soft copy version.

Sample Statistics

It is sensible to check the sample statistics for the data collected. Sample size can affect statistical tests by either making it insensitive (at small sample sizes) or overly-sensitive (at very large sample sizes) (Hair et al., 2010). To avoid this, a simple binomial test has been conducted. The binomial test is commonly-used to examine the relative proportions of a dichotomous variable of gender. Therefore, it is best to test the sample population that consists of 2-categories of variables (UCLA, 2009). For this study, it is aimed to have non-significant groups of respondents on gender category. It can be seen that out of the 348 respondents, 191 are females, 157 males. The dependent variables: compulsory and voluntary retirement schemes choices were deliberately untested here because it is well-known to be unequally-distributed in the population.

Results in **Table 6.2** indicate that there are no significant differences in gender, throughout the sample. The proportions of men versus women has no significant difference at p = 0.077. The sample is reasonably balanced in representing the gender, where the proportion in the sample is 55 percent: 45 percent for females: males; which is not much different from the population of 49.5 percent: 50.5 percent. This implies that the sample is valid to be used in further statistical analysis.

Table 6.2: Binomial Test (N=348)

	Category	N	Observed Prop.	Test Prop	Asymp. Sig. (2-tailed)
Gender					
Group 1	0 Females	191	0.55	0.50	0.077[a]
Group 2	1 Males	157	0.45		
	Total	348	1.00		

a. Based on Z Approximation.

6.3 Data Screening and Transformation

6.3.1 Missing Data

Missing data is a common problem for researchers. Hair et al. (2010) suggested that the primary concern is to identify the patterns and relationships underlying the missing data in order to remain close to the original distribution of values when any remedy is applied.

Table 6.3 provides descriptive statistics for responses to each of the questions. The missing value analysis (MVA) is based on the total number of responses of 359 instead of 377 indicating the sample before oversampling of the academic category. As can be seen from the table, the mean value of the responses varies between 2.0 (Q24) to 4.4 (Q39) on a 5-point Likert scale. Furthermore, standard deviations (SD) obtained were from 0.754 to 1.279 indicating low SD values for the scales.

In examining the table, all of the real missing value rates (see *no response percent column*) were actually less than 8 percent. The lowest missing rate was 0.3 (Q69-Q98) with two highest values of 79.4 (Q68) and 74.4 (Q15). These two items were then removed. Q15 asked "*I can find information about Malaysian retirement system from the sources of .....Others (specify)*" and Q68 was "*I expect to receive my retirement income from ..... Others (specify)*". This result is not surprising because both questions were intended to find out if there was/were *other* source(s), which might be available other than those sources listed prior to them. Thus, the exact items have been used exhaustively in the questionnaire. In other words, this implies that the "sources" extracted from the literature reviews are sufficient.

Upon closer review, the proportion of not-applicable (N/A) answers was relatively high. It ranged from 4.6 percent to 34.0 percent. However, in most cases it can be explained. For example, questions on spouse details (Q175-179) and number of children (Q160) are not relevant for unmarried[24] respondents. Those respondents were asked to omit these items in their questionnaire scripts. The same applies to item Q115: 8.9 percent, which is not relevant to individuals who have not made any decision between EPF or PENSION schemes. As for items Q130, Q131 and Q132 with N/A values of 34.0

[24] In Malaysia, only legally married couples are acknowledged by law

percent, this simply indicates about 34 percent of respondents were not aware of the proposed new scheme which is called the New Pension Trust Fund (FPB).

Table 6.3: Descriptive Statistics for Response of Questions (N =359)

Q	Question	Label	n	Mean	Std. Dev (SD)	Missing Total (%)	N/A (%) (include I don't know)	No Response (%)
1	A1a	knowledge	345	3.31	0.88	3.9	-	3.9
2	A1b		345	3.39	0.91	3.9	-	3.9
3	A1c		345	2.87	0.96	3.9	-	3.9
4	A1d		345	2.99	0.98	3.9	-	3.9
5	A2		345	3.25	0.96	3.9	-	3.9
6	A3		345	3.31	0.94	3.9	-	3.9
7	A4		345	2.93	1.15	3.9	-	3.9
8	A5		345	2.92	1.12	3.9	-	3.9
9	A6		345	2.91	1.16	3.9	-	3.9
10	A7		345	3.39	1.16	3.9	-	3.9
11	B1a	Information	345	3.81	0.93	3.9	-	3.9
12	B1b		345	3.51	0.84	3.9	-	3.9
13	B1c		345	2.96	1.04	3.9	-	3.9
14	B1d		345	3.60	0.91	3.9	-	3.9
15	B1e		92	3.05	1.22	74.4	removed	
16	B2		345	2.87	1.11	3.9	-	3.9
17	B3		345	3.08	1.07	3.9	-	3.9
18	B4		345	3.13	1.08	3.9	-	3.9
19	B5		345	3.10	1.07	3.9	-	3.9
20	C1	Decision behaviour	345	3.93	0.81	3.9	-	3.9
21	C2		345	3.66	0.87	3.9	-	3.9
22	C3		345	3.03	1.01	3.9	-	3.9
23	C4		345	2.80	1.09	3.9	-	3.9
24	C5		345	1.97	1.07	3.9	-	3.9
25	C6		345	3.11	1.23	3.9	-	3.9
26	C7		345	2.84	1.16	3.9	-	3.9
27	C8		345	3.45	1.03	3.9	-	3.9
28	C9		345	3.04	0.90	3.9	-	3.9
29	C10		345	3.03	0.96	3.9	-	3.9
30	S2Aa1	Scheme Feature Preferences	313	3.49	1.28	12.8	8.6	4.2
31	S2Aa2		309	3.86	0.96	13.9	9.8	4.1
32	S2Aa3		283	3.70	0.92	21.2	16.9	4.3
33	S2Aa4		276	3.73	0.95	23.1	18.9	4.2
34	S2Aa5		273	3.61	1.00	24.0	19.8	4.2
35	S2Ab1		329	4.41	0.84	8.4	4.6	3.8
36	S2Ab2		317	4.25	0.87	11.7	7.8	3.9
37	S2Ab3		317	4.30	0.85	11.7	7.8	3.9
38	S2Ab4		324	4.40	0.75	9.7	5.9	3.8
39	S2Ab5		323	4.44	0.80	10.0	6.1	3.9
40	S2Ac1		305	3.80	0.93	15.0	10.9	4.1

Table 6.3: Descriptive Statistics for Response of Questions (N =359) ~ continued

Q	Question	Label	n	Mean	Std. Dev (SD)	Missing Total (%)	N/A (%) (include I don't know)	No Response (%)
41	S2Ac2	Scheme Feature Preferences	302	3.92	0.83	15.9	11.7	4.2
42	S2Ac3		293	3.6	0.93	18.4	14.2	4.2
43	S2Ac4		304	3.81	0.84	15.3	11.1	4.2
44	S2Ac5		310	3.41	1.07	13.6	9.5	4.1
45	S2Ac6		319	4.18	0.82	11.1	7.0	4.1
46	S2B1	Retirement system satisfaction	345	4.10	0.92	3.9	-	3.9
47	S2B2		345	3.75	0.97	3.9	-	3.9
48	S2B3		345	3.70	0.87	3.9	-	3.9
49	S2B4		345	3.42	0.94	3.9	-	3.9
50	S2B5		345	3.69	0.90	3.9	-	3.9
51	S2B6		345	3.56	0.90	3.9	-	3.9
52	S2B7		345	3.53	0.88	3.9	-	3.9
53	S2B8		345	3.29	1.06	3.9	-	3.9
54	S2B9		345	3.57	1.06	3.9	-	3.9
55	S2B10		345	3.75	0.92	3.9	-	3.9
56	S2B11		345	3.58	1.05	3.9	-	3.9
57	S2B12		345	3.52	1.10	3.9	-	3.9
58	S3A1	Retirement Income	357	4.23	0.81	0.6	-	0.6
59	S3A2		357	3.50	1.10	0.6	-	0.6
60	S3A3		357	3.50	0.97	0.6	-	0.6
61	S3A4		357	3.35	1.10	0.6	-	0.6
62	S3A5		357	2.99	1.12	0.6	-	0.6
63	S3A6		357	3.08	1.14	0.6	-	0.6
64	S3A7		357	3.64	1.00	0.6	-	0.6
65	S3A8		357	3.22	1.19	0.6	-	0.6
66	S3A9		357	2.94	1.21	0.6	-	0.6
67	S3A10		357	3.50	1.05	0.6	-	0.6
68	S3A11		74	2.89	1.08	79.4	removed	
69	S3B1	Voluntary Schemes	358	3.63	1.08	0.3	-	0.3
70	S3B2		358	3.59	1.04	0.3	-	0.3
71	S3B3		358	3.96	0.89	0.3	-	0.3
72	S3B4		358	3.61	1.00	0.3	-	0.3
73	S3B5		358	3.13	1.13	0.3	-	0.3
74	S3B6		358	3.14	1.17	0.3	-	0.3
75	S3B7		358	2.75	1.16	0.3	-	0.3
76	S3B8		358	3.21	1.06	0.3	-	0.3
77	S3C1	Health Status	358	3.91	0.81	0.3	-	0.3
78	S3C2		358	3.65	0.94	0.3	-	0.3
79	S3C3		358	3.73	0.77	0.3	-	0.3
80	S3C4		358	3.66	1.06	0.3	-	0.3

Table 6.3: Descriptive Statistics for Response of Questions (N =359) ~ continued

Q	Question	Label	n	Mean	Std. Dev (SD)	Missing Total (%)	N/A (%) (include I don't know)	No Response (%)
81	S3C5	Health Status	358	3.20	1.141	0.3	-	0.3
82	S3C6		358	3.67	1.112	0.3	-	0.3
83	S3C7		358	4.17	0.950	0.3	-	0.3
84	S3C8		358	1.67	1.087	0.3	-	0.3
85	S3C9		358	1.69	1.094	0.3	-	0.3
86	S3D1	Retirement age & Extending Work	358	3.59	1.200	0.3	-	0.3
87	S3D2		358	3.32	1.267	0.3	-	0.3
88	S3D3		358	3.78	1.062	0.3	-	0.3
89	S3D4		358	3.30	1.350	0.3	-	0.3
90	S3D5		358	3.09	1.273	0.3	-	0.3
91	S3D6		358	3.26	1.196	0.3	-	0.3
92	S3D7		358	2.70	1.227	0.3	-	0.3
93	S3D8		358	3.36	1.170	0.3	-	0.3
94	S3D9		358	3.21	1.107	0.3	-	0.3
95	S3D10		358	3.69	0.979	0.3	-	0.3
96	S3D11		358	3.37	1.164	0.3	-	0.3
97	S3D12		358	3.66	0.996	0.3	-	0.3
98	S3D13		358	3.25	1.029	0.3	-	0.3
99	S4A1	Preference, Comfort, Confidence	337	4.16	0.882	6.1	-	6.1
100	S4A2		337	4.23	0.878	6.1	-	6.1
101	S4A3		337	3.59	1.079	6.1	-	6.1
102	S4A4		337	3.76	0.971	6.1	-	6.1
103	S4A5		336	4.08	0.849	6.4	-	6.4
104	S4A6		337	4.09	0.823	6.1	-	6.1
105	S4A7		337	3.73	0.916	6.1	-	6.1
106	S4A8		335	3.86	0.866	6.7	-	6.7
107	S4A9		337	3.60	0.884	6.1	-	6.1
108	S4A10		336	3.90	0.966	6.4	-	6.4
109	S4A11		337	3.70	0.993	6.1	-	6.1
110	S4A12		337	3.64	1.096	6.1	-	6.1
111	S4A13		337	4.17	0.874	6.1	-	6.1
112	S4A14		337	4.00	0.869	6.1	-	6.1
113	S4B1		337	2.51	1.047	6.1	-	6.1
114	S4B2		336	3.64	0.849	6.4	-	6.4
115	S4B3		301	2.79	1.067	16.2	8.9	7.3
116	S4B4		337	3.34	0.965	6.1	-	6.1
117	S4B5		337	3.49	0.913	6.1	-	6.1
118	S4B6		336	3.20	0.922	6.4	-	6.4
119	S4B7		337	3.47	1.055	6.1	-	6.1
120	S4B8		337	3.47	0.922	6.1	-	6.1

Table 6.3: Descriptive Statistics for Response of Questions (N =359) ~ continued

Q	Question	Label	n	Mean	Std. Dev (SD)	Missing Total (%)	N/A (%) (include I don't know)	No Response (%)
121	S4C1	Overall Schemes Appraisal	336	3.05	0.910	6.4	-	6.4
122	S4C2		336	3.67	0.872	6.4	-	6.4
123	S4C3		335	3.19	0.803	6.7	-	6.7
124	S4C4		335	3.51	0.944	6.7	-	6.7
125	S4C5		337	3.65	0.927	6.1	-	6.1
126	S4C6		333	3.15	1.072	7.2	-	7.2
127	S4C7		334	3.61	1.007	7.0	-	7.0
128	S4C8		334	3.24	0.994	7.0	-	7.0
129	S4C9		337	2.49	1.300	6.1	-	6.1
130	S4C9a		215	3.00	0.933	40.1	34.0	6.1
131	S4C9b		215	3.06	0.852	40.1	34.0	6.1
132	S4C9c		215	3.06	0.955	40.1	34.0	6.1
133	S4D1	Overall Satisfaction	337	3.56	1.004	6.1	-	6.1
134	S4D2		337	3.53	0.932	6.1	-	6.1
135	S5A1	Job Nature	353	3.17	1.159	1.7	-	1.7
136	S5A2		353	4.09	0.836	1.7	-	1.7
137	S5A3		353	2.69	1.055	1.7	-	1.7
138	S5A4		352	3.66	0.965	1.9	-	1.9
139	S5B1	Job satisfaction	353	3.90	0.869	1.7	-	1.7
140	S5B2		352	3.92	0.996	1.9	-	1.9
141	S5B3		351	3.51	0.889	2.2	-	2.2
142	S5B4		349	3.71	1.032	2.8	-	2.8
143	S5B5		351	3.31	0.973	2.2	-	2.2
144	S5B6		352	3.61	0.946	1.9	-	1.9
145	S5B7		352	3.29	0.977	1.9	-	1.9
146	S5B8		350	3.38	0.908	2.5	-	2.5
147	S5B9		351	3.57	0.923	2.2	-	2.2
148	S5B10		351	3.81	0.972	2.2	-	2.2
149	S5B11		351	3.56	0.881	2.2	-	2.2
150	S5B12		351	3.58	0.977	2.2	-	2.2
151	S5B13		350	3.76	0.825	2.5	-	2.5
152	D1:	Gender	349	3.88	0.499	2.8	-	2.8
153	D2	nationality	349	0.46	0.107	2.8	-	2.8
154	D3	age	349	0.99	0.826	2.8	-	2.8
155	D4	race	349	2.96	0.392	2.8	-	2.8
156	D5	religion	349	1.07	0.225	2.8	-	2.8
157	D6	residence	349	1.03	0.500	2.8	-	2.8
158	D7	education level	348	0.53	0.973	3.1	-	3.1
159	D8	marital status	349	2.28	0.429	2.8	-	2.8
160	D9	number of dependents	280	1.80	1.654	22.0	19.2	2.8

Table 6.3: Descriptive Statistics for Response of Questions (N =359) ~ continued

Q	Question	Label	n	Mean	Std. Dev (SD)	Missing Total (%)	N/A (%) (include I don't know)	No Response (%)
161	D10	year appointed as civil servant	346	1998	7.43	3.6	-	3.6
162	D11	age appointed as civil servant	346	26	3.90	3.6	-	3.6
163	D12	length of service in this university	346	9	6.79	3.6	-	3.6
164	D13	length of service in civil services	346	10	7.49	3.6	-	3.6
165	D14	number of previous employer	348	1	1.40	3.1	-	3.1
166	AcademicC	Academic class	350	0.47	0.50	2.5	-	2.5
167	BusMgtCat	Business faculty	350	0.33	0.47	2.5	-	2.5
168	JobTenure	Tenure of job	349	0.87	0.33	2.8	-	2.8
169	D19	size of faculty	347	2.22	1.06	3.3	-	3.3
170	D20	monthly income	346	3.29	1.51	3.6	-	3.6
171	D21	household income	344	3.23	1.41	4.2	-	4.2
172	D22	retirement age	349	56	2.32	2.8	-	2.8
173	SelectSch	EPF versus PENSION	349	0.84	0.37	2.8	-	2.8
174	VoluntaryS	Own voluntary scheme	346	0.37	0.48	3.6	-	3.6
175	D25: spouse	housewife/husband	277	1.83	0.38	22.8	18.9	3.9
176	D26: spouse	civil servant	277	1.45	0.50	22.8	18.9	3.9
177	D27: spouse	has ret. scheme	278	1.37	0.48	22.6	18.9	3.9
178	D28: spouse	Own voluntary scheme	277	1.57	0.50	22.8	18.9	3.9
179	D29: spouse	benefits entitle to you	278	1.48	0.50	22.6	18.9	3.9
180	D16 (string)	University	358	-	-	0.3	-	0.3
Subjective1	6(Q1)(string)	Most Important reason to choose	35	-	-	90.3	-	90.3
Subjective2	6(Q2)(String)	Most attractive benefit	34	-	-	90.5	-	90.5
Subjective3	6(Q3)(string)	Most negative aspect	34	-	-	90.5	-	90.5

Finally, for dimensions in *scheme feature preferences* for items Q30-45 (16 items), the N/A values ranged from 4.6 percent to 19.8 percent. The "*I don't know*" column signified that respondents are not aware of that particular or specific schemes feature being discussed. This also indicated that some respondents did not have basic knowledge on the two main mandatory retirement schemes.

It can be seen in the table that there is an extremely poor response rate for subjective views in section 6 (the last 3 items). It recorded a massive missing value of more than 90 percent implying less than 10 percent of respondents answered these questions. This indicates that the Malaysian culture is less favourable to the open-type (subjective)

questions. However, the interview which was conducted later would help in exploring subjective views.

6.3.2 Treatment for Missing Values

In order to enable generalisation of the results, the researcher has utilised many ways to address the missing values problem. The first process was to analyse the missing values themselves. This has been done in the previous section (6.3.1). The researcher also tried to identify whether the missing values were random, or due to some systematic pattern. Some of the items have been removed after the procedure. There is no clear rule regarding the level of tolerance for missing values. However, some researchers have proposed that 5 percent to 10 percent of missing data on a given variable is considered small (Cohen and Cohen, 1983). Others suggested that a 40 percent rate of missing data on a variable may be considered high (Raymond and Roberts, 1987). Therefore, applying it to this study, an acceptable rate of missing data lies somewhere between 10 percent and 40 percent. The missing rate for this study (see *no response percent column*) is well-positioned in this range. It has the lowest value of 0.3 percent and the highest of 7.2 percent.

Hair et al. (2010) clarifies "ignorable missing data", where it involves a process that is explicitly identifiable and/or is under the control of the researcher. Ignorable missing data do not require a remedy because it is explicitly-handled. For example, it is "missing data" of those observations in a population that are not included when taking a sample. The researcher makes this missing data ignorable by using a probability sampling to select respondents. On the other hand, imputation which is a process of estimating missing data in an observation based on valid values of other variables (Hair et al., 2010) has also been performed. The objective was to employ known relationships that can be identified in the valid values in the sample to assist in representing or even estimating the replacements for missing values.

The researcher has also attempted to complete the missing answers by contacting the respondents either by telephone or email. This task depended on the willingness of the respondents themselves. Some variables for instance marital status, faculty, and others could be detected with the help from human resources department or university's portal system if granted access.

Another challenging task completed was checking for illogical/incorrect answers, based on the researcher's own rational judgments. This is applied mostly to the demographic section. For instance, changes are made when respondents mistakenly ticked boxes which denote that their "gross individual income is much higher than his/her gross family income" or "unmarried" but answered "spouse information details".

Next, it is also important to assign codes for missing values. The researcher has coded the missing value for each respondent accordingly. It takes the form of discrete numbers of 0, 98, and 99 which depend on the variable labels or characteristics. This process was done following the suggestion from Miller et al. (2002), where number 99 is allocated for *missing* value and 98 is allocated for *not-relevant* or *not-applicable* code. Otherwise, 0 can be also used as *missing* value only if it fits the item which cannot represent a genuine/legitimate code.

The next procedure was to replace the missing data with the `*mean*' value, whenever feasible. This follows Pallant (2007) who argued that the "*replace with mean*" option should never be used if there were a lot of missing values. The researcher tried to minimise this in order not to severely distort results of the analysis.

In order to limit the problem of missing values, the "*exclude cases pairwise*" option was used for performing analysis in SPSS. This method excludes the case (person) only if the missing data is required for the specific analysis Pallant (2007). They will still be included in other analyses for which they have the necessary information.

After this section, further analysis will now be based on the cleaned and treated data with **N=348.**

6.4 Reliability and Validity Testing

Before examining the research hypotheses, the reliability and validity of the instruments were assessed. Various measures have been taken to ensure that this research was both reliable and valid. Reliability is concerned with the consistency of findings and whether the data collected is a true picture of what is being studied. Explicitly, Hair et al. (2010) explained that reliability is the extent to which a variable or set of variables is consistent

in what it is intended to measure. If multiple measurements are taken, the reliable measures will all be consistent in their values. It differs from validity in that it is not about "what" should be measured, but "how" it is measured. The pilot test which has been explained in the previous chapter has helped to ensure the reliability and validity of the data.

Since the questionnaire used has been originally-developed, the validity and reliability of the instruments have not been tested. Thus further analysis is necessary once the data collection phase was completed.

6.4.1 Reliability

Reliability reveals the ability of an instrument to measure a particular variable consistently. Specifically, a reliable measurement is one where we obtain the same result on repeated occasions (DeVaus, 1996). Similarly, Collis and Hussey (2003) defined reliability as "being able to obtain the same results if the research were to be repeated by any researcher" (p.57). This implies replication, which suggests that if another researcher uses the same method on the same group the same result will be obtained. Thus, the scales used in the questionnaire for this research should be reliable where they are constantly reflecting the construct they are measuring. To the positivist, the purpose of ensuring reliability is to reduce errors and bias in conducting the research (Remenyi et al., 1998). This is opposed to the qualitative approach, where a replication is difficult to achieve because of the flexibility of procedures involved. The researcher and participants' relationship cannot be duplicated easily. What and how the researcher chooses to record and interpret results might vary from one to another. Hence, the reliability of qualitative research is a very subjective matter.

6.4.1.1 External Reliability

External reliability looks at sample characteristics from which it was taken so that findings can be generalised to fit with the population (Cook and Campbell, 1979; Berk, 1983; Henry, 1998). Although external reliability is not the main focus, the researcher has been able to conduct a preliminary test to ensure that there are no significant differences in gender throughout the sample. The Binomial Tests in **Table 6.2** suggest that the sample is valid to be used in further statistical analysis.

6.4.1.2 Internal Reliability

A reliability test was carried out to check the internal consistency of the data from the questionnaire survey. Here, the researcher analysed answers to specific questions and examined differences between questions which combine to form a single construct. Subsequently, the internal consistency of items was estimated using Cronbach's-alpha (see **Appendix A1a** for the formula and explanation). It is the most common form of internal consistency reliability coefficient (Hair et.al, 2010; Garson, 2009). The purpose of Cronbach's-alpha is simply to provide an estimate of consistency across all items. However, the coefficient alpha (α) is appropriate for items that are not scored as *right* or *wrong*, which is applicable to this questionnaire of using the 5-point Likert scales. Thus, it is used in all items of scales' format throughout Section 1 to Section 5. Each of the scales used was measured from a range representing (1) strongly disagree to (5) strongly agree, and (3) indifference. The subjective view (Section 6) and demographic characteristics (Section 7) are exempted from such measurement. The negative worded items in this questionnaire have been changed (reversed) before performing the reliability tests. The affected items are S3B5, S3B6, S3C8, S3C9, S3D9, and S4B1.

Cronbach's-alpha varies between 0 and 1 (Hair et al., 2010), with a higher number indicating greater reliability. Hair et al. (2010), DeVellis (2003) and Cavana et al. (2001) agreed that the α coefficient of scale should be above 0.70. Robinson et al. (1991) also seconded that the general limit for Cronbach's-alpha is 0.70, but it might be decreased to 0.60 in exploratory research. Cronbach's-alpha reacts sensitively to the number of items in the scale. According to Pallant (2007), it is common to find lower α values such as 0.50 in items less than 10. On the other hand, Briggs and Cheek (1986) suggested the use of an optimal range for inter-item correlation of 0.20 to 0.40.

Table 6.4 reveals the results of Cronbach's-alpha for this study. Results confirmed all α values above 0.70 for the 5-point Likert scales. The values range from 0.702 to 0.935, indicating reliability. Furthermore, the Cronbach's-alpha for all 149 items is high at 0.965, which represents very good internal consistency in measuring the reliability of the questionnaire as a whole.

Most related studies revealed low values of coefficients α. A study by Dulebohn et al. (2000) on the determinants of employees' choice on pension plans in higher learning institutions reported αs of 0.84, 0.74, 0.78, 0.69 for choice, portability preference (mobility), self-efficacy and involvement preference respectively. They also used 5-point Likert scales. Conversely, Luchak and Gellatly (2002) with their 7-point Likert scales reported a low α of 0.64 for the dependent variables, measuring job satisfaction related to pension accrual effects. Additionally, Danehower and Lust (1995) specifically reported an α value of 0.873 (based on 4 items) on satisfaction with university retirement plans and 0.863 (based on 2 items) on satisfaction with voluntary (life insurance) schemes. It can be said that the Cronbach's-alpha values obtained from this study are strong enough in supporting the reliability issue.

Table 6.4: Cronbach's-alpha Values

	Variables	k	Cronbach-Alpha (α)
1	Knowledge	10	0.90
2	Information	8	0.84
3	Peer & soft behaviour (soft constraints)	12	0.72
4	Schemes feature preferences	16	0.90
a	*EPF*	*5*	*0.82*
b	*PENSION*	*5*	*0.91*
c	*Overall schemes features*	*6*	*0.82*
5	'Idont Know' plan feature	16	0.93
6	Retirement income	10	0.86
7	Voluntary savings perceptions	13	0.72
8	Health status	12	0.70
9	Retirement age and extension of working years	13	0.71
10	Preference (include mobility) & Confidence	22	0.85
11	Schemes appraisal	12	0.83
12	Job nature & job satisfaction	17	0.89
13	Satisfaction ALL	27	0.93
a	*Retirement systems satisfaction*	*12*	*0.93*
b	*Choice satisfaction*	*2*	*0.72*
c	*job satisfaction*	*13*	*0.92*
d	*All satisfaction (exclude job satisfaction)*	*14*	*0.92*
	Note 1: Mobility in section 4A	8	0.75
	Note 2: Subsection of question S4C9 (a,b,c)	3	0.90
	Note 3: Total (All items)	149	0.97

*Note: Several variables required recoding and subsequently renamed with some sort of initial in front of its original question numbers. The researcher uses initials such as "*Recode"*, and "*New"* to serve this purpose. Frequencies of new variables were cross referenced with old variables to check for accuracy.

6.4.2 Validity

Establishing validity enables the researcher to draw meaningful and useful inferences for the population in this research. Validity can be determined by the instrument's content and measurement. Hair et al. (2010) defined validity as the extent to which a scale or set of measures accurately represents the concepts of interest. The validity of measurement is the extent to which it gives the correct answer. Accordingly, this research exercised care in collecting data, analysing and interpreting processes. Generally, there are three traditional forms of validity: content, predictive/concurrent and construct validity which can be determined by an instrument's content and measurement.

Predictive (criterion validity) is closely related to cluster analysis and deemed unsuitable to be tested in this study as Hair et al (2010) defined cluster analysis as grouping individuals or objects into clusters, so that objects in the same cluster are similar to one another.

Construct validity was measured after the data has been collected. Specifically Hair et al. (2010) confirmed that it is the extent to which a set of measured items actually reflects the theoretical latent construct which those items are designed to measure. The researcher completed the "factor analysis" to establish construct validity in the instrument by determining the number of factors and contribution of each item to the construct.

Content validity, or "face validity", subjectively assesses the correspondence between individual items and the concepts through ratings by experts, pre-tests with multiple subpopulations or other means (Hair et al., 2010). Content validity has been established through review and feedback which took a lengthy period during the pre-testing and pilot study phase. Representatives of respondents, both from academic and administrative categories played a major role in shaping the final questionnaire. Reviews and feedback from experts in the retirement field were successfully obtained in order to correspond to the unique conditions of retirement systems in Malaysia. This was done prior to the pilot test. One individual represents an EPF institution and the other represents a PENSION department. These two individuals were selected based on criteria of their experiences and willingness to cooperate. Their selection for this

research is important; not only to provide a different perspective for the subject being studied, but also to allow for cross checking statements which could expose any biased statements. They both reviewed the first draft of the questionnaire. It is claimed that their comments increased the validity and reliability of the research instruments (Fowler, 2002).

As mentioned in earlier chapters, output from pilots or pre-testing is very important. The early stage of pilot work tended to be exploratory. The necessary modifications were made to draft the final questionnaire. Specifically, the meaning, difficulties of understanding and answering the questionnaire, design and layout, and the evaluation of the questionnaire as a whole have been checked, revised and improved after completing the pilot test. In order to gain detailed views and input, one-to-one discussions between the researcher and selected respondents were carried out. The selected respondents are the initial 11 participants in UK in the first stage of the pilot test; refer to Section 5.6.3.3 and Section 5.6.3.4. Most of the respondents agreed that the questionnaire was able to capture the main issues surrounding choice of retirement schemes in Malaysian public universities.

6.5 Descriptive Results

This section reports the univariate statistics to provide sample description and yield important insights before embarking on further empirical analysis. As explained in the research design section, the questionnaire includes independent variables and two dichotomous dependent variables. Summaries of these variables are presented. All of the variables (except dependent variables1) reported here were attained after the process of data reduction using factor analysis. The factor analysis will be explained in the next section. Dependent variables2 (Satisfaction) will be explained separately in chapter 10. Additionally, individual descriptive statistics have been explained in the missing value section.

Variables

Table 6.5 identifies the labels for selected variables used in the analysis with its short description. The descriptions of variables are also discussed in Appendix A1e (b). As a synopsis, the independent variable KNOW_1 is linked to the level of basic knowledge including knowledge on pro/cons on EPF and Pensions schemes. KNOW_2 refers to possession of advanced knowledge such as knowledge on the calculation of retirement benefit, inflation effect and advanced impact of choice such as on the employee's loan. The SOFTs variables are related to the nature of decision behaviour (individual), where SOFT_1 admits that the employee's decision is made independently (on his or her own), while SOFT_2 admits that the decision is influenced by others (peers or spouse or family). All three IDONT variables refer to the opposite possession of knowledge variables, while all of the FEATURE variables relate to particular features on each of the retirement schemes. The variable INFOR concerns the characteristics of the information; which examine the accuracy, simplicity, and sufficiency of information.

Sources of retirement income used two variables named INCOME_1 and INCOME_2. INCOME_1 is related to the basic individual sources such as from savings accounts, investment funds, business and real estate, while INCOME_2 is the supporting sources which came from the spouse or children or family members. The VOLUNTARY variables are concerned with the optional mechanism of voluntary savings related matters, where VOLUNTARY_1 explores the respondents' savings such as in banks, houses, real estates, or others. The VOLUNTARY_2 discloses the respondents' debt issues either in long term or short term obligations, while the VOLUNTARY_3 seeks to investigate respondents' confident and perceived quality on the commercial retirement schemes offered in Malaysia.

All three variables of HEALTH investigate health related matters. First HEALTH_1 is looking at respondents' satisfaction with Malaysian healthcare providers such as support from family, quality of health care system, and quality of elderly care system. Second, HEALTH_2 indicates good health where employees declare their current health status, expected health status during retirement and to maintained their healthy diet behaviour. Third is the variable on bad health status, disclosing if there is an existence of serious and chronic health conditions.

There are two variables for extending works perceptions namely AGE_1 for extending work willingness and AGE_2 for preferring an ordinary retirement age. AGE_1 is to see if employees support the increased retirement age, are willing to extend their retirement age in the current job and are willing to work part time after retirement. Oppositely, AGE_2 is in favour of retiring at the ordinary retirement age. This support a perception that employees considered themselves as retirees once they were no longer in the employment sector.

MOBILITY_1 (Public sector attractiveness) and MOBILITY_2 (private sector attractiveness) are two variables measuring mobility perceptions. MOBILITY_1 indicates that employees admit security in working as civil servants and PENSION is such an exclusive privilege to them. MOBILITY_2 explores the employees' moving considerations namely, better payment, mobility of retirement schemes, and implications for retirement scheme when changing job. The JOB_1 (job satisfaction) and JOB_2 (young age advantage) are measuring the job related aspects. JOB_1 indicates satisfaction with job/profession and salary, while JOB_2 sees favouritism for young employees in terms of promotion in their career.

Attitudes and Perceptions which are labelled as Hard Constraints are measured by the four HARD variables and divided into two categories. The first category is the Risks and benefit considerations (oneHARD_1 and oneHARD_2) and second, on the Schemes appraisal (twoHARD_1 and twoHARD_2). On the first category, the oneHARD_1 is associated with the benefit confidence; where employees admit they are confident to have enough income when they retire, have chosen an appropriate scheme, are confident in the commercial retirement scheme, expect that the post-retirement living standard will be higher and expect better future retirement benefits. Next, oneHARD_2 is measuring aspects on Risk Considerations; exploring if guaranteed security and benefits are top priorities, PENSION scheme will provide more money than EPF, and income tax relief is an appreciated privilege for employees. The second Hard Constraints category, which measures Schemes Appraisal is divided into twoHARD_1 (Favour New Scheme) and twoHARD_2 (Favour Existing Schemes). In twoHARD_1, employees state their opinion if the new scheme (FPB) is better than the old pension scheme, FPB better than EPF, and their willingness to enrol in FPB. Oppositely, twoHARD_2 revealed favouritism on existing schemes by admitting excellent quality of EPF or PENSION schemes or commercial retirement schemes.

Table 6.5: Variable Labels and Descriptions

Variables Labels*	Description
Dependent Variables 1	~ Main dependent variables: **schemes** selection~
SelectSch	Scheme choice selection (0=PENSION, 1=EPF)
VoluntaryS	Voluntary scheme ownership (0= not-own, 1= own)
Independent Variables	
KNOW_1	Basic Knowledge
KNOW_2	Advanced knowledge
INFOR	Information level
IDONT_1	No knowledge on scheme features (0= no, 1= yes)
IDONT_2	No knowledge of EPF features (0= no, 1= yes)
IDONT_3	No knowledge of PENSION features (0= no, 1= yes)
SOFT_1	Realistic level
SOFT_2	Peer & soft influence
FEATURE_1	PENSION preference
FEATURE_2	EPF preference
FEATURE_3	Negative schemes prefer
INCOME_1	Basic sources of retirement Income
INCOME_2	Supplementary sources of retirement income
VOLUNTARY_1	Voluntary savings
VOLUNTARY_2	Debt obligations
VOLUNTARY_3	Commercial retirement scheme trust
HEALTH_1	healthcare providers satisfaction
HEALTH_2	Good health
HEALTH_3	Bad health
AGE_1	Extension of working years willingness
AGE_2	Ordinary retirement
MOBILITY_1	Public sector attractiveness
MOBILITY_2	Private sector attractiveness
oneHARD_1	Benefit confidence
oneHARD_2	Risk consideration
twoHARD_1	Proposed new scheme (FPB)
twoHARD_2	Existing schemes quality
JOB_1	Job satisfaction
JOB_2	Young age advantage

*Note: after the factor analysis
*The Dependent variables2 is explained in a separate section

Almost all of the variables adhered to 5-point Likert scales measurements of 1 (strongly disagree) to 5 (strongly agree). However, the dichotomous variables are limited to 0 or 1, specifically for variables: *IDONT_1, IDONT_2* and *IDONT_3.* The same applies to the two main dependent variables1: SelectSch and VoluntaryS.

Secondly, some basic descriptive statistics for the variables identified earlier are provided in the following tables. **Table 6.6**, **Table 6.7**, **Table 6.8**, which display the mean, median, standard deviation, skewness and kurtosis for all variables which have been computed after the factor analysis.

Table 6.6: Descriptive Statistics TOTAL (N= 348)

	Min	Max	Mean	Median	SD	Skewness	Kurtosis
Dependent Variables1							
SelectSch	0	1	0.20	0	0.404	1.475	0.177
VoluntaryS	0	1	0.38	0	0.486	0.500	-1.761
Independent Variables							
SOFT_1	1	5	3.80	4.00	0.747	-0.581	0.514
SOFT_2	1	5	2.99	3.00	1.044	-0.187	-0.390
FEATURE_1	1	5	4.27	4.40	0.738	-0.960	1.075
FEATURE_2	1	5	3.59	3.75	0.728	-0.516	1.410
FEATURE_3	1	5	3.68	3.75	0.701	-0.105	0.277
INCOME_1	1	5	3.32	3.50	0.926	-0.336	-0.183
INCOME_2	1	5	3.17	3.00	0.995	-0.270	-0.227
VOLUNTARY_1	1	5	3.71	3.83	0.817	-0.683	0.765
VOLUNTARY_2	1	5	2.86	3.00	0.958	0.106	-0.149
VOLUNTARY_3	2	5	3.21	3.00	0.744	0.098	-0.039
HEALTH_1	1	5	3.61	4.00	0.947	-0.430	-0.277
HEALTH_2	1	5	3.76	3.67	0.710	-0.289	0.400
HEALTH_3	1	5	4.33	5.00	1.039	-1.563	1.567
AGE_1	1	5	3.20	3.33	1.079	-0.225	-0.587
AGE_2	1	5	3.45	3.50	1.067	-0.536	-0.247
MOBILITY_1	1	5	4.20	4.00	0.826	-1.167	1.571
MOBILITY_2	1	5	3.95	4.00	0.725	-0.657	1.211
OneHARD_1	1	5	3.40	3.40	0.737	-0.349	0.955
OneHARD_2	1	5	3.94	4.00	0.695	-0.719	1.470
twoHARD_1	1	5	3.05	3.00	0.653	-0.110	3.070
twoHARD_2	1	5	3.31	3.33	0.659	0.076	0.589
JOB_1	1	5	3.58	3.67	0.719	-0.227	-0.037
JOB_2	1	5	2.68	3.00	1.056	0.187	-0.326
KNOW_1	1	5	3.32	3.25	0.780	-0.038	0.167
KNOW_2	1	5	2.91	3.00	0.987	-0.082	-0.603
INFOR	1	5	3.04	3.00	0.960	-0.131	-0.461
IDONT_1	0	1	0.88	1	0.279	-2.284	3.865
IDONT_2	0	1	0.84	1	0.286	-1.865	2.350
IDONT_3	0	1	0.94	1	0.210	-3.588	12.187

The first table is for descriptive statistics on variables based on the total sample of N=348. The next table is for the compulsory retirement schemes choice: PENSION versus EPF schemes; with N=277 and N=71 respectively. Further descriptive statistics were produced for voluntary retirement schemes ownership; the table represents voluntary retirement schemes owned (bought) by the respondents. It was divided by OWN (N=216) versus NOT-OWN (N=132) of the voluntary scheme ownership. All these statistics used the bivariate cross-tabulation method in order to ascertain the basic relationship between two categorical variables.

Generally, **Table 6.7** suggested that the descriptive statistics such as the mean, median, standard deviation, skewness and kurtosis did not deviate much from the TOTAL and from each other (PENSION versus EPF). A similar situation is also found in **Table 6.8** on the OWN versus NOT-OWN categories of the voluntary retirement schemes choices.

Table 6.7: Descriptive Statistics Compulsory Scheme (PENSION versus EPF)

Independent Variables	**PENSION (N= 277)**					**EPF (N= 71)**				
	Mean	Med	SD	Skew	Kurtosis	Mean	Med	SD	Skew	Kurtosis
SOFT_1	3.81	4.00	0.751	-0.680	0.771	3.78	4.00	0.740	-0.181	-0.442
SOFT_2	2.92	3.00	1.059	-0.182	-0.462	3.23	3.00	0.952	-0.063	-0.219
FEATURE_1	4.34	4.40	0.694	-0.940	0.685	3.98	4.00	0.837	-0.826	1.362
FEATURE_2	3.56	3.50	0.735	-0.559	1.546	3.72	3.75	0.689	-0.273	0.622
FEATURE_3	3.69	3.75	0.714	-0.051	0.217	3.68	3.75	0.651	-0.399	0.614
INCOME_1	3.32	3.50	0.944	-0.326	-0.221	3.32	3.25	0.860	-0.393	0.021
INCOME_2	3.16	3.00	1.005	-0.274	-0.210	3.20	3.00	0.962	-0.246	-0.271
VOLUNTARY_1	3.70	3.67	0.784	-0.590	0.666	3.75	4.00	0.941	-0.934	0.912
VOLUNTARY_2	2.86	3.00	0.941	0.111	-0.186	2.85	3.00	1.030	0.098	-0.027
VOLUNTARY_3	3.24	3.00	0.739	0.124	-0.025	3.11	3.00	0.760	0.032	-0.072
HEALTH_1	3.69	4.00	0.916	-0.455	-0.177	3.29	3.33	1.003	-0.253	-0.570
HEALTH_2	3.76	3.67	0.722	-0.298	-0.385	3.76	4.00	0.667	-0.247	0.515
HEALTH_3	4.35	5.00	1.027	-1.667	1.967	4.23	5.00	1.088	-1.236	0.506
AGE_1	3.17	3.33	1.080	-0.211	-0.586	3.34	3.33	1.073	-0.288	-0.533
AGE_2	3.47	3.50	1.038	-0.610	0.015	3.37	3.50	1.177	-0.291	-0.920
MOBILITY_1	4.27	4.50	0.750	-1.036	1.186	3.92	4.00	1.032	-1.022	0.674
MOBILITY_2	3.94	4.00	0.701	-0.578	1.273	3.96	4.00	0.818	-0.870	1.036
OneHARD_1	3.44	3.40	0.747	-0.323	0.654	3.25	3.40	0.682	-0.649	2.787
OneHARD_2	3.98	4.00	0.684	-0.621	1.234	3.78	3.75	0.721	-1.065	2.104
twoHARD_1	3.06	3.00	0.689	-0.127	2.488	3.00	3.00	0.486	-0.167	8.229
twoHARD_2	3.32	3.33	0.640	0.269	0.503	3.27	3.33	0.732	-0.409	0.637
JOB_1	3.60	3.67	0.717	-0.208	-0.003	3.49	3.56	0.727	-0.302	-0.140
JOB_2	2.75	3.00	1.064	0.155	-0.335	2.44	2.00	0.996	0.269	-0.203
KNOW_1	3.31	3.25	0.767	0.000	0.214	3.33	3.25	0.836	-0.164	0.078
KNOW_2	2.92	3.00	0.970	-0.085	-0.641	2.89	3.00	1.055	-0.066	-0.491
INFOR	3.12	3.00	0.935	-0.143	-0.339	2.74	3.00	1.003	0.026	-0.803
IDONT_1	0.87	1	0.283	-2.162	3.349	0.91	1	0.264	-2.927	7.212
IDONT_2	0.83	1	0.297	-1.745	1.846	0.90	1	0.234	-2.513	5.924
IDONT_3	0.94	1	0.210	-3.751	13.205	0.92	1	0.213	-3.070	9.519

Table 6.8: Descriptive Statistics Voluntary Scheme (OWN and NOT-OWN)

Independent Variables	NOT-OWN (N=216)					OWN (N= 132)				
	Mean	Med	SD	Skew	Kurtosis	Mean	Med	SD	Skew	Kurtosis
SOFT_1	3.78	4.00	0.711	-0.333	-0.232	3.83	4.00	0.805	-0.884	1.308
SOFT_2	3.00	3.00	0.982	-0.240	-0.154	2.97	3.00	1.140	-0.120	-0.689
FEATURE_1	4.22	4.20	0.737	-0.672	0.070	4.34	4.40	0.736	-1.472	3.213
FEATURE_2	3.52	3.50	0.680	-0.388	1.682	3.72	3.75	0.787	-0.800	1.497
FEATURE_3	3.64	3.50	0.653	0.280	-0.535	3.76	3.75	0.770	-0.574	1.153
INCOME_1	3.22	3.25	0.932	-0.181	-0.389	3.48	3.50	0.898	-0.614	0.541
INCOME_2	3.12	3.00	1.023	-0.152	-0.358	3.25	3.50	0.946	-0.481	0.159
VOLUNTARY_1	3.63	3.67	0.769	-0.497	0.530	3.84	4.00	0.877	-1.029	1.398
VOLUNTARY_2	2.85	3.00	0.901	0.078	0.053	2.88	3.00	1.047	0.125	-0.425
VOLUNTARY_3	3.10	3.00	0.697	-0.009	0.102	3.40	3.50	0.783	0.078	-0.345
HEALTH_1	3.61	3.67	0.967	-0.393	-0.369	3.62	4.00	0.916	-0.503	-0.069
HEALTH_2	3.75	3.67	0.701	-0.285	0.842	3.79	4.00	0.728	-0.305	-0.180
HEALTH_3	4.38	5.00	0.971	-1.612	1.851	4.23	5.00	1.140	-1.455	1.065
AGE_1	3.22	3.33	1.019	-0.228	-0.445	3.17	3.33	1.174	-0.200	-0.800
AGE_2	3.43	3.50	1.029	-0.496	-0.215	3.48	3.50	1.130	-0.601	-0.278
MOBILITY_1	4.17	4.00	0.810	-1.084	1.585	4.25	4.50	0.853	-1.318	1.726
MOBILITY_2	3.91	4.00	0.666	-0.356	0.503	4.00	4.00	0.812	-0.994	1.770
OneHARD_1	3.32	3.40	0.736	-0.512	0.939	3.53	3.40	0.722	-0.077	0.826
OneHARD_2	3.87	3.88	0.673	-0.654	1.691	4.05	4.00	0.719	-0.915	1.582
twoHARD_1	3.02	3.00	0.623	-0.217	3.081	3.10	3.00	0.698	-0.030	3.048
twoHARD_2	3.22	3.17	0.601	-0.030	0.415	3.44	3.33	0.727	-0.005	0.571
JOB_1	3.53	3.56	0.693	-0.271	0.113	3.67	3.67	0.754	-0.235	-0.216
JOB_2	2.75	3.00	1.034	0.100	-0.275	2.57	3.00	1.086	0.349	-0.278
KNOW_1	3.23	3.25	0.784	0.005	0.266	3.46	3.50	0.757	-0.082	0.117
KNOW_2	2.85	3.00	0.969	0.005	-0.575	3.00	3.00	1.013	-0.233	-0.561
INFOR	2.97	3.00	0.898	-0.009	-0.443	3.16	3.25	1.046	-0.349	-0.433
IDONT_1	0.85	1	0.313	-1.919	2.180	0.93	1	0.204	-3.200	9.638
IDONT_2	0.82	1	0.305	-1.381	1.609	0.88	1	0.250	-2.247	4.206
IDONT_3	0.92	1	0.245	-3.224	9.045	0.96	1	0.133	-3.357	10.584

6.5.1 Demographic Profile

This section reports a profile summary of the sample of employees with respect to their demographic and institutional characteristics. It represents a wide variety of demographic categories. Individual backgrounds and spouse information were also revealed. The important part was about the retirement information of the respondents. It is interesting to note that although all respondents in this sample are civil servants in Malaysian public universities, some of them might have previously served other

government agencies or even private companies. This gave them an opportunity to continue their retirement schemes which had been set up before. For instance, there is an opportunity of continuing the EPF scheme from private companies or to change to PENSION upon attaining confirmation[25] status of services. In the following tables, the "**bold"** figures indicate the highest percentage for that category.

a. Gender, Age, Universities, Residence, Educational Attainment and Income

Table 6.9 shows the details of respondents as segregated by EPF with PENSION schemes. There are about 45 percent males and 55 percent females respondents. This gender proportion is not much different from the population of 50.5 percent males and 49.5 percent females as in Table 5.1. Respondents' age ranged from 20 to above 50 years old. The majority (46 percent) are between 31 to 40 years old, followed by those aged 21-30 years old (30 percent).

It could be summarised that there was a well-proportioned balance among respondents in terms of universities and location. About 49 percent are from *Old Uni2*; established universities located in the north. It could also be seen that more than half are from urban areas. As this is conducted in educational surroundings, about 70 percent of respondents have obtained higher education qualifications (bachelor, masters, PhD). Out of this, 40 percent are those with a master's degree, which is the minimum requirement to become a lecturer.

In terms of income, the outcomes depicted a spread of income variations across the range. Those earning between RM1000-RM2000 are the dominant category of respondents. However, looking at the household income variable, the majority of respondents are those who earn between RM1001-RM3000. The two adult households are common in Malaysian case. **Figure 6.3** and **Figure 6.4** illustrate a detailed overview of educational level and gross individual monthly income based on two choices: compulsory retirement scheme choice (PENSION versus EPF) and voluntary schemes ownership (NOT-OWN versus OWN).

[25] The condition of confirmation is attained on an employee's present post after completing not less than 3 years of service.

Table 6.9: Profile of Respondents 1: Basic Information (N=348)

		Compulsory Scheme selection		Voluntary Scheme selection		TOTAL
		PENSION	EPF	NOT-OWN	OWN	
Gender						
Females		46.0 %	8.9 %	34.5 %	20.4 %	**54.9 %**
Males		33.6 %	11.5 %	27.6 %	17.5 %	45.1 %
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %
Age						
Less than 20 years old		0.3 %	0.3 %	0.6 %	-	0.6 %
21 to 30 years old		24.4 %	5.5 %	21.3 %	8.6 %	29.9 %
31 to 40 years old		34.8 %	11.5 %	26.1 %	20.1 %	**46.3 %**
41 to 50 years old		16.1 %	2.9 %	11.5 %	7.5 %	19.0 %
More than 50 years old		4.0 %	0.3 %	2.6 %	1.7 %	4.3 %
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %
Universities						
New Uni		12.9 %	3.4 %	10.1 %	6.3 %	16.4 %
Old Uni 1		10.3 %	4.3 %	7.2 %	7.5 %	14.7 %
Old Uni 2		42.2 %	6.6 %	32.2 %	16.7 %	**48.9 %**
Special Uni		14.1 %	6.0 %	12.6 %	7.5 %	20.1 %
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %
Residence						
Rural		39.9 %	6.9 %	30.2 %	16.7 %	46.8 %
Urban		39.7 %	13.5 %	31.9 %	21.3 %	**53.2 %**
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %
Educational level						
Primary/secondary school		25.0 %	3.7 %	21.8 %	6.9 %	28.7 %
Diploma/bachelor		20.7 %	2.3 %	14.9 %	8.0 %	23.0 %
Masters		29.0 %	10.6 %	19.8 %	19.8 %	**39.7 %**
PhD		4.9 %	3.7 %	5.5 %	3.2 %	8.6 %
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %
Individual gross monthly income						
Less than RM1000		8.3 %	2.0 %	8.9 %	1.4 %	10.3 %
RM1001 to RM2000		24.7 %	2.3 %	18.7 %	8.3 %	**27.0 %**
RM2001 to RM3000		16.4 %	3.2 %	11.2 %	8.3 %	19.5 %
RM3001 to RM4000		12.4 %	8.0 %	11.5 %	8.9 %	20.4 %
RM4001 to RM5000		8.9 %	1.7 %	4.6 %	6.0 %	10.6 %
> RM5000		8.9 %	3.2 %	7.2 %	4.9 %	12.1 %
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %
Household gross monthly income						
Less than RM1000		6.4 %	1.7 %	6.9 %	1.1 %	8.1 %
RM1001 to RM3000		25.1 %	3.5 %	19.5 %	8.9 %	**28.6 %**
RM3001 to RM5000		19.9 %	4.9 %	15.2 %	10.1 %	24.9 %
RM5001 to RM7000		13.0 %	4.3 %	7.5 %	9.8 %	17.3 %
RM7001 to RM9000		10.1 %	2.6 %	8.9 %	3.7 %	12.7 %
> RM9000		5.2 %	3.2 %	4.0 %	4.3 %	8.4 %
	Total	79.8 %	20.2 %	62.1 %	37.9 %	100.0 %

Figure 6.3 highlights the educational levels obtained by respondents. It shows that a higher percentage of respondents with a lower educational level opted for the PENSION scheme. This might indicate that the default retirement scheme (PENSION) is more popular to them. A similar pattern also applies to the voluntary scheme indicating a low

percentage of ownership among those with lower educational levels. In terms of the relative height of the bars, **Figure 6.3** reveals that first, many employees with the lowest educational level (secondary school) chose PENSION and do not own any voluntary scheme. Second, many employees with the diploma/bachelor level chose PENSION but they do own a higher percentage of voluntary schemes. Third, the highest percentage of employees with a masters qualification chose PENSION scheme but surprisingly, an equal proportion of them who own and do not own any voluntary schemes (19.8 percent) could be found. Finally, the highest level of education is the PhD holders category which recorded higher percentages of choosing PENSION and not owning voluntary retirement schemes. However, this category had indicated only small percentages of differences with the group who chose EPF (1.2 percent) and the OWN (2.3 percent) voluntary scheme.

Figure 6.3: Descriptive Statistics: Educational Level

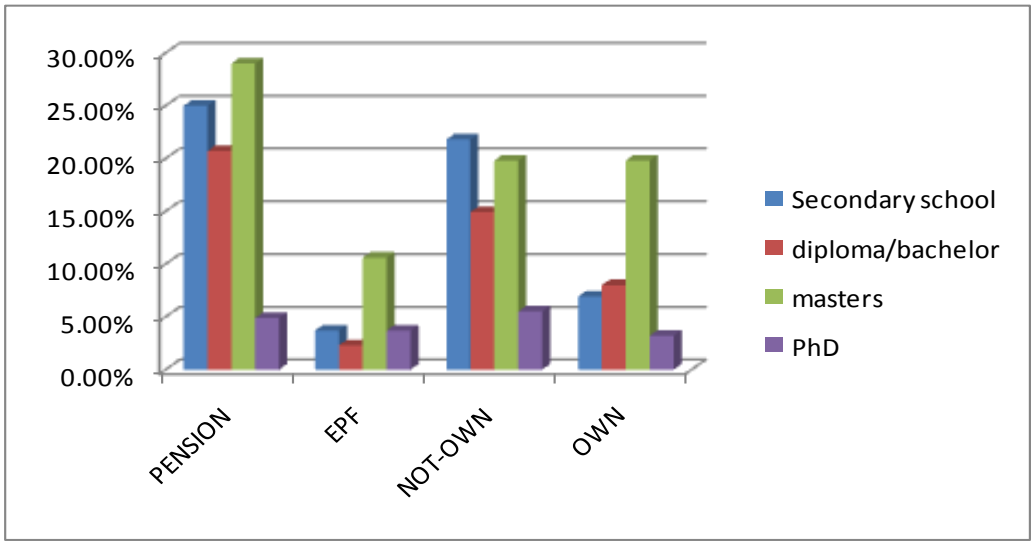
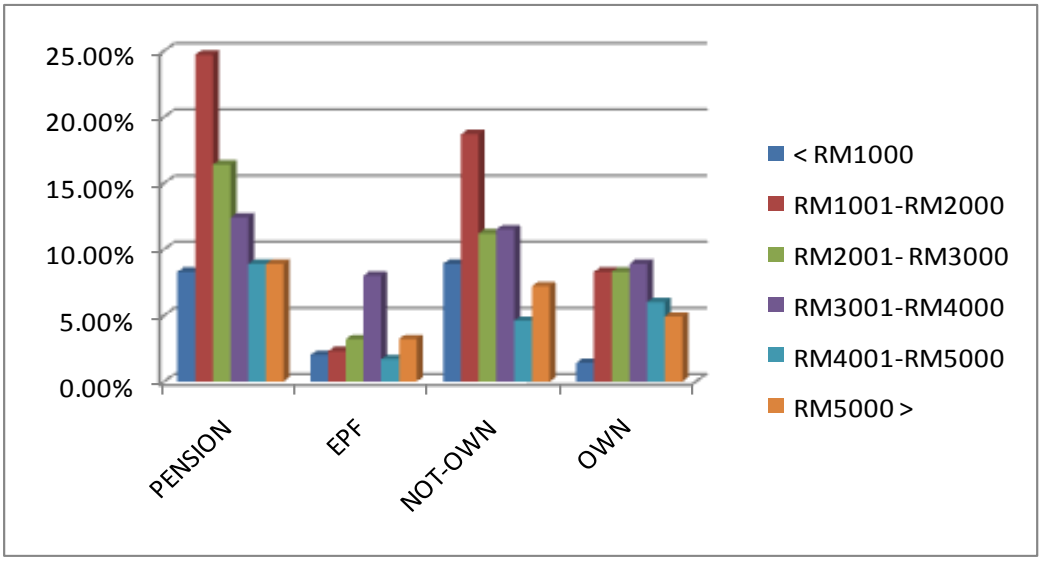


Figure 6.4 looks at the gross individual monthly income. Generally, lower educational levels are related to lower income, less salary is paid to low level jobs. Surprisingly, based on different categories of income, these respondents displayed an unpredictable pattern of choice between compulsory and voluntary retirement schemes. It was difficult to conclude any other significant trend, although there is less voluntary scheme ownership and PENSION was more appealing to lower income earners.

Figure 6.4: Descriptive Statistics: Individual Gross Monthly Income



b. Marital Status, Number of Children and Spouse Information

Table 6.10 shows that most of the respondents are married or have been married. Only 22 percent of respondents are not married, suggesting that there might be a higher spouse effect on the choice made. However, more than 85 percent of the spouses are working and this indicates that most families might not solely depend on the respondents' own arrangements alone. About 60 percent of respondents reported to have between 1-3 children, signifying medium size families.

Table 6.10: Profile of Respondents 2: Family Information (N=348)

	Compulsory Scheme selection		Voluntary Scheme selection		TOTAL
	PENSION	EPF	NOT-OWN	OWN	
Marital Status					
unmarried	18.1 %	4.0 %	15.8 %	6.3 %	22.1 %
married	60.6 %	15.8 %	45.7 %	30.7 %	**76.4 %**
widow/widower	0.9 %	0.3 %	0.6 %	0.6 %	1.1 %
divorced	-	0.3 %	-	0.3 %	0.3 %
Total	79.6 %	20.4 %	62.1 %	4.3 %	100.0 %
Number of Dependents					
zero-none	11.0 %	1.1 %	8.8 %	3.6 %	12.1 %
one	14.3 %	7.0 %	9.5 %	11.7 %	21.2 %
two	14.3 %	4.0 %	9.9 %	8.4 %	18.3 %
three	18.3 %	3.3 %	13.9 %	7.7 %	**21.6 %**
four	12.5 %	4.0 %	10.6 %	5.8 %	16.5 %
five	5.5 %	1.5 %	4.7 %	2.2 %	7.0 %
six	1.5 %	-	1.5 %	-	1.5 %
seven	1.5 %	-	0.7 %	0.7 %	1.5 %
eight	0.4 %	-	-	0.4 %	0.4 %
Total	79.1 %	20.9 %	59.5	40.5 %	100.0 %
Spouse details					
1.Spouse is a full time housewife/ husband					
Yes	12.0 %	2.6 %	9.5 %	5.1 %	14.6 %
No	66.8 %	18.6 %	50.7 %	34.7 %	**85.4 %**
Total	78.8 %	21.2 %	60.2 %	39.8 %	100.0 %
2.Spouse is a civil servant					
Yes	43.4 %	12.0 %	32.8 %	22.6 %	**55.5 %**
No	35.4 %	9.1 %	27.4 %	17.2 %	44.5 %
Total	78.8 %	21.2 %	60.2 %	39.8 %	100.0 %
3.Spouse has a compulsory retirement scheme					
Yes	51.6 %	12.4 %	37.8 %	26.2 %	**64.0 %**
No	27.3 %	8.7 %	22.2 %	13.8 %	36.0 %
Total	78.9 %	21.1 %	60.0 %	40.0 %	100.0 %
4. Spouse bought a voluntary scheme					
Yes	34.3 %	8.4 %	17.9 %	24.8 %	42.7 %
No	44.9 %	12.4 %	42.3 %	15.0 %	**57.3 %**
Total	79.2 %	20.8 %	60.2 %	39.8 %	100.0 %
5.Spouse benefits entitled to you					
Yes	52.7 %	14.5 %	37.1 %	30.2 %	**67.3 %**
No	26.2 %	6.5 %	22.9 %	9.8 %	32.7 %
Total	78.9 %	21.1 %	60.0 %	40.0 %	100.0 %

It can be seen that there is a slightly higher percentage of working spouses who also work in the civil sector. Thus, this might influence a higher percentage of spouses owning some sort of compulsory retirement scheme. However, most of them do not own any voluntary retirement scheme arrangement. Additionally, most of the respondents stated that they are entitled to benefits from their spouse's retirement plan.

c. Job Information: Academic Grade Class, Business Faculty, Faculty Size, Tenure, Year and Age Appointed, Number of Previous Employers and Length of Service

Table 6.11 illustrates job information among respondents. It shows that slightly more than half of the sample belongs to the non-academic category and 67 percent are those from non-business faculty. Respondents were also asked to specify their faculty size with regard to the smaller unit related to them (department or faculty). It was found that faculty size varies widely across categories. Only 1 percent indicated "more than 1000 colleagues" in their department.

Table 6.11: Profile of Respondents 3: Job Information (N=348)

		Compulsory Scheme selection		Voluntary Scheme selection		TOTAL
		PENSION	**EPF**	**NOT-OWN**	**OWN**	
Academic grade class						
Administration		47.1 %	5.5 %	37.4 %	15.2 %	**52.6 %**
Academic		32.5 %	14.9 %	24.7 %	22.7 %	47.4 %
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %
Business faculty						
Non Business		55.1 %	11.6 %	44.0 %	23.0 %	**66.7 %**
Business		24.6 %	8.7 %	18.1 %	14.9 %	33.3 %
	Total	79.7 %	20.3 %	62.1 %	37.9 %	100.0 %
Faculty size						
1 to 49		27.3 %	5.7 %	22.4 %	10.6 %	**33.0 %**
50 to 99		18.7 %	5.7 %	16.4 %	8.0 %	24.4 %
100 to 249		23.9 %	6.9 %	17.5 %	13.2 %	30.7 %
250 to 999		9.2 %	1.4 %	5.7 %	4.9 %	10.6 %
more than 1000 persons		0.6 %	0.6 %	-	1.1 %	1.1 %
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %
Tenure of job						
Temporary		9.5 %	3.7 %	8.3 %	4.9 %	13.2 %
Permanent		70.1 %	16.7 %	53.7 %	33.0 %	**86.8 %**
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %
Year appointed as civil servant						
1985 or earlier		6.9 %	0.9 %	6.0 %	1.7 %	7.8 %
1986- 1990		9.5 %	0.3 %	5.2 %	4.6 %	9.8 %
1991- 1995		6.0 %	3.4 %	5.2 %	4.3 %	9.5 %
1996-2000		14.1 %	4.3 %	10.9 %	7.5 %	18.4 %
2001- 2005		27.0 %	6.9 %	19.5 %	14.4 %	**33.9 %**
2006-2008		16.1 %	4.6 %	15.2 %	5.5 %	20.7 %
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %
Age appointed as civil servant						
< 20 years old		4.9 %	0.9 %	3.4 %	2.3 %	5.7 %
21 - 25		44.3 %	9.2 %	34.2 %	19.3 %	**53.4 %**
26 - 30		25.9 %	7.8 %	20.4 %	13.2 %	33.6 %
> 30 years old		4.6 %	2.6 %	4.0 %	3.2 %	7.2 %
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %

Number of previous employers					
Zero(none)	36.1 %	6.9 %	29.9 %	13.5 %	**43.1 %**
one	22.0 %	4.9 %	15.8 %	10.9 %	26.9 %
two	10.7 %	5.2 %	7.8 %	8.0 %	15.9 %
three	6.9 %	0.9 %	5.7 %	2.0 %	7.8 %
four	2.9 %	1.2 %	1.7 %	2.3 %	4.0 %
five	0.6 %	0.6 %	0.3 %	0.3 %	1.2 %
six	0.6 %	-	-	0.3 %	0.6 %
eight	-	0.3 %	-	0.3 %	0.3 %
ten	-	0.3 %	-	0.3 %	0.3 %
Total	79.8 %	20.2 %	62.1 %	37.9 %	100.0 %
Length of service in this university (years)					
0-5 years	31.1 %	9.6 %	28.25 %	12.4 %	**40.7 %**
6-10 years	26.2 %	6.4 %	17.0 %	15.5 %	32.6 %
11-15 years	7.6 %	3.2 %	6.3 %	4.6 %	10.8 %
16-20 years	7.3 %	0.9 %	4.3 %	4.0 %	8.1 %
21-25 years	5.5 %	-	4.9 %	0.6 %	5.5 %
26-30 years	1.5 %	-	0.9 %	0.6 %	1.5 %
31-35 years	0.9 %	-	0.6 %	0.3 %	0.9 %
Total	79.9 %	20.1 %	62.1 %	37.9 %	100.0 %
Length of service as civil servant					
0-3 years (not yet confirmed)	14.9 %	5.5 %	15.5 %	4.9 %	20.4 %
4-10 years	34.5 %	8.9 %	24.4 %	19.0 %	**43.4 %**
11-15 years	11.5 %	4.3 %	9.5 %	6.3 %	15.8 %
> 16 years	18.7 %	1.7 %	12.6 %	7.8 %	20.4 %
Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %

Most of the respondents (87 percent) achieved permanent status of employment with the majority of them hired after the year 2000, which means they had the option to choose between EPF and PENSION. In terms of "age hired as civil servant", 53 percent started working at slightly above the normal age after finishing formal Malaysian education, which is between 21 to 25 years old. The majority of them declared that they never had any previous employer (zero). Although 41 percent of the respondents have been working up to 5 years in their current institutions, in terms of length in civil service, 43 percent had served between 4 to 10 years, indicating seniority or being permanent in their job status.

d. Nationality, Race, Religion

Figure 6.12 highlights all categories of nationality, race and religion variables. The survey revealed more than 95 percent on all these accounts are of Malaysian nationality, Malay and Muslim.

Table 6.12: Profile of Respondents 4: Nationality, Race and Religion (N=348)

		Compulsory Scheme selection		Voluntary Scheme selection		TOTAL
		PENSION	EPF	NOT-OWN	OWN	
Nationality						
Non-Malaysian		0.6 %	0.6 %	0.6 %	0.6 %	1.1 %
Malaysian		79.0 %	19.8 %	61.5 %	37.4 %	**98.9 %**
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %
Race						
Malay		78.2 %	18.4 %	61.2 %	35.3 %	**96.6 %**
Chinese		0.9 %	0.9 %	0.6 %	1.1 %	1.7 %
Indian		-	0.3 %	-	0.3 %	0.3 %
Others		0.6 %	0.9 %	0.3 %	1.1 %	1.4 %
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %
Religion						
Islam		78.2 %	19.0 %	61.2 %	35.9 %	**97.1 %**
Budha		1.4 %	1.1 %	0.9 %	1.7 %	2.6 %
Christian		-	0.3 %	-	0.3 %	0.3 %
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %

e. Retirement Information: Scheme Selection and Retirement Age

As shown in **Table 6.13,** the majority of the respondents are in PENSION (79.6 percent) and NOT-OWN (62.1 percent) voluntary retirement scheme. According to the President of Life Insurance Associations of Malaysia, Ezamshah Ismail (The Malay Mail, 7/10/2005), the percentage of Malaysians owning any insurance coverage is still low compared to more developed markets such as in Singapore. In terms of scheme selection, there is a similar preference between those who have already "opted-in" a scheme and those going to "opt-in" a scheme; both chose PENSION rather than EPF. As for the voluntary retirement schemes, the most preferred choice is buying commercial life insurance policies and not annuity products. Finally, almost 70 percent chose to retire at age 56. The Malaysian retirement provision stated the age 55 or 56 as the mandatory retirement age, with exception for those who want to take early retirement at the age of 40. Surprisingly, some of the answers given were unrealistic, indicating poor level of knowledge on basic retirement matters. It can be seen in the table that some respondents answered 60, 63, 65, and 70 years old as their future mandatory-retirement age, which are not allowed by law. It was interesting to note that despite efforts from the researcher to explain the valid retirement ages for civil servants (in the small note at the end of the questionnaire), some respondents still failed to answer this question correctly. Note that this is a subjective question asking "*My mandatory age of retirement is_____ years old*"; giving respondents freedom to

answer the question. In order to have a clearer view on the retirement age selection, the researcher regrouped these in four categories. It was found that most employees prefer a late retirement age at 56 (70 percent) instead of 55 (22 percent). It recorded only 4 percent preferring early retirement and similarly only 4 percent willing to extend their retirement beyond the maximum mandatory retirement age of 56.

Table 6.13: Profile of Respondents 5: Individual Retirement Information (N=348)

		Compulsory Scheme selection		Voluntary Scheme selection		TOTAL
		PENSION	EPF	NOT-OWN	OWN	
Retirement Scheme selection **(N)**		**277**	**71**	**216**	**132**	**348**
Compulsory scheme						
PENSION (0)				52.3 %	27.3 %	**79.6 %**
EPF (1)				9.8 %	10.6 %	20.4 %
	Total			62.1 %	37.9 %	100.0 %
Voluntary scheme						
No, Not own (0)		52.3 %	9.8 %			**62.1 %**
Yes, Own(1)		27.3 %	10.6 %			37.9 %
	Total	79.6 %	20.4 %			100.0 %
Compulsory Scheme details						
Yes opted, chose PENSION		66.4 %	3.2 %	42.8 %	26.7 %	**69.5 %**
Yes opted, chose EPF		N/A	11.5 %	3.7 %	.8 %	11.5 %
Not yet opted, will choose PENSION		13.2 %	0.9 %	12.1 %	2.0 %	14.1 %
Not yet opted, will choose EPF		N/A	4.9 %	3.4 %	1.4 %	4.9 %
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %
Voluntary scheme details						
Yes, Annuity		1.1 %	0.6 %	-	1.7 %	1.7 %
Yes, Life insurance		24.7 %	7.8 %	0.6 %	31.9 %	32.5 %
Yes, Other		1.1 %	0.3 %	-	1.4 %	1.4 %
Yes, Annuity & Life Insurance		1.7 %	0.6 %	58.9 %	1.4 %	2.3 %
Yes, Life Insurance & Others		1.7 %	-	1.4 %	0.9 %	1.7 %
No		49.1 %	11.2 %	1.1 %	0.6 %	**60.3 %**
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %
Retirement age chosen						
40 years old		-	0.6 %	0.3 %	0.3 %	0.6 %
45 years old		0.3 %	0.9 %	0.6 %	0.6 %	1.1 %
50 years old		0.9 %	1.4 %	2.0 %	0.3 %	2.3 %
53 years old		-	0.3 %	0.3 %	-	0.3 %
55 years old		17.2 %	4.3 %	11.8 %	9.8 %	21.6 %
56 years old		56.0 %	13.8 %	44.3 %	25.6 %	**69.8 %**
58 years old		0.6 %	0.9 %	0.9 %	0.6 %	1.4 %
60 years old		1.7 %	-	1.4 %	0.3 %	1.7 %
63 years old		0.3 %	-	0.3 %	-	0.3 %
65 years old		0.6 %	-	0.3 %	0.3 %	0.6 %
70 years old		-	0.3 %	-	0.3 %	0.3 %
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %
Retirement age chosen (Re-group)						
Early retirement (< 55 yrs old)		3.2 %	1.1 %	3.2 %	1.1 %	4.3 %
Compulsory opt 1 (55 yrs old)		17.2 %	4.3 %	11.8 %	9.8 %	21.6 %
Compulsory opt 2 (56 yrs old)		56.0 %	13.8 %	44.3 %	25.6 %	**69.8 %**
Extension of working years (> 56 yrs old)		3.2 %	1.1 %	2.9 %	1.4 %	4.3 %
	Total	79.6 %	20.4 %	62.1 %	37.9 %	100.0 %

6.6 Interview: Respondents

Table 6.14 shows the number and categorization of interview respondents. Sampling of the respondents was made purposefully. Selection of respondents was based on their availability for interviews and willingness to provide information. Their availabilities were confirmed by arrangements made in advance. Interviews were conducted at the respondents' offices for their convenience. For confidentiality purposes, interviewees' real names are not revealed to protect their true identity.

The first 11 interviews were conducted by focusing on various management personnel in all levels of two universities. The 2 universities which had been chosen represented:

i. New university which is less than 5 years of establishment: UniMAP with nearly 5 years of age.
ii. Matured university with more than 20 years of establishment: UUM with 25 years of age.

Table 6.14: Interview Respondents

No	Name *	Title	Size of department (number of employees)
1	A	Head of Residential College	16
2	B	Assistant Registrar	More than 100
3	C	Program Coordinator	30
4	D	Assistant Registrar	80
5	E	Head of Department	50
6	F	Deputy Director	45
7	G	Head of Department	19
8	H	Head of Residential College	17
9	I	Deputy Dean	50
10	J	Dean	90
11	K	Assistant Registrar UNIMAP	50
12	L	Deputy Director	More than 100
13	M	Deputy Director	More than 100

** Respondents' name are not published to protect their privacy and identity*

The number of participants involved in the interview was highlighted in parenthesis as follows:

1. Assistant Registrar (pension division) in Human Resource Department (2)
2. Assistant Registrar in the faculty (1)
3. Dean (1)
4. Deputy Dean (1)
5. Head of departments (3)
6. Deputy Director of Institute (Timbalan Pengarah Pusat) (1)
7. Residential Manager (Pengetua Kolej) (2)

In addition, two more interviews were conducted; the respondents are from the EPF institution and the PENSION department, one-each respectively. The researcher named this as "**special interviews and discussions**". Apart from using the same interview schedules, the researcher also took part as participant in a one-day talk/seminar given by one of the new public universities. It was known as an "induction course" organised by the human resource department intended to give information on EPF and PENSION schemes for staff nearing their job confirmation. The participants were then given formal forms for them to decide which scheme to choose. The form can be submitted at the end of that day or later (not more than 1 month). Attending the seminar gave the researcher insights into the actual situation encompassing issues related with retirement choices. Issues raised during Q&A sessions gave ideas on what really matters to them in selecting a scheme; simultaneously these issues are also the critical factors that influence decisions.

After the seminar, appointments to interview these speakers were arranged. It was hoped that these special interviews could help in understanding the matters surrounding issues of choosing EPF versus pension schemes. These 2 speakers were:

i. Deputy Director, Employee Provident Fund, Kangar Branch.
ii. Deputy Director, Pension Department, Public Service Department

There were reasons for seeking views from the management levels. It was hoped to gain other explanations apart from employees. Thus, more holistic views above the individual level could be achieved.

6.7 Conclusion

This chapter has presented the initial results from the questionnaire survey. A response rate of 12 percent or 348 usable response has been attained. Data were treated and cleaned before further analysis. Thus, the detailed treatment involved has been discussed in the screening and transformation phase. Next, the reliability and validity issues were presented in ensuring that this research was both reliable and valid. The descriptive statistics were also offered as early findings by separating according to two categories: first, PENSION versus EPF schemes; and second, OWN versus NOT-OWN of voluntary retirement schemes. Specifically, values of minimum, maximum, mean median, standard deviation, skewness and kurtosis for the variables were revealed after clarifying the variables' labels and descriptions in detail. Subsequently, the demographic profiles summary of the sample were reported which represents a wide variety of demographic categories of the respondents. On the contrary, the last section described the respondents involved in the interview (the second research method) which is the semi-structured interviews.

CHAPTER 7: FACTOR ANALYSIS AND NORMALITY TESTING

This chapter explains the factor analysis test, results and discussion. Reductions of data using factor analysis have been done so that a better representation of variables could be achieved. Detailed discussion on the analysis performed and findings found are presented. The last part gives the normality test results which indicate distribution scores of the variables.

7.1 Factor Analysis

In order to manage the first 149 items in the questionnaire, the researcher decided to use data reduction techniques, so that a better representation of the independent variables could be achieved. All variables that could be included in the analysis were included in the test. As is normal practice, some variables such as the demographic factors were excluded due to their unsuitable nature/criteria. The factor analysis was performed with no intention to test any hypotheses. It was merely performed as a data-reduction technique prior to further analysis. This time-consuming task has generated 14 main factors to be retained for further analysis. The process allowed for the retention of 31 items. Only 29 items will be used in the next step, which is the multivariate analysis using logistic regression to explore the determinants of dependent variable1 (choice). The remaining two items will be used for exploring dependent variable2 (satisfaction).

Factor analysis is an *interdependence* method. The method is the opposite of the *dependence* method such as multiple regressions. Kent (2001) supported this idea by clarifying that factor analysis reviews the interdependence between variables in order to generate an understanding of the underlying structure, and to create new variables or new groupings. He added that in measuring many variables, some could be measuring different aspects of the same phenomenon, hence will be interrelated. Factor analysis systematically reviews the correlations between each variable forming part of the analysis and all of the other variables, and groups together those that are highly inter-correlated with one another, and not correlated with variables in another group. The groups identify 'factors' that are in effect higher order variables. This helps to eliminate redundancy, should there be more than two variables measuring the same construct. The factors themselves are not directly observable, but each variable has a factor loading which is the correlation between the variable and the factors with which it is

most closely-associated. The advantage is that it can reduce a large number of variables to a more manageable set of factors.

Nonetheless, we should be aware of the possibility of problems related to factor analysis (Kent, 2001). First, it is possible to generate several solutions from a set of variables. Second, it relies on subjective decision making. This refers to the decision made on how many factors need to be accepted. Third, the grouping of the factors generated has to make intuitive sense, as factor analysis will always produce solutions. On the other hand, whether the solution is good or helpful is another matter. Sometimes, there may not be any factors underlying the variables.

7.1.1 Principle behind Factor Analysis

There are several types of factor analysis, with the most common being *Principal Component Analysis* (PCA) and the *Common Factor Analysis* (FA) (Field, 2005; Pallant, 2007; Tabachnick and Fidell, 2001; Nasser and Wisenbaker, 2001; Garson, 2009). The *Common Factor Analysis* is also called *Factor Analysis* (FA). These two are applied to a single set of variables, when the researcher is interested in discovering which variables in the set form coherent subsets that are relatively independent of one another (Tabachnick and Fidell, 2001, p. 582). The PCA produces components while FA produces factors, but both results are often called "factors".

The PCA assumes that each of the extracted components is not related and the measured variables can be perfectly-calculated by the extracted components (Pett et al., 2003). In simple words, PCA simply reduces the information from many variables into a set of weighted linear combinations of variables. Thus, it is most suitable for use in data reduction, not for modelling the structure of correlations among the measured variables.

There are two major types of FA: exploratory and confirmatory (Tabachnick and Fidell, 2001). *Exploratory Factor Analysis* (EFA) and *Confirmatory Factor Analysis* (CFA) are two powerful statistical techniques. EFA could be described as an orderly simplification (summarise) of interrelated measures. Traditionally, it has been used to explore the possible underlying factor structure in a set of observed variables without imposing a preconceived structure on the outcome (Child, 1990). By performing EFA, the underlying factor structure is identified. Thus, it could be said that EFA is basically

grounded in the common factor model and is data-driven. EFA tries to discover and summarise the pattern of inter-correlations among variables. Specifically, EFA is very suitable for exploring key dimensions; in determining the number of factors and pattern of loadings primarily from data; and in identifying latent variables which are contributing to common variance in a set of measured variables (Field, 2005; Tabachnick and Fidell, 2001)

On the other hand, CFA is a technique used to verify the factor structure in a set of observed variables. CFA allows the researcher to test the relationship between observed variables and their underlying latent constructs. The researcher uses knowledge of theory, empirical research, or both, postulates the relationship pattern and then tests the hypothesis statistically. Kim and Mueller (1978, p. 55) recommended a minimum requirement of CFA; one should hypothesize beforehand the number of factors in the model. However, the researcher will usually have expectations about which variables will load on which factors. The researcher seeks to determine for instance; if measures created to represent a latent variable really belong together. Thus, the CFA technique is the one which is appropriate for this study.

After careful consideration, it was decided that the PCA, which focuses on data reduction techniques would be the best approach for this research.

7.1.2 Initial Considerations for Factor Analysis

In order to determine the **appropriateness** of factor analysis with the data in this research (Field, 2005; Pallant, 2007; Gorsuch, 1983; Tabachnick and Fidell, 2001; Hair et al., 2010; Nunnally, 1978; and Garson, 2009), the following issues were considered:

1. Sample Size

This is an initial consideration. However, there is very little agreement on the minimum sample size necessary for factor analysis. Nunnally (1978) suggested at least ten cases per item are necessary. Tabachnick and Fidell (2007) claimed that five cases for each item are adequate in most situations. Hair et al. (2010) insisted that the number of items, multiplied by five is the proper guide to the number of cases necessary to undertake the factor analysis. Many authors suggested that the

sample size needs to be more than 150 cases. Others suggested using a sample size of more than 300. This is due to the fact that the correlation coefficients from sample to sample fluctuate more in a small sample as compared to large ones (Field, 2005). Tabachnick and Fidell (2001, p 640) suggested at least 300 cases for factor analysis. Both suggestions are met with this study, with a sample of 348 cases. Therefore, even under the strictest rule, the sample size of 348 cases has met the minimum requirement for factor analysis.

2. Factorability and Correlation Matrix

The factorability and correlation matrix screening have been checked in order to show that the data used is suitable for factor analysis. In this study, both the factorability and correlation have been screened, while simultaneously avoiding the problem of singularity. The task involves:

a. Screening

The initial data screening or factorability and correlation matrix has been performed. First, variables are identified which do not correlate at all to others and second, variables that correlate very highly with other variables (R>0.90). In this process, first the researcher aims to have many occurrences of coefficients which are above 0.30 (and significant) from the correlation matrix (R-Matrix). These verify the existence of correlation among items in order to meet the requirements to use factor analysis. The result was good since there were a high number of items possessing correlation greater than 0.30. The significance value of each correlation in the R-matrix could also be checked at the end of the R-matrix table. Next, careful consideration of the problem of singularity was made. Singularity is the result of a too-high correlation. Many authors suggested that the singularity problem is indicated by correlations of greater than 0.80 or 0.90. The determinants (denoted by symbol "**a**") of the R-matrix are vital in testing for problems of multicollinearity or singularity. Thus, the determinant should be greater than 0.00001 (Field, 2005). Obtaining values less than 0.00001, leads to elimination of one of the variables before further analysis in order to solve the singularity problem. Results for these singularity determinants are depicted in **Table 7.1**. It shows that there is no outstanding threat of such problems. See further discussion in later sections.

b. KMO and Bartlett's Test of Sphericity (BTS):

KMO and BTS are two additional statistical measures. They also help to assess the factorability of data. They verify the suitability of data used for factor analysis by examining the KMO and BTS box.

i. Kaiser Meyer-Olkin Measure of Sampling Adequacy (KMO)

KMO is used to measure the sampling adequacy (Kaiser, 1970, Kaiser 1974), where it needs the value of KMO greater than 0.60 (Pallant, 2007). Tabachnick and Fidell (2007) indicated that KMO is an index ranging from 0 to 1. A value near to 1 indicates a relatively-compact correlation pattern, yielding distinct and reliable factors (Field, 2005). Whilst a value equal to 0 means that the sum of partial correlations is relatively-greater than the sum of correlations, thus making factor analysis inappropriate. Tabachnick and Fidell (2007) suggested a value of 0.60 as a minimum value for factor analysis. However, Kaiser (1974) claimed that a value greater than 0.5 is acceptable. Hutcheson and Sofroniou (1999) offered further examination regarding values between 0.5 and 0.7 as mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb. Accordingly, in this study, the KMO cut-off point is fixed at 0.50.

ii. Bartlett's Test of Sphericity (BTS)

This is to test the null hypothesis that the original correlation matrix is an identity matrix. Results of BTS need to be significant ($p<0.05$) in ensuring that factor analysis is appropriate (Bartlett, 1954). The condition was met successfully (see **Table 7.1**). The BTS formula is given in **Appendix A1b.**

c. Anti-Image Matrices

The Matrices help in assessing the factorability of data (Field, 2005). In order to verify whether the data set used in this study is suitable for factor analysis, the anti-image table provides the "anti-image correlation". Here, the KMO values for individual variables are produced on the diagonal. Kaiser (1974) recommended a bare minimum of 0.50, the higher the better. As for the rest of the off-diagonal elements (which represent the partial correlations between variables), smaller values are more favourable. The output has confirmed satisfactory values (exceeding 0.50 for the diagonal and small values for the off diagonal) on all anti-image correlations throughout the matrices.

3. Linearity

As factor analysis is based on correlation, it assumes that the relationship between variables is linear. According to Spicer (2005, p.103), "the linear assumption requires that the shape of the data cloud be better summarised with a straight line than with any other type of line". He added that the assumption does not require high linearity (clustered tightly about a straight line) but the main concern is to prove that the data show no obvious signs of nonlinearity whereby a curved line of some description could be drawn through the centre of the data cloud. Tabachnick and Fidell (2007) suggested screening through spot checks on some combinations of variables. Pallant (2007) suggested that unless there is clear evidence of a curvilinear relationship, it is safe to proceed, provided an adequate sample size as discussed. As suggested, after the researcher has performed the spot check procedure, no evidence of a curvilinear relationship between variables could be found. It is found that there is a fairly clear linear upward trend in the scatter of points on the diagnostic scatter plot. Thus, suggesting that the linearity of the data has been complied with.

7.1.3 Methods Chosen in Running Factor Analysis

Apart from meeting all said requirements, the researcher had to decide on other important issues. This is to properly assure the suitability of adopting different methods to conduct the analysis, according to the nature of the research data and study. It was indicated earlier that the factor analysis is used as a data reduction technique. It was also pointed out that the interpretation and usage depends on the researcher's judgment, rather than any hard and fast statistical rules. Thus, some **decisions** have been made in attempt to correctly run the factor analysis as follows:

1. Goal

   Pallant (2007), Hair et al (2010), Tabachnick and Fidell (2007) and Field (2005) gave suggestions concerning the subjective number of factors to be retained by using techniques such as Kaiser's criterion (Eigenvalue rule), Scree test and Parallel analysis. However, Pallant (2007) advised that the parallel analysis is more popular in the psychology and educational fields and thus is unsuitable for this study. Specifically, in performing the analysis, the researcher based her decision on

having *Eigenvalues* >1, then used visual results from the *Scree Plot*, aimed at higher percentages in *Percentage of Total Variance Explained* and comprehensibility of the generated factors. The *Percentage of Total Variance Explained (cumulative)* is chosen as the priority for this study. Following Pallant (2007), Hair et al (2010) and Field (2005) suggestions, the researcher is satisfied with less than four factors representing each dimension. This is justifiable because less than four factors are a reasonable number to reduced to, which is 25% less than the original items which ranged from n=8 up to n=17 to the new dimension ranging from n=4 up to n=15 as shown in **Table 7.2**. Note that the factor analysis used here is for the objective to reduce data (items) and to maintain them as correlated factors (as opposed to uncorrelated factors). Indirectly, this also helps to achieve a parsimonious model later, particularly with the large number of independent variables involved in this study.

2. Extraction Method: PCA

   Factor extraction involves determining the smallest number of factors that best represent the interrelations among sets of variables; whereby PCA is a commonly-used technique. The differences between these two have been explained earlier. As a data reduction technique, PCA is used here to reduce a set of *p* variables to *m* components or factors prior to further analyses of those *m* factors. These *m* predictors will be used in the logistic regression in later analyses. Specifically, in performing the extraction, the method of "*Principal Components*" is selected.

3. Rotation Method: Oblique as opposed to Orthogonal

   The rotation method chosen was *Oblique Rotation* using the *Direct Oblimin*. This is because there are *theoretical grounds* for supposing how the factors might correlate. Rotation is used to clearly see the data structure which is helpful to better understand what is being measured and its relation to other variables. There are two rotation methods namely orthogonal and oblique. In the orthogonal rotation, factors are uncorrelated (independent) with one another. In contrast, in oblique rotation, factors are allowed to correlate with one another. However, the drawback of oblique rotation is that it is more difficult to interpret. According to Pallant (2007), if the correlations between factor components are low, we would expect very similar solutions from Varimax and Oblimin rotation. However, if the correlations are stronger, we may find discrepancies between results of these two approaches. In

this case, Oblimin rotation needs to be reported. This suggests using the Direct Oblimin method for the study. All things considered, the researcher has decided to use Direct Oblimin under the Oblique rotation method.

4. Correlation Matrix as Opposed to Covariance Matrix of Analysis

   Although the two matrices are actually similar; the correlation matrix is a default method because it takes the standardised form of matrix. The advantage of the correlation matrix is that it could eliminate problems in cases where analysis is based on different measurement scales (e.g. a 5-point Likert scale compared to other types). In addition, even if variables are measured using the same scale, it could have very different variances and create problems for the PCA analysis (Field, 2005). Thus, the correlation matrix is used in this study.

5. The Kaiser's (Eigenvalue) Criterion

   There is no clear rule on how many factors are retained. One approach uses Kaiser's Criterion; known as the eigenvalue rule, where factors with eigenvalues equal or greater than 1.00 are retained. The eigenvalue represents the amount of the *Total Variance Explained* by that factor and a value of 1.00 represents a substantial amount of variation (Field, 2005; Gorsuch, 1983; Nasser and Wisebaker, 2001). Accordingly, minimum eigenvalue of 1.00 was established as an initial cut-off. However, the Kaiser's Criterion has been criticised due to too many factors being retained in some situations. Thus, the researcher also looked at other alternatives to supplement Kaiser's Criterion such as using *Scree Plots* and values of the *Percentage of Total Variance Explained*.

6. The force Method

   The force method is used only if necessary. Out of 14 tests, there are three special situations where the researcher decided to use extraction based on "number of factors". The "extract box" provided this option pertaining to the retention of factors to a fixed (specified) numbers of factors. This was only performed for specific variables namely "soft constraints", "voluntary schemes" and "hard constraints 2". The force numbers of factors to retain were 2, 3 and 2 for "soft constraints", "voluntary schemes" and "hard constraints 2" respectively. This method was acceptable due to the fact that the factor analysis was performed primarily as a data reduction technique. This only involved cases where items

measuring the variable resulted in too many factors (exceeding 4 in this case). The study aimed to have less than 4 factors representing each variable.

7. The Scree Test

   In addition to Kaiser's criterion, the scree plot is used to assist in making decisions concerning the number of factors to retain. It is a visual method of identifying factors. Accordingly, the relative importance of each factor becomes more apparent by inspection. The scree test plots eigenvalues of factors in order to find a point at which the shape of the curve changes direction and becomes horizontal. In other words, the researcher will retain all factors that lie before the line flattens out. It is still recommended to retain all factors with eigenvalues above 1.00. Normally, in many situations, the scree plot would end up producing fewer factors with high eigenvalues to ease the decision. Stevens (1992) confirmed that, with a sample of more than 200, the plot would be able to provide a fairly-reliable criterion for factor selection. Based on this rule, the scree plots are mainly-used to determine the strongest factors. **Table 7.1** presents the decision to retain factors on each variable after performing the factor analysis.

8. The Maximum Iterations for Convergence Set at 25 Times

   After several attempts of factor analysis, the maximum iteration of 25 for convergence was specified. This allows up to a maximum of 25 steps, that the algorithm can take to estimate the solution.

9. Missing Value Treatment

   The "Missing Values Option" is used to specify how missing values are handled. The *Exclude Cases Pairwise* method is chosen for this study as opposed to the other two methods (*Exclude Listwise* and *Replace with Mean).*

10. Suppress Values Set at 0.40

    The suppress values option was set at 0.40 for all test runs. The default suppress value is 0.10, however higher suppress values are better since higher factor loadings will be selected in the analysis. Although the default is as low as 0.10, in this study it could accept up to the value of 0.40. This is good because the best factors were generated with more than 40 percent of factor loadings.

11. Factor Loadings

The factor loadings cut-off is set to be less than 0.40 (consistent with the suppress value above). In **Table 7.1** there are no loadings less than 0.60. The factor loadings could be defined as a Pearson correlation between a factor and a variable (Field, 2005, p. 622). Typically, researchers take a loading of an absolute value of more than 0.30 to be important. Also many authors also are of the opinion that a factor loading of more than 0.60 is usually high. However, the significance of the factor loading depends on sample size. Stevens (1992, p. 382-384) summarised this matter, where he recommends a sample size less than 50, 100, 200, **300,** 600, 1000 with loadings greater than 0.722, 0.512, 0.64**, 0.298**, 0.21, 0.162 respectively, to be considered significant. Consequently, in this study with a sample of 348 the rule of loading greater than 0.298 could be considered "important". Common problems incurred during this test include situations where each variable loaded strongly only on one component, or each component was represented by a number of strongly-loaded variables. It is also normal to find situations where variables load moderately on a number of different components, or some components with only one or two variables loading on them. The problems could be solved by removing items and repeating the analysis. Thus, if the rotated factor pattern loadings are 0.40 or greater, and did not load highly on any of the other factors, it was included in the construct.

12. Total/Cumulative Variance Explained

The *Total Variance Explained* is the main consideration in reaching the decision on the number of factors to be retained in this study. Output produced for each component after the rotation was analysed, by selecting the table of the *Percentage of Variance Explained*. The variance explained is equal to the Sum of Square Loadings (SSL) across variable values. It is similar to the eigenvalues concept, aiming to retain components with eigenvalues equal or greater than 1. The loading is important because if only 1 variable loads heavily on a component, that component is not well defined. The results indicate a high *Percentage of Total Variance Explained* around 62-81 percent (refer to **Table 7.1**).

13. Communality

The researcher has decided to remove items where communalities after extraction values were less than 0.30. The Communality is used to look at the SSL for each variable across factors. It shows a proportion of the variance of x_j explained by the *m* common factors. A variable's communality represents the R^2 of the variables predicted from the components (Wuensch, 2009). Through the communalities table, information about how much of the variance in each item is explained was revealed, both at inception and after extraction values.

The *initial communality* value is always equal to 1 because it assumes that all variance is common. On the other hand, the *extraction communality* is normally less than 1. This communality after extraction represents the amount of variance in each variable that can be explained by the retained factor. For instance, the question on "information" such as in Section 1; numbered B4, yielded an extraction of 0.823. This indicated that 82.3 percent of the variance associated with this question is common or shared variance on the "information" variable.

Thus, low values such as less than 0.30 indicate that the item does not fit well with other items in its components (Pallant, 2007). In this study, the researcher has decided to remove such items in order to refine the scales. By removing items with low communality values, it will increase the *Total Variance Explained* which is the main aim in performing factor analysis.

14. New Cronbach-alpha

Most of the results were found favourable for this analysis, as shown in **Table 7.2**. After conducting factor analysis, new factors were generated and named. The new Cronbach-alphas were then calculated to validate the reliability of their new scales. The Cronbach-alpha values vary between 0 and 1 (Hair et al., 2010), with the higher number indicating greater reliability. The generally-acceptable Cronbach-alpha values are recommended at 0.70 (Hair et al, 2010 and Cavana et. al. 2001). Robinson et al. (1991) also argued that the generally agreed-upon lower limit for the Cronbach-alpha is 0.70, but they confirmed that it might be decreased to 0.60, especially in exploratory research. According to Pallant (2007) for cases with less than 10 items, it was acceptable to use a lower α value of 0.50. Briggs and Cheek (1986) suggested the use of an optimal range for the inter-item correlation of 0.20

to 0.40. Thus, the researcher decided to use the value of less than 0.60 as the cut-off for the Cronbach-alpha in the factor analysis.

7.1.4 Factor Analysis Outputs Summary

As highlighted in the research framework, there are twelve independent variables tested in this study. They are knowledge/information levels, demographics, retirement income sources, voluntary saving perceptions, job related aspects, mobility, extension of working years perceptions, health status perceptions, plan features preference, soft constraints perceptions, hard constraints1 (risk and benefits considerations) and hard constraints2 (schemes appraisal).

Refer to **Table 7.1** and **Table 7.2** for the main results of the factor analysis. **Table 7.1** shows the summary of generated factors matrices for each dimension together with their new names: determination (a), factor loading, eigenvalue, KMO and variation extraction on every item for the independent and dependent variables. Next in **Table 7.2**, based on the new factors, the listed items with new names, label, item number (as in the questionnaire), ***n*** and the new calculated Cronbach-alpha values are described. Discussions of these two tables are presented below:

Table 7.1: Summary of Factor Matrices

There are no outstanding multicollinearity and singularity problems detected (see note 1 at the end of the table). Multicollinearity/singularity is denoted by the value of "a". The table shows that most of **a** values were greater than 0.00001. However, two factors in the independent variables (*Plan Feature Preference* and *I dont_Know Features)* have determinants of a<0.00001; implying a problem. However, it is acceptable due to the scope of the questionnaire which is based on only two scheme features (EPF or PENSION). Besides, the "*I dont_Know Features*" does not belong to any crucial key variable but an extra-generated variable. Specifically, it is originally-generated from the variable "*Plan features*", and aims to measure the lack of knowledge level on both schemes. It is logical to expect them to be correlated with one another, based on the similarity of the variables' focus and different dimension of views. Furthermore, the main aim in factor analysis is to achieve a "higher percentage of *Total Variance*

Explained ". Since the results produce more than 70 percent of variance explained (see **Table 7.1**), it has a higher priority of retaining such factors. Finally, it is also worth mentioning that the analysis uses an oblique rotation which is applicable as discussed in Section 7.1.3. Thus, under this oblique method, there are *theoretical grounds* for supposing how the factors might correlate.

Each of the components has a high loadings range exceeding 0.60. Specifically, loadings are around 0.80, with a minimum of 0.631 and maximum of 0.927, i.e. there is no loading of less than 0.60. Eigenvalues are all greater than 1.00. The minimum value is 1.057 and the highest is 7.584. The result cannot be criticised on the basis of "occurrence of many factors to be retained" situations. Thus, this eliminates the Kaiser's criterion weaknesses.

The KMO values all exceed the minimum value (0.60). However, there is one exception for the *Soft Constraints* construct which is at the borderline of 0.60, but later concluded as acceptable for this study (see note 2 in **Table 7.1**). Although many researchers generally prefer a KMO >0.60, Kaiser (1974) and Hutcheson and Sofroniou (1999) recommended accepting values of >0.50. Field (2005) also indicated that >0.50 is acceptable if the sample size is adequate, which is N >150, which is valid for this study of N=348.

The *Total Variance Explained* was able to explain a minimum of 62 percent up to 81 percent of the variations on 14 generated constructs. Achieving a high percentage of *Total Variance Explained* is the top priority in performing factor analysis for this study. BTS resulted in a significant 0.000 for each dimension (factors), which indicates that the factor analysis is appropriate (Bartlett, 1954) for each construct. The result of BTS is significant as indicated by the $p < 0.05$.

Table 7.1: Summary of Factor Matrices for Each Dimension

Construct and Factors	a.	Loading range	Eigen values	KMO	% Total Variance Expl.
Independent variables					
1.Knowledge:	0.042			0.78	73 %
1. Basic knowledge		0.742 - 0.894	4.038		
2. Advanced knowledge		0.790 - 0.910	1.075		
2.Information	0.055			0.81	79 %
1. Information level		0.842 - 0.924	3.155		
3.I Don't know Features* (Extra)	0.000			0.91	71 %
1. No knowledge Overall?	*Note1*	0.775 - 0.886	7.584		
2. No knowledge EPF?		0.631 - 0.920	1.720		
3. No knowledge PENSION?		-(0.790 - 0.880)	1.416		
4.Plan feature	0.000			0.86	72 %
1. PENSION preference	*Note1*	0.824 - 0.904	5.655		
2. EPF preference		0.784 - 0.846	2.167		
3. Negative scheme preference		-(0.764 - 0.863)	1.467		
5.Ret Income Sources	0.089			0.77	73 %
1. Basic income sources		0.752 - 0.910	3.196		
2. Supplementary income sources		0.869 - 0.910	1.167		
6.Voluntary saving perceptions				0.66	72 %
1. Voluntary savings	0.232	0.805 - 0.855	2.419		
2. Debts obligations		0.825 - 0.827	1.444		
3. Commercial schemes trust		0.859 - 0.864	1.132		
7.Health related perception	0.012			0.66	81 %
1. Healthcare satisfy		0.884 - 0.841	2.814		
2. Good health		0.820 - 0.868	2.116		
3. Bad health		0.847 - 0.950	1.581		
8.Extension of working years	0.268			0.63	73 %
1. Extension of working years		0.782 - 0.874	2.161		
2. Ordinary retirement		0.847 - 0.866	1.486		
9.Mobility	0.151			0.65	74 %
1. Public sector attractiveness		0.920 - 0.927	2.561		
2. Moving considerations		0.724 - 0.772	1.132		
10.Soft Constraints (Peers & DM)	0.453			0.60	78 %
1. Realistic level		0.889 - 0.895	1.731	*Note2*	
2. Peer & immediate influence level		0.875 - 0.877	1.398		
11.Hard Constraints1 (Preference & CC)	0.024			0.80	63 %
1. Benefit Confidence		0.710 - 0.845	3.682		
2. Risk Consideration		0.724 - 0.880	1.969		
12.Hard Constraints2 (Scheme Appraisal)	0.073			0.73	71 %
1. Favour new scheme (FPB)		0.906 - 0.919	2.973		
2. Favour Existing schemes		0.730 - 0.805	1.312		
13.Job nature & satisfaction	0.007			0.89	62 %
1. Job satisfaction		0.692 - 0.795	5.152		
2. Young Age advantage		0.962	1.057		
Dependent variables 1					
Choice scheme choice of selection					
1. PENSION(0), EPF(1)	N/A	Not tested due to only 1 item used			
Voluntary scheme ownership					
1. NOT-OWN (0), OWN(1)					
Dependent variables 2					
14.Ret systems satisfaction	0.008			0.84	79 %
1. Surround Systems satisfaction		0.827-0.936	4.240		
2. Personal Systems satisfaction		0.825-0.892	1.270		
Choice satisfaction					
1. Scheme Choice satisfaction	N/A	Not tested due to only 1 item used			
2. Provision Choice satisfaction					

Note:

- Bartlett's Test of Sphericity (BTS) had a significant result of p= 0.000 for each dimension
- KMO= Kaiser-Meyer-Olkin Measure of sampling adequacy

- Determinant (a.)= testing for Multicollinearity & Singularity problem
- N/A = cannot be computed due to only 1 item used in measuring the variable.
- *Tested on the dummy variable (0, 1), (Extra) = in addition created from plan feature variables
- % Total Variance Expl. = Percentage of Total or Cumulative Variance Explained.

Note1:

The "a." symbol denotes the Multicollinearity/Singularity, where a<0.00001 implying the problem.

Note2:

There is one variable which has a KMO value at the borderline of 0.60

Table 7.2: Items List and New Cronbach's α

Factor analysis was able to reduce the number of items for further analysis substantially; a cut from 149 items to 99 for the independent variables. In **Table 7.2,** the construct name, factors (components), labels are reported together with items number as appeared in the questionnaire. The new *n (n*)* is also reported together with the original *n* before and after the factor analysis (See Note 1). For comparison purposes, the total original and after extraction *n** are presented together. The number in brackets represents the original *n*, followed by the new *n**; after extraction. For instance, the plan-feature construct is (16)14, 5, 4, 4. This could be interpreted as: there are 16 original items which is reduced to 14; 5 items in component 1, 4 in component 2 and another 4 in component 3. The results found that approximately half of the items can be reduced from its original number under each construct. A minimum of 1 and maximum of 8 items are extracted (deleted) in the end. Results also suggest that the average number of deletions for all 14 constructs is around 4 items.

The key concern is the value of Cronbach's **α,** which aims to test the internal reliability of the new constructs. The majority of alpha values exceed the generally recommended level of 0.70. These indicate that the measurement of reliability is acceptable (Hair et al., 2010, Cavana et al., 2001, DeVellis, 2003, Gorsuch, 1983). However, there is an exception for one item, *Debt-Obligations* under the *Voluntary Retirement Schemes* construct, with a value equal to 0.63. However, it is still considered acceptable for various reasons. First, a value of 0.63 is within the acceptable range due to the "nearest-number concept". Second, it is expected for scales with fewer than 10 items (Pallant, 2007) which in this case consisted of only 2 items. Third, the original Cronbach's αs, based on the original questionnaire, are reliable with values of more than 0.70 (refer to **Table 6.4** in Chapter 6).

Table 7.2: Factor Analysis: Items List and New Cronbach's-alpha (α)

Names	Factors Label	Items in Questionnaire	*n**	α
	Independent variables			
1.Knowledge:	Knowledge:		***(10)7***	
1. KNOW_1	• Basic knowledge	A1a, A1b, A2, A3	4	0.87
2. KNOW_2	• Advanced knowledge	A [4, 5, 6]	3	0.83
2.Information	Information		***(8)4***	
1. INFOR	• Information level	B [2, 3, 4, 5]	4	0.91
3.I don't know Feature	I don't know feature		***(16)15***	
1. IDONT_1	• No knowledge Overall?	Idont_Ac [1,2,3,4,5]	5	0.91
2. IDONT_2	• No knowledge EPF?	Idont_Aa [1,2,3,4,5]	5	0.86
3. IDONT_3	• No knowledge PENSION?	Idont_Ab [1,2,3,4,5]	5	0.91
4.Plan feature	Plan feature		***(16)13***	
1. FEATURE_1	• PENSION preference	S2Ab [1,2,3,4,5]	5	0.92
2. FEATURE_2	• EPF preference	S2Aa [2,3,4,5]	4	0.85
3. FEATURE_3	• Negative scheme preference	S2Ac [1,2,3,4]	4	0.85
5.Ret Income Sources	Retirement Income Sources		***(10)6***	
1. INCOME_1	• Basic sources	S3A [7,8, 9, 10]	4	0.85
2. INCOME_2	• Supplementary sources	S3A [4,5]	2	0.75
6. Voluntary saving perceptions	Voluntary saving perceptions		***(13)7***	
1. VOLUNTARY_1	• Voluntary Savings	S3B [2,3,4]	3	0.78
2. VOLUNTARY_2	• Debts obligations	Recode [S3B5, S3B6]	2	0.63*
3. VOLUNTARY_3	• Commercial scheme trust	S4B6, S4C3	2	0.70
7.Health related perception	Health		***(12)8***	
1. HEALTH_1	• Healthcare provider satisfy	S2B [10,11, 12]	3	0.91
2. HEALTH_2	• Good health	S3C [1, 2, 3]	3	0.80
3. HEALTH_3	• Bad health	Recode [S3C8, S3C9]	2	0.90
8.Extension of working years	Ret Age & Extension of working		***(13)5***	
1. AGE_1	years	S3D [4, 5, 6]	3	0.80
2. AGE_2	• Extension of working years	S3D [1, 2]	2	0.70
	• Ordinary retirement			
9.Mobility	Mobility		***(8)5***	
1. MOBILITY_1	• Public sector attractiveness	S4A [1,2]	2	0.88
2. MOBILITY_2	• Private sector attractiveness	S4A [12,13,14,]	3	0.70
10.Soft Constraints	Soft Constraints (Peers & DM)		***(10)4***	
1. SOFT_1	• Realistic level	C [1, 2]	2	0.74
2. SOFT_2	• Peer influence level	C [6, 7]	2	0.70
11.Hard Constraints 1	Preference & Comfort, confidence		***(14)9***	
1. oneHARD_1	• Benefit Confidence	S4B [4,5,6,7,8]	5	0.83
2. oneHARD_2	• Risk considerations	S4A [5,6,7,8]	4	0.82
12.Hard Constraints 2	Schemes appraisal		***(12)6***	
1. twoHARD_1	• Favour new scheme (FPB)	S4C9 [a, b, c]	3	0.83
2. twoHARD_2	• Favour Existing schemes	S4C [1, 2, 3]	3	0.70
13.Job nature & satisfaction	Job nature & satisfaction		***(17)10***	
1. JOB_1	• Job satisfaction	S5B[1,2,3,4,5,7,8,9,10]	9	0.91
2. JOB_2	• Young Age advantage	S5A3	1	N/A
	Dependent variables 1			
SelectSch	Compulsory sch. Choice selection	PENSION(0), EPF(1)	N/A	N/A
VoluntaryS	Voluntary schemes Ownership	NOT-OWN(0),OWN(1)	N/A	N/A
	Dependent variables 2			
14.Ret systems satisfaction	Ret systems satisfaction		***(12)7***	
1. Satis_SYSTEMS_1	• Surround systems satisfaction	S2B [9, 10, 11, 12]	4	0.91
2. Satis_SYSTEMS_2	• Personal systems satisfaction	S2B [1, 2, 3]	3	0.85
Choice satisfaction	Choice satisfaction			
1. Satis_CHOICE_1	• Scheme choice satisfaction	S4D1	N/A	N/A
2. Satis_CHOICE_2	• Provision choice satisfaction	S4D2	N/A	N/A

- Note 1: n*:

The number in the brackets refers to the original *n* before factor analysis; e.g. for Plan feature construct *(16)14, 5, 4*, 4 means the original number of items is 16 and the *n** is 14 which consists 5, 4, 4 items for component 1, 2, 3 respectively after the factor analysis.

7.1.5 Deleted Items

The generated results formed 12 independent variables and 2 dependent variables (for satisfaction). The details of the deleted items together with its justification are addressed in **Appendix A1e (a).**

7.1.6 Remaining Items

The results for the remaining items are detailed in **Appendix A1e (b)** together with the summary of communalities after extraction values. As indicated earlier, the communality after extraction represents the amount of variance in an item that can be explained. Pallant (2007) advised obtaining values greater than 0.30 to confirm that items fit well with others. Favourably, the results reported high communalities values; all exceeding 0.50.

7.1.7 Factor Analysis Matrices.

The output from the factor analysis using the oblique method provides three types of matrices; *Pattern Matrix*, *Structure Matrix* and *Component Correlation matrix*. After executing the oblique rotation, the factor matrix is divided into two matrices: the Pattern and Structure matrices (Field, 2005).

The **Pattern Matrix** shows the factor loadings of each variable. It is comparable to a factor matrix which is interpreted by its orthogonal rotation. Factor loadings are the correlation between each variable and its factor. Loadings indicate the degree of correspondence between variables and its factor, with higher loadings making the variable representative of the factor (Hair et al., 2010, p. 123). It is simply a means of interpreting the roles that each variable plays in defining each factor. The Pattern matrix is preferable for Interpretation reasons because it contains information about the unique contribution of a variable to a factor.

The **structure matrix** takes into account the relationship between factors. Specifically, according to Pallant (2007), the structure matrix is unique to the Oblimin output, and provides information about the correlation between variables and between factors. It differs (from the pattern matrix) in that the shared variance is not ignored. Thus, sometimes it is more complicated to interpret when several factors load highly onto more than one factor.

Finally the **Component Correlation Matrix** contained information on the coefficient correlation between factors. This is discussed separately later in Section 7.1.7.2.

7.1.7.1 Summary of Selected Factor Analysis Matrices Outputs

The list of items remaining after the extraction can also be seen from either tables labels of Communalities, Pattern, or Structure matrices. Refer to all 14 Tables, from **Table 7.3** up to **Table 7.16** for this purpose. The tables show summaries of the selected matrices outputs which were generated by factor analysis in the final solutions. The BTS formula is given in Appendix A1b.

Table 7.3: Summary of Factor Analysis Outputs: Knowledge

A: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.782
Bartlett's Test of Sphericity	Approx. Chi-Square	1326.887
	df	21
	Sig.	.000

B: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	percent of Variance	Cumulative percent	Total	percent of Variance	Cumulative percent	Total
1	**4.038**	**57.693**	**57.693**	4.038	57.693	57.693	3.573
2	**1.075**	**15.358**	**73.051**	1.075	15.358	73.051	3.165
3	.603	8.616	81.667				
4	.457	6.533	88.200				
5	.356	5.082	93.282				
6	.311	4.446	97.728				
7	.159	2.272	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

C: Pattern Matrix[a]

Variable	Factor	
	1	2
A1a	0.894	
A1b	0.873	
A3	0.837	
A2	0.742	
A5		0.91
A6		0.865
A4		0.79

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.
a. Rotation converged in 4 iterations.

D: Structure Matrix

Variable	Factor	
	1	2
A1a	0.866	0.447
A1b	0.857	0.500
A3	0.842	0.429
A2	0.821	0.556
A5	0.466	0.888
A6	0.475	0.862
A4	0.513	0.831

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

Table 7.4: Summary of Factor Analysis Outputs: Information

A: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.805
Bartlett's Test of Sphericity	Approx. Chi-Square	1002.252
	df	6
	Sig.	.000

B: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	percent of Variance	Cumulative percent	Total	percent of Variance	Cumulative percent
1	**3.155**	**78.887**	**78.887**	3.155	78.887	78.887
2	.399	9.964	88.851			
3	.302	7.551	96.402			
4	.144	3.598	100.000			

Extraction Method: Principal Component Analysis.

C: PATTERN MATRIX = Component Matrix[a]

	Factor
	1
B4 info accurate	.924
B3 info sufficient about retirement scheme	.917
B5 info simple and easy	.868
B2 info sufficient from university	.842

Extraction Method: Principal Component Analysis.

a. 1 component extracted.

Note:

Pattern Matrix and Structure Matrix is identical due to only 1 factor extracted

Table 7.5: Summary of Factor Analysis Outputs: I don't know

A: **KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.909
Bartlett's Test of Sphericity	Approx. Chi-Square	3648.697
	df	105
	Sig.	.000

B: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	percent of Variance	Cumulative percent	Total	percent of Variance	Cumulative percent	Total
1	**7.584**	**50.562**	**50.562**	7.584	50.562	50.562	5.750
2	**1.720**	**11.464**	**62.026**	1.720	11.464	62.026	5.040
3	**1.416**	**9.443**	**71.468**	1.416	9.443	71.468	5.875
↓	↓	↓	↓				
15	.163	1.090	100.000				

Extraction Method: Principal Component analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

C: Pattern Matrix[a]

Variable	Component		
	1	2	3
Idont_Ac4	0.886		
Idont_Ac3	0.872		
Idont_Ac2	0.821		
Idont_Ac5	0.786		
Idont_Ac1	0.775		
Idont_Aa3		0.92	
Idont_Aa4		0.827	
Idont_Aa2		0.77	
Idont_Aa5		0.632	
Idont_Aa1		0.631	
Idont_Ab4			-0.880
Idont_Ab3			-0.858
Idont_Ab2			-0.793
Idont_Ab5			-0.791
Idont_Ab1			-0.790

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 6 iterations.

D: Structure Matrix

Variable	Component		
	1	2	3
Idont_Ac4	0.908		-0.540
Idont_Ac3	0.867	0.411	-0.446
Idont_Ac2	0.866	0.432	-0.512
Idont_Ac5	0.823		-0.519
Idont_Ac1	0.802	0.415	-0.426
Idont_Aa3		0.872	
Idont_Aa4		0.836	-0.429
Idont_Aa2	0.407	0.827	-0.495
Idont_Aa5	0.537	0.732	-0.420
Idont_Aa1		0.719	-0.498
Idont_Ab4	0.518	0.422	-0.890
Idont_Ab3	0.617		-0.865
Idont_Ab2	0.502	0.527	-0.862
Idont_Ab5	0.468	0.438	-0.862
Idont_Ab1		0.495	-0.805

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

.

Table 7.6: Summary of Factor Analysis Outputs: Plan Feature

A: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.861
Bartlett's Test of Sphericity	Approx. Chi-Square	1975.615
	df	78
	Sig.	.000

B: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	percent of Variance	Cumulative percent	Total	percent of Variance	Cumulative percent	Total
1	**5.655**	**43.499**	**43.499**	5.655	43.499	43.499	4.515
2	**2.167**	**16.666**	**60.164**	2.167	16.666	60.164	3.827
3	**1.467**	**11.287**	**71.451**	1.467	11.287	71.451	3.776
↓	↓	↓	↓				
13	.119	.916	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

C: Pattern Matrix[a]

Variable	Component		
	1	2	3
S2Ab4	0.904		
S2Ab1	0.855		
S2Ab2	0.849		
S2Ab3	0.831		
S2Ab5	0.824		
S2Aa3		0.846	
S2Aa4		0.829	
S2Aa5		0.824	
S2Aa2		0.784	
S2Ac3			-0.863
S2Ac4			-0.825
S2Ac1			-0.773
S2Ac2			-0.764

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 8 iterations.

D: Structure Matrix

Variable	Component		
	1	2	3
S2Ab4	0.928		
S2Ab1	0.877		
S2Ab2	0.849		
S2Ab3	0.830		
S2Ab5	0.830		
S2Aa3		0.852	
S2Aa4		0.834	
S2Aa5		0.814	
S2Aa2		0.802	
S2Ac3			-0.845
S2Ac4	0.451		-0.829
S2Ac1		0.465	-0.813
S2Ac2			-0.813

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

.

Table 7.7: Summary of Factor Analysis Outputs: Retirement Income Sources

A: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.771
Bartlett's Test of Sphericity	Approx. Chi-Square	831.763
	df	15
	Sig.	.000

B: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	percent of Variance	Cumulative percent	Total	percent of Variance	Cumulative percent	Total
1	**3.196**	**53.273**	**53.273**	3.196	53.273	53.273	2.998
2	**1.167**	**19.458**	**72.731**	1.167	19.458	72.731	2.044
3	.555	9.253	81.984				
4	.474	7.903	89.887				
5	.339	5.642	95.529				
6	.268	4.471	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

C: Pattern Matrix[a]

Variable	Component	
	1	2
S3A8	0.910	
S3A7	0.833	
S3A10	0.802	
S3A9	0.752	
S3A5		0.910
S3A4		0.869

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 3 iterations.

D: Structure Matrix

Variable	Component	
	1	2
S3A8	0.887	
S3A7	0.826	
S3A10	0.808	0.438
S3A9	0.794	
S3A5		0.903
S3A4		0.879

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

Table 7.8: Summary of Factor Analysis Outputs: Voluntary Savings Perceptions

A: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.664
Bartlett's Test of Sphericity	Approx. Chi-Square	501.691
	df	21
	Sig.	.000

B: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	percent of Variance	Cumulative percent	Total	percent of Variance	Cumulative percent	Total
1	**2.413**	**34.474**	**34.474**	2.413	34.474	34.474	2.231
2	**1.444**	**20.625**	**55.099**	1.444	20.625	55.099	1.406
3	**1.132**	**16.170**	**71.269**	1.132	16.170	71.269	1.689
4	.657	9.389	80.658				
5	.498	7.120	87.778				
6	.483	6.899	94.677				
7	.373	5.323	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

C: Pattern Matrix[a]

Variable	Component		
	1	2	3
S3B3	0.857		
S3B4	0.841		
S3B2	0.801		
RcodeS3B6		0.829	
RcodeS3B5		0.822	
S4C3			0.875
S4B6			0.847

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 4 iterations.

D: Structure Matrix

Variable	Component		
	1	2	3
S3B3	0.855		
S3B4	0.844		
S3B2	0.805		
RcodeS3B6		0.827	
RcodeS3B5		0.825	
S4C3			0.864
S4B6			0.859

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

Table 7.9: Summary of Factor Analysis Outputs: Health Status

A: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.663
Bartlett's Test of Sphericity	Approx. Chi-Square	1508.702
	df	28
	Sig.	.000

B: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	percent of Variance	Cumulative percent	Total	percent of Variance	Cumulative percent	Total
1	**2.814**	**35.174**	**35.174**	2.814	35.174	35.174	2.616
2	**2.116**	**26.447**	**61.622**	2.116	26.447	61.622	2.235
3	**1.581**	**19.762**	**81.384**	1.581	19.762	81.384	1.885
4	.498	6.221	87.605				
5	.374	4.676	92.281				
6	.316	3.944	96.226				
7	.171	2.143	98.368				
8	.131	1.632	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

C: Pattern Matrix[a]

Variable	Component		
	1	2	3
S2B12	0.941		
S2B11	0.939		
S2B10	0.884		
S3C2 H		0.868	
S3C3 H		0.830	
S3C1 H		0.820	
RcodeS3C8			0.950
RcodeS3C9			0.947

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 6 iterations.

D: Structure Matrix

Variable	Component		
	1	2	3
S2B12	0.940		
S2B11	0.939		
S2B10	0.885		
S3C2 H		0.863	
S3C3 H		0.837	
S3C1 H		0.822	
RcodeS3C8			0.950
RcodeS3C9			0.948

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

.

Table 7.10: Summary of Factor Analysis Outputs: Extending Work

A: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.626
Bartlett's Test of Sphericity	Approx. Chi-Square	453.202
	df	10
	Sig.	.000

B: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	percent of Variance	Cumulative percent	Total	percent of Variance	Cumulative percent	Total
1	**2.161**	**43.224**	**43.224**	2.161	43.224	43.224	2.155
2	**1.486**	**29.714**	**72.938**	1.486	29.714	72.938	1.498
3	.567	11.333	84.271				
4	.478	9.556	93.826				
5	.309	6.174	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

C: Pattern Matrix[a]

Variable	Component	
	1	2
S3D5	0.877	
S3D4 A	0.800	
S3D6	0.787	
S3D2		0.868
S3D1		0.861

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 3 iterations.

D: Structure Matrix

Variable	Component	
	1	2
S3D5	0.878	
S3D4 A	0.870	
S3D6	0.787	
S3D2		0.865
S3D1		0.863

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

Table 7.11: Summary of Factor Analysis Outputs: Mobility

A: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.645
Bartlett's Test of Sphericity	Approx. Chi-Square	651.744
	df	10
	Sig.	.000

B: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	percent of Variance	Cumulative percent	Total	percent of Variance	Cumulative percent	Total
1	**2.561**	**51.213**	**51.213**	2.561	51.213	51.213	2.136
2	**1.132**	**22.649**	**73.862**	1.132	22.649	73.862	1.926
3	.769	15.385	89.247				
4	.337	6.743	95.990				
5	.200	4.010	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

C: Pattern Matrix[a]

Variable	Component	
	1	2
S4A2	0.927	
S4A1	0.920	
S4A12		0.772
S4A14		0.741
S4A13		0.724

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 7 iterations.

D: Structure Matrix

Variable	Component	
	1	2
S4A2	0.937	
S4A1	0.920	
S4A12	0.424	0.801
S4A14	0.480	0.800
S4A13		0.711

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

Table 7.12: Summary of Factor Analysis Outputs: Soft Constraints

A: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.603
Bartlett's Test of Sphericity	Approx. Chi-Square	423.409
	df	6
	Sig.	.000

B: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	percent of Variance	Cumulative percent	Total	percent of Variance	Cumulative percent	Total
1	**1.731**	**43.264**	**43.264**	1.731	43.264	43.264	1.609
2	**1.398**	**34.951**	**78.215**	1.398	34.951	78.215	1.554
3	.489	12.213	90.428				
4	.383	9.572	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

C: Pattern Matrix[a]

Variable	Factor	
	1	2
C2	0.895	
C1	0.889	
C7		0.877
C6		0.875

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 4 iterations.

D: Structure Matrix

Variable	Factor	
	1	2
C2	0.892	
C1	0.892	
C7		0.876
C6		0.876

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

Table 7.13: Summary of Factor Analysis Outputs: Hard Constraints1

A: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.802
Bartlett's Test of Sphericity	Approx. Chi-Square	1275.699
	df	36.000
	Sig.	.000

B: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sumsof Squared Loadings[a]
	Total	percent of Variance	Cumulative percent	Total	percent of Variance	Cumulative percent	Total
1	**3.682**	**40.916**	**40.916**	3.682	40.916	40.916	3.229
2	**1.969**	**21.877**	**62.793**	1.969	21.877	62.793	2.898
3	.746	8.289	71.083				
4	.610	6.775	77.858				
5	.589	6.540	84.398				
6	.517	5.739	90.137				
7	.395	4.390	94.527				
8	.272	3.019	97.547				
9	.221	2.453	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

C: Pattern Matrix[a]

Variable	Component	
	1	2
S4B4	0.845	
S4B5	0.841	
S4B6	0.745	
S4B7	0.710	
S4B8	0.710	
S4A6		0.880
S4A5		0.860
S4A8		0.748
S4A7		0.724

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 4 iterations.

D: Structure Matrix

Variable	Component	
	1	2
S4B4	0.843	
S4B5	0.811	
S4B6	0.743	
S4B7	0.736	
S4B8	0.732	
S4A6		0.885
S4A5		0.861
S4A8		0.743
S4A7		0.730

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

Table 7.14: Summary of Factor Analysis Outputs: Hard Constraints2

A: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.729
Bartlett's Test of Sphericity	Approx. Chi-Square	569.369
	df	15
	Sig.	.000

B: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	percent of Variance	Cumulative percent	Total	percent of Variance	Cumulative percent	Total
1	**2.973**	**49.543**	**49.543**	2.973	49.543	49.543	2.723
2	**1.312**	**21.871**	**71.415**	1.312	21.871	71.415	2.089
3	.710	11.837	83.252				
4	.549	9.152	92.404				
5	.292	4.874	97.277				
6	.163	2.723	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

C: Pattern Matrix[a]

Variable	Component	
	1	2
S4C9b	0.919	
S4C9c	0.911	
S4C9a	0.906	
S4C3		0.805
S4C1		0.766
S4C2		0.73

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 4 iterations.

D:Structure Matrix

Variable	Component	
	1	2
S4C9b	0.93	
S4C9c	0.918	
S4C9a	0.893	
S4C3		0.808
S4C1		0.756
S4C2		0.739

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

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Table 7.15: Summary of Factor Analysis Outputs: Job Nature and Job Satisfaction

A: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.892
Bartlett's Test of Sphericity	Approx. Chi-Square	1724.653
	df	45
	Sig.	.000

B: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	percent of Variance	Cumulative percent	Total	percent of Variance	Cumulative percent	Total
1	**5.152**	**51.519**	**51.519**	5.152	51.519	51.519	5.150
2	**1.057**	**10.569**	**62.088**	1.057	10.569	62.088	1.073
3	.904	9.037	71.125				
4	.678	6.783	77.908				
5	.516	5.158	83.066				
↓	↓	↓	↓				
10	.220	2.196	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

C: Pattern Matrix[a]

Variable	Component	
	1	2
S5B10	0.795	
S5B3	0.792	
S5B9	0.783	
S5B8	0.781	
S5B2	0.757	
S5B5	0.749	
S5B4	0.735	
S5B7	0.713	
S5B1	0.692	
S5A3		0.962

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 3 iterations.

D: Structure Matrix

Variable	Component	
	1	2
S5B10	0.792	
S5B3	0.791	
S5B9	0.789	
S5B8	0.786	
S5B2	0.758	
S5B5	0.748	
S5B4	0.728	
S5B7	0.707	
S5B1	0.703	
S5A3		0.962

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

Table 7.16: Summary of Factor Analysis Outputs: Retirement Systems Satisfaction

A: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.844
Bartlett's Test of Sphericity	Approx. Chi-Square	1666.640
	df	21
	Sig.	.000

B: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	percent of Variance	Cumulative percent	Total	percent of Variance	Cumulative percent	Total
1	**4.240**	**60.576**	**60.576**	4.240	60.576	60.576	3.817
2	**1.270**	**18.143**	**78.719**	1.270	18.143	78.719	3.137
3	.513	7.332	86.051				
4	.346	4.945	90.996				
5	.267	3.819	94.814				
6	.229	3.270	98.084				
7	.134	1.916	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

C: Pattern Matrix[a]

Variable	Component	
	1	2
S2B12	0.936	
S2B11	0.917	
S2B10	0.869	
S2B9	0.827	
S2B2		0.892
S2B1		0.890
S2B3		0.825

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 4 iterations.

D: Structure Matrix

Variable	Component	
	1	2
S2B12	0.921	0.470
S2B11	0.917	0.434
S2B10	0.884	0.467
S2B9	0.835	0.433
S2B2	0.465	0.900
S2B1	0.549	0.892
S2B3		0.847

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

7.1.7.2 Component Correlation Matrix

As explained, the Component Correlation Matrix contains information about coefficients of the correlation between factors. **Table 7.17** simply puts together the summary of Component Correlations coefficients between generated factors to see whether factors are independent from one another. This table is constructed from the Component Correlation matrix which defines the correlation coefficient between factors. Field (2005) clarified that the matrix gives a guide to whether it is reasonable to assume independency among factors. If the constructs are independent (low correlation) then we would expect the oblique rotation to provide the same identical solution to the orthogonal rotation and the component correlation matrix should be an identity matrix. Pallant (2007) also said that if the correlation between components is low, there might be discrepancies between the results of the two approaches. In this case, one needs to report the Oblimin results. These show favouritism towards the Oblimin method.

Table 7.17: Comparison of Oblimin Results: Components Correlation Matrix

Factors (Components)	Factors (n)	Component's Correlation Coefficients	Strength indication	Independence of correlation
Independent variables				
1. Knowledge	2	.556, 1.00	EXCELLENT	x
2. Information	1	1.00	EXCELLENT	x
3. Soft Constraints	2	.-.541, 1.00	EXCELLENT	x
4. Plan Feature Preferences	3	.343, -.343, -.437, 1.00	EXCELLENT	x
5. I don't know Features	3	.439, -.501, -.541,1.00	EXCELLENT	x
6. Ret. Income Sources	2	.389, 1.00	EXCELLENT	x
7.Voluntary Saving perceptions	3	.006, .292, -.083, 1.00	GOOD	x
8.Health perceptions	3	-.022, .142, .171, 1.00	LOW	✓
9. Extension of working years	2	-.040, 1.00	LOW	✓
10.Mobility	2	.261, 1.00	GOOD	x
11.Hard Constraints1	2	.283, 1.00	GOOD	x
12.Hard Constraints2	2	.347, 1.00	EXCELLENT	x
13.Job Nature & Satisfaction	2	-.043, 1.00	LOW	✓
Dependent variables 1				
1.Compulsory Choice		N/A		
2.Voluntary ownership				
Dependent variables 2				
1.Ret systems satisfaction	2	.504, 1.00	EXCELLENT	x
2.Choice satisfaction		N/A		

Note1: Correlation > 0.30 is considered important (e.g. Pallant, 2007; Field, 2005)
Note 2: Oblique rotation allowed factors to correlate with one another
x = means that there are correlations between factors
✓= means that there are no correlations between factors

The results shown in **Table 7.17** are quite interesting in several ways. First, the result confirms that all factors under each construct do interrelate to some degree. Second, most factors (11 out of 14) possess excellent correlation strength. This presents strong evidence in supporting the application of oblique rotation. Third, only a small number of factors (3 out of 14) have little or no relationship with other factors, as pointed out by low coefficient values which are less than 0.30. This happens to Health Perception, Extending Work and Job Nature factors. All things considered, this suggests that the researcher cannot assume "independence" between factors, which indicates that the result of the oblique rotation solution is more meaningful. On the other hand, Field (2005) advised on a theoretical level that the dependencies between factors do not normally cause serious concern. This is because some constructs could be more socially-based (i.e. related to how people live in society) which could give subjective relationships. Thus, the aim for a high percentage of *Total Variance Explained* is still the dominant consideration in performing the factor analysis.

7.2 Normality Test

It is common to check if the distribution scores of variables are normal. Normal distribution is used to describe a symmetrical, bell curve, with the greatest frequency in the middle, and smaller frequencies towards the extremes (Gravetter and Wallnau, 2004, p. 48). Normality can be assessed by analysing Skewness and Kurtosis, Trimmed Means, Histograms, Normal Q-Q Plots, Detrended Normal Q-Q Plots and Box plot figures, and Kolmogorov-Smirnov tests. However, emphasis is given to the Kolmogorov-Smirnov test since it is the most reliable technique due to its statistical power as discussed later.

7.2.1 Techniques for Assessing Normality

All of the techniques for normality testing are discussed below:

1. Skewness and Kurtosis

   Field (2005, p. 8) argued that there are two ways in which a distribution can deviate from being normal - lack of symmetry (called skewness) and pointyness (called kurtosis). Specifically, the skewness value provides an indication of symmetry, while kurtosis provides information about the "peakedness" of the

distribution. Thus, if the distribution is perfectly normal, it would have obtained a skewness 0 and kurtosis value of 3 (rather an uncommon occurrence in the social sciences). Positive skewness indicates scores are clustered to the left at the low values. Kurtosis values below 3 indicate a distribution that is relatively flat (too many cases in the extremes values). The formula of kurtosis and skewness are as below where n is the sample size, $\bar{x}$ is the mean and σ is the standard deviation of sample (Bluman, 2008, Myatt, 2007)

$$skewness = \frac{\sum_{i=1}^{n}(x_i - \bar{x})^3}{(n-1)\sigma^3}$$

$$kurtosis = \frac{\sum_{i=1}^{n}(x_i - \bar{x})^4}{(n-1)\sigma^4}$$

In SPSS, the kurtosis formula is set as follow. This sometimes referred as "excess kurtosis". Using this definition, the perfect normal distribution has a kurtosis of zero.

$$\frac{\sum_{i=1}^{n}(x_i - \bar{x})^4}{(n-1)\sigma^4}$$

2. The Kolmogorov-Smirnov Test

The Kolmogorov-Smirnov Test is the most reliable test of normality amongst all due to its statistical power. For instance, Field (2005) argue that looking at histograms in order to see if the distribution is close to normality is subject to subjectivity and open to abuse. Likewise, skewness and kurtosis statistics tell us only about one aspect of non-normality on each. Thus, the Kolmogorov-Smirnov test is more favourable because it can be used to see whether the distribution as a whole deviates from a comparable normal distribution. Accordingly, Pallant (2007, p. 62) stated that a non-significant result (Sig. value of more than 0.05) indicates normality in this Kolmogorov-Smirnov Test. See the formula and explanation of the Kolmogorov-Smirnov and Lilliefors tests in **Appendix A1c**.

7.2.2 Normality Results

It was found that:

1. Skewness and Kurtosis

   Skewness and Kurtosis have been examined for individual items and factors after the factor analysis. In the earlier chapter, some of the basic statistics are able to provide an early indication of normality conditions. Refer to skewness and kurtosis values in **Table 6.6** and **Table 6.7** in chapter 6. The results show that most variables could be concluded as being non normal.

2. Kolmogorov-Smirnov Test

   Specifically, **Table 7.18**, **Table 7.19** and **Table 7.20** summarise the normality tests. Results confirm that the variables are not normally-distributed as shown by the Kolmogorov-Smirnov Test of Normality. Pallant (2007, p. 62) verified that a non-significant result (Sig. value of more than 0.05) indicates normality. All of the items are found to result in significant values of 0.000, violating the assumption of normality. Further, Pallant (2007) emphasised that this is common in larger samples. Thus, it is acceptable in this study with 348 cases. Further analysis is conducted by separating total scores into compulsory retirement scheme selection: EPF versus PENSION and voluntary scheme ownership; OWN versus NOT-OWN.

7.2.3 The Kolmogorov-Smirnov Results

This section elaborates on the results from the Kolmogorov-Smirnov test. The results confirm that the data used are not normally-distributed. Specifically, the Kolmogorov-Smirnov statistics are all significant at the 1 percent level as in **Table 7.18**. In the next two tables, the data is divided into choice of compulsory (**Table 7.19**) and voluntary (**Table 7.20**) retirement schemes. **Table 7.19** shows that for the first segregation (EPF versus PENSION), two items meet the lower normality assumption. These are AGE_1 (Extension of working years) and JOB_1 (Job satisfaction) variables. However, these two items are not very convincing in supporting the normality distribution of the data. First, it only incurred for two items out of the total number of 33 items tested. Second, the normality assumption is weakly met (at the lower bound of the true significance)

under the Kolmogorov-Smirnov statistics. On the other hand, by segregating between NOT-OWN and OWN of voluntary schemes, none of the variables meets the normality assumptions as reported in **Table 7.20**. In conclusion, generally, all of the variables do not meet the normality assumptions.

Table 7.18: Normality Test ~TOTAL (df =348)

Variables (Factors)	Variables labels	Kolmogorov-Smirnov[a]	
		Statistic	Sig.
Independent			
KNOW_1	Basic knowledge	0.123	0.000
KNOW_2	Advanced knowledge	0.111	0.000
INFOR	Information level	0.107	0.000
IDONT_1	No knowledge overall?	0.464	0.000
IDONT_2	No knowledge EPF?	0.402	0.000
IDONT_3	No knowledge PENSION?	0.500	0.000
SOFT_1	Realistic level	0.209	0.000
SOFT_2	Peer influence level	0.155	0.000
FEATURE_1	PENSION preference	0.185	0.000
FEATURE_2	EPF preference	0.126	0.000
FEATURE_3	Negative schemes preference	0.125	0.000
INCOME_1	Basic sources of ret income	0.101	0.000
INCOME_2	Supplementary sources	0.150	0.000
VOLUNTARY_1	Voluntary savings	0.161	0.000
VOLUNTARY_2	Debts obligations	0.158	0.000
VOLUNTARY_3	Commercial schemes trust	0.170	0.000
HEALTH_1	Health care provider satisfy	0.166	0.000
HEALTH_2	Good health	0.127	0.000
HEALTH_3	Bad health	0.345	0.000
AGE_1	Extension of working years	0.086	0.000
AGE_2	Ordinary retirement	0.148	0.000
MOBILITY_1	Public sector attractiveness	0.206	0.000
MOBILITY_2	Private sector attractiveness	0.124	0.000
oneHARD_1	Benefit confidence	0.122	0.000
oneHARD_2	Risk consideration	0.140	0.000
twoHARD_1	Favour new scheme (FPB)	0.345	0.000
twoHARD_2	Favour existing scheme	0.161	0.000
JOB_1	Job satisfaction	0.071	0.000
JOB_2	Young age advantage	0.210	0.000
Dependent 2			
Satis_SYSTEMS_1	Surround systems satisfaction	0.117	0.000
Satis_SYSTEMS_2	Personal systems satisfaction	0.195	0.000
Satis_CHOICE_1	Scheme choice satisfaction	0.215	0.000
Satis_CHOICE_2	Provision Choice satisfaction	0.230	0.000

a.Lilliefors Significance Correction

Table 7.19: Normality Test ~ Compulsory Scheme (PENSION versus EPF)

Variables (Factors)	PENSION (df =277)		EPF(df =71)	
	Kolmogorov-Smirnov[a]		Kolmogorov-Smirnov[a]	
	Statistic	Sig.	Statistic	Sig.
KNOW_1	0.128	0.000	0.105	0.050
KNOW_2	0.109	0.000	0.118	0.015
INFOR	0.102	0.000	0.124	0.009
IDONT_1	0.458	0.000	0.483	0.000
IDONT_2	0.389	0.000	0.447	0.000
IDONT_3	0.509	0.000	0.466	0.000
SOFT_1	0.216	0.000	0.179	0.000
SOFT_2	0.157	0.000	0.143	0.001
FEATURE_1	0.205	0.000	0.113	0.025
FEATURE_2	0.128	0.000	0.123	0.009
FEATURE_3	0.120	0.000	0.184	0.000
INCOME_1	0.097	0.000	0.115	0.020
INCOME_2	0.161	0.000	0.120	0.013
VOLUNTARY_1	0.160	0.000	0.168	0.000
VOLUNTARY_2	0.154	0.000	0.175	0.000
VOLUNTARY_3	0.183	0.000	0.163	0.000
HEALTH_1	0.173	0.000	0.126	0.007
HEALTH_2	0.117	0.000	0.163	0.000
HEALTH_3	0.346	0.000	0.339	0.000
AGE_1	0.092	0.000	0.088	**.200***
AGE_2	0.156	0.000	0.156	0.000
MOBILITY_1	0.220	0.000	0.237	0.000
MOBILITY_2	0.119	0.000	0.152	0.000
oneHARD_1	0.110	0.000	0.172	0.000
oneHARD_2	0.144	0.000	0.201	0.000
twoHARD_1	0.331	0.000	0.398	0.000
twoHARD_2	0.156	0.000	0.174	0.000
JOB_1	0.070	0.002	0.089	**.200***
JOB_2	0.211	0.000	0.207	0.000
Dependent 2				
Satis_SYSTEMS_1	0.121	0.000	0.148	0.001
Satis_SYSTEMS_2	0.196	0.000	0.166	0.000
Satis_CHOICE_1	0.219	0.000	0.209	0.000
Satis_CHOICE_2	0.242	0.000	0.234	0.000

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

a.Lilliefors Significance Correction

*This is a lower bound of the true significance.

Table 7.20: Normality Test ~ Voluntary Scheme (NOT-OWN versus OWN)

Variables (Factors)	NOT-OWN (df =216)		OWN (df =132)	
	Kolmogorov-Smirnov[a]		Kolmogorov-Smirnov[a]	
	Statistic	Sig.	Statistic	Sig.
KNOW_1	0.129	0.000	0.126	0.000
KNOW_2	0.103	0.000	0.128	0.000
INFOR	0.111	0.000	0.115	0.000
IDONT_1	0.438	0.000	0.502	0.000
IDONT_2	0.374	0.000	0.445	0.000
IDONT_3	0.501	0.000	0.511	0.000
SOFT_1	0.212	0.000	0.207	0.000
SOFT_2	0.159	0.000	0.147	0.000
FEATURE_1	0.188	0.000	0.185	0.000
FEATURE_2	0.139	0.000	0.117	0.000
FEATURE_3	0.165	0.000	0.126	0.000
INCOME_1	0.092	0.000	0.113	0.000
INCOME_2	0.142	0.000	0.161	0.000
VOLUNTARY_1	0.156	0.000	0.184	0.000
VOLUNTARY_2	0.163	0.000	0.149	0.000
VOLUNTARY_3	0.190	0.000	0.128	0.000
HEALTH_1	0.153	0.000	0.185	0.000
HEALTH_2	0.136	0.000	0.146	0.000
HEALTH_3	0.358	0.000	0.325	0.000
AGE_1	0.094	0.000	0.085	0.020
AGE_2	0.163	0.000	0.135	0.000
MOBILITY_1	0.203	0.000	0.213	0.000
MOBILITY_2	0.129	0.000	0.135	0.000
oneHARD_1	0.143	0.000	0.091	0.009
oneHARD_2	0.158	0.000	0.136	0.000
twoHARD_1	0.336	0.000	0.358	0.000
twoHARD_2	0.180	0.000	0.135	0.000
JOB_1	0.076	0.004	0.090	0.011
JOB_2	0.223	0.000	0.186	0.000
Dependent 2				
Satis_SYSTEMS_1	0.106	0.000	0.144	0.000
Satis_SYSTEMS_2	0.184	0.000	0.212	0.000
Satis_CHOICE_1	0.202	0.000	0.232	0.000
Satis_CHOICE_2	0.245	0.000	0.210	0.000

a. Lilliefors Significance Correction

Note that the Lilliefors significance correction is one of the most well-known modification of the Kolmogorov-Smirnov test of goodness of fit and is generally known as the Lilliefors test for normality or Lilliefors test in short (Abdi and Molin, 2007; Steinskog, Tjostheim and Kvamsto, 2007). The Lilliefors correction (Lilliefors,

1967) uses the same test statistics as the Kolmogorov-Smirnov test but with adjusted critical values. Basically, the Lilliefors test presents a table for testing normality using the Kolmogorov-Smirnov statistic when the mean and variance of the population are unknown. A table of critical values can be obtained by the Monte Carlo approximation (Steinskog, Tjostheim and Kvamsto, 2007; p. 1153). Formula and explanation of the Lilliefors significance correction are given in **Appendix A1c**.

7.2.4 Normality Treatment

It is apparent that the data is not normally-distributed. It is quite common to execute data transformations to meet the normality assumptions. However, for this research, the researcher decided not to do any "transformations" due to several reasons. First, this situation is common for large data. Second, Pallant (2007) argued that many scales and measures in the social sciences have scores that are positively or negatively skewed. Thus, this does not indicate a problem with the scales, but rather reflects the underlying nature of the constructs being measured. Third, transformation is not needed in order to perform further analysis. For example, logistic regression does not need normality assumptions.

7.3 Conclusion

This chapter has explained in great detail the factor analysis and normality testing. In factor analysis, the procedure is aimed at data reduction techniques and has been completed for the data set. Although it is time-consuming to complete the task repeatedly, the results are promising. All initial considerations together with appropriate decisions have been made in great detail to run the factor analysis. These careful considerations arguably strengthen the output from the factor analysis. After extraction, 14 factors on independent variables and 2 on dependent variables are generated for further analysis. The final task was to calculate the **average** which represents all items in each factor. For example, the use of the factor "KNOW_1" represents the average values of items A1a, A1b, A2 and A3. This is done for all factors (generated components). As for the normality testing, it is concluded that the data is not normally-distributed.

CHAPTER 8: CHOICE: UNIVARIATE ANALYSIS

This chapter examines the relationship between groups comparing means (medians). It presents preliminary analysis - a univariate analysis - of the first dependent variable - CHOICE. It tries to address the question of whether the average (e.g. mean or median) score for one set differs from the average for another.

8.1 Introduction

Having completed the descriptive analysis, factor analysis and normality test, further analysis is conducted to compare the independent (explanatory) variables across the retirement schemes choices. Specifically, this section assesses the statistical significance of the difference between means (median) of the two sets of scores. A simple univariate statistical technique of the Mann-Whitney U Test is used in this initial analysis. It was performed in order to compare the group's medians of EPF versus PENSION schemes and NOT-OWN versus OWN voluntary retirement schemes. At this point, the objective is to compare medians of all items in the ordinal scales, with the choice of retirement plans. The choice is a dichotomous variable; PENSION (0) versus EPF (1) and NOT-OWN (0) versus OWN (1) voluntary scheme. The expected outcome is to find which items are significantly-different; between groups of different schemes' choice. The scales used here were measured from a range representing (1) strongly disagree up to (5) strongly agree, and (3) represented neutral.

8.2 Mann-Whitney U Test

If the assumption of normality is met, the T–test is appropriate. The *Independent–sample T-test* was chosen. It was appropriate as the test serves to compare the mean of the scores between two different groups of people or conditions (Pallant, 2007). In this case, the researcher collected information from two different sets of people and then compared these scores. The assumptions about the shape of the population distribution (normally distributed) are not always met. Since the data in this study is not normally-distributed the T-test was not used.

A non-parametric test is used in cases where the normality assumption is not met. Thus, the Mann-Whitney U test is used in this research. This test was developed by Henry B. Mann along with D. R. Whitney in 1947 and there are two assumptions underlie the use of the Mann-Whitney U test (Black, 2001). First, the sample is independent and second, the level of data is at least ordinal. Furthermore the two-tailed hypotheses being tested with the Mann-Whitney U test area as follows (Black, 2001, p.693):

" H_0: The two populations are identical.

H_1: The two populations are not identical. "

A non-parametric test has the advantage of not having such stringent assumptions but tends to be less sensitive (powerful) in detecting actual differences between groups. However, the argument of "less power" is in disagreement with Field (2005) who argues that this condition is not always true. Additionally, the Mann-Whitney U test is best employed with data measured using ordinal (ranked) scale and thus it is appropriate for this study.

One important consideration is that the non-parametric statistics do not test for differences in means, but instead it uses ranks (Howitt and Cramer, 2005). It tests whether ranks in one group are typically larger or smaller than ranks in other groups. Accordingly, values of medians and ranks are of concern here. Explicitly, the computation of the U statistics is as follow (Black, 2001).

> "The test begins by arbitrarily designating two samples as group 1 and group 2. The data from the groups are combined into one group, with each data value retaining a group identifier of its original group. The pooled values are then ranked from 1 to *n*, with the smallest value being assigned a rank of 1. The sum of the ranks of value from group 1 and group 2 is then computed".

This chapter will focus on identifying individual characteristics and the factors that may predict decision (selection) of Malaysian public universities employees in choosing their retirement plans (schemes) and establish how these factors influence decisions of choice.

Addressing the objective above, the **research question** below needs to be answered:

- Research question 1: "What are the factors that influence decisions of Malaysian public universities' employees in choosing their retirement schemes? (objective 1)"

Specifically, research question 1 will be answered by the **research hypothesis** below:

- "H1: Knowledge level, demographic factors, retirement income sources, voluntary savings perceptions, job related aspects, mobility, extending work perceptions, health status, plan features, soft constraints, hard constraints **are the factors** that predict the choice of retirement plans."

The "compare means" procedure is a preliminary test to analyse differences among two groups. Two tests were performed. First, on compulsory retirement scheme, which tested the differences between two groups namely the group who chose PENSION versus the group who chose EPF schemes. Similarly, the second test was conducted on voluntary retirement scheme choice, testing the differences between groups of people who OWN versus NOT-OWN any commercial retirement schemes.

To begin with, descriptive statistics by comparing median values for each different retirement scheme choice are presented. The "median" value is more important to report here, due to its relevance in explaining the Mann-Whitney U output as compared to the "mean" values. The Mann-Whitney U test actually compares medians instead of means, then it evaluates whether the ranks from the two groups differ significantly. As scores are converted to ranks, the actual distribution of the scores does not matter (Pallant, 2007). Field (2005) also supported the notion that the test works by looking at differences in the ranked positions of scores in different groups.

All medians values are reported based on TOTAL, PENSION and EPF groups as in **Table 8.1** for compulsory retirement scheme choice. **Table 8.3** reports medians based on TOTAL, OWN and NOT-OWN for voluntary retirement scheme ownership choice. The tables are divided into categories of *Items, Demographics* and *Factors*. Variables under the *items* category refer to the questions in Sections 1 to 5 as appeared in the questionnaire; "Demographic" variables refer to the *Demographic* items in section 6 and *Factors* refer to factors or components generated by the factor analysis procedure in **Chapter 7**. These factor variables are the average values of a specific number of items.

Next, the results for the Mann-Whitney U test are reported in the tables; specifically **Table 8.2** for compulsory retirement schemes choice and **Table 8.4** for the voluntary

retirement scheme ownership[26]. Other variables are reported in full regardless of their significance. They are the "FACTORS" and the "demographics" variables which are also going to be used in the logistic regression. The tables show values of mean ranks in different groups, together with p and r values. The Mann-Whitney U statistics are also reported with the indication of significance; denoted with ** (significant at 5%) or *** (significant at 1%) at the end of each significance value. The significant variables are highlighted in "bold".

Additionally, the researcher accounts for the effect size by calculating the value of "*r*" using the formula of = (Rosenthal, 1991, p.19). Note that r denotes the effect size estimate, z is the z-score and N is the size of the study such as the number of total observations. An effect size provides an objective measure of the importance of an "effect". Accordingly, what effect is sought after, what variables have been measured or how those variables have been measured does not matter (Field, 2005, p. 33). The *r* of 0 means no effect and a value of 1 means a perfect effect and the value of r could take a negative value but cannot be less than -1 (Field, 2005, p. 33; Green and Salkind, 2011, p. 258).

A score on a variable is a low score to the extent that it falls below the mean score on that variable. A score on a variable is a high score to the extent that it falls above the mean score on that variable. Without specific indications, high scores are conventionally reported in this study. They are low scores when the figures are negative. An important point to note is that a variable with a large r could also be a non-significant variable. Additionally, Cohen (1988) sorted out the criteria for interpreting the value of r, where:

- $r = 0.10$ (small effect); in this case the effect explains 1 percent of the total variance.
- $r = 0.30$ (medium effect); the effect accounts for 9 percent of the total variance.
- $r = 0.50$ (large effect); the effect accounts for 25 percent of the total variance.

Thus, Cohen's criteria will be used in interpreting the results for this test.

[26] Only variables which are significant are reported

8.3 Results and Discussion

This section shall discuss the results for COMPULSORY Retirement Schemes choice and VOLUNTARY Retirement Schemes choice as presented in **Table 8.1** up to **Table 8.4.** The *r* values are all negative as shown in **Table 8.2** and **Table 8.4**. This means that for **Table 8.2** the low score in the ranking of medians in PENSION scheme tend to be associated with high scores on EPF scheme; and vice versa. Similarly, the same goes in **Table 8.4** which indicates the low score in median ranking in the NOT-OWN group of voluntary retirement schemes, tends to be associated with high scores on the OWN group; and vice versa. Additionally, in examination of medians along the 5-point-Likert scales, **Table 8.1** has recorded many occurrences of 4.00 (agree) under "ITEMS" category for compulsory schemes in TOTAL, EPF and PENSION columns. In contrast, for voluntary schemes, **Table 8.3** has recorded many occurrences of 4.00 (agree) in TOTAL, and OWN columns, but recorded 3.0 (neutral) on PENSION column.

8.3.1 Compulsory Retirement Scheme Choice

Discussions of the Mann-Whitney U results on each factor deemed to be significant in choice of the compulsory retirement scheme are detailed below (refer to **Table 8.1** and **Table 8.2**):

1. $H_{1,1}$: **Knowledge Level** influences the choice of compulsory retirement plans.
   There are 3 different categories of variables measuring this construct, namely *Knowledge, Information* and *No-knowledge* of specific plan features. Specifically, the *Knowledge level* construct was measured by 40 variables, 34 items from the questionnaire (from section 1 and Section 2A) and 6 factors (components: NOW_1, KNOW_2, INFOR, IDONT_1, IDONT_2, IDONT_3) which were generated from factor analysis.

   The results indicated that employees in PENSION and EPF groups did seem to differ in terms of knowledge level in choosing their compulsory retirement scheme. Many knowledge level variables are significantly-different in the PENSION versus EPF groups. The results found 6 significant variables, of which 5 variables were under the *items* (A7, B3, B4, B5 and Idon't_Aa4) and 1 under the *factors* (INFOR) category generated by the factor analysis. All of these significant variables have negative Z statistics with r values equal to $-0.18 < r < -0.11$, an indication that the construct has up to a medium size effect.

   The medians, mean ranks and significant results reveal important findings. It shows that higher mean rank is recorded on significant items of A7 and Idon't_Aa4 under the EPF group. On the contrary, higher mean ranks on significant items are reported on all other 4 significant items under the PENSION group. There are a number of important findings to highlight. First, this has suggested that EPF employees are more knowledgeable than PENSION employees with regard to knowledge in the application of the tax-provisional effects. Indirectly, this also demonstrates that, on the employees' side, the "tax relief" feature is the most or common knowledge possessed on the retirement scheme.

Table 8.1: Medians for Compulsory Schemes

ITEMS

Variables	MEDIAN		
	Compulsory scheme		
	PENSION	EPF	TOTAL
	n=277	n=71	N=348
A7	3.00	4.00	3.00
B3	3.00	3.00	3.00
B4	3.00	3.00	3.00
B5	3.00	3.00	3.00
Idont_Aa4	1.00	1.00	1.00
C6	3.00	3.00	3.00
C8	4.00	3.00	3.00
S2Aa1	3.00	4.00	3.50
S2Aa4	4.00	4.00	4.00
S2Ab1	5.00	4.00	5.00
S2Ab4	5.00	4.00	4.00
S2Ab5	5.00	4.00	5.00
S2Ac6	4.00	4.00	4.00
S3C7	4.00	5.00	4.00
S3D10	4.00	4.00	4.00
S3D11	3.00	4.00	3.00
S3D12	4.00	4.00	4.00
S4A1	4.00	4.00	4.00
S4A2	4.00	4.00	4.00
S4A6	4.00	4.00	4.00
S4A7	4.00	3.00	4.00
S4A10	4.00	4.00	4.00
S4B2	4.00	3.00	4.00
S4B3	3.00	3.00	3.00
S4B5	4.00	3.00	4.00
S4C2	4.00	3.00	4.00
S4C4	3.00	4.00	4.00
S4C7	3.00	4.00	4.00
S4C9	3.00	1.00	3.00
S5A3	3.00	2.00	3.00
S5B3	4.00	4.00	4.00
S5B7	3.00	3.00	3.00

DEMOGRAPHIC

Variables	MEDIAN		
	Compulsory scheme		
	PENSION	EPF	TOTAL
	n=277	n=71	N=348
D1	.00	1.00	.00
Recode_D3	2.00	2.00	2.00
D4	1.00	1.00	1.00
D5	1.00	1.00	1.00
D6	.00	1.00	1.00
D7	2.00	3.00	2.00
Recode_D8	2.00	2.00	2.00
New_D11	2.00	3.00	2.00
New_D12	2.00	2.00	2.00
New_D13	2.00	2.00	2.00
D14	1.00	1.00	1.00
AcademicC	.00	1.00	.00
New_D16	3.00	3.00	3.00
BusMgtCat	.00	.00	.00
JobTenure	1.00	1.00	1.00
New_D19	2.00	2.00	2.00
D20	3.00	4.00	3.00
D21	3.00	3.00	3.00
New_D22	3.00	3.00	3.00
D28	2.00	2.00	2.00
D29	1.00	1.00	1.00

Table 8.1: Medians for Compulsory Schemes (continued)

FACTORS

Variables	MEDIAN		
	Compulsory scheme		
	PENSION	EPF	TOTAL
	n=277	n=71	N=348
KNOW1	3.25	3.25	3.25
KNOW_2	3.00	3.00	3.00
INFOR	3.00	3.00	3.00
IDONT_1	1.00	1.00	1.00
IDONT_2	1.00	1.00	1.00
IDONT_3	1.00	1.00	1.00
SOFT_1	4.00	4.00	4.00
SOFT_2	3.00	3.00	3.00
FEATURE_1	4.40	4.00	4.40
FEATURE_2	3.50	3.75	3.75
FEATURE_3	3.75	3.75	3.75
INCOME_1	3.50	3.25	3.50
INCOME_2	3.00	3.00	3.00
VOLUNTARY_1	3.67	4.00	3.83
VOLUNTARY_2	3.00	3.00	3.00
VOLUNTARY_3	3.00	3.00	3.00
HEALTH_1	4.00	3.33	4.00
HEALTH_2	3.67	4.00	3.67
HEALTH_3	5.00	5.00	5.00
AGE_1	3.33	3.33	3.33
AGE_2	3.50	3.50	3.50
MOBILITY_1	4.50	4.00	4.00
MOBILITY_2	4.00	4.00	4.00
oneHARD_1	3.40	3.40	3.40
oneHARD_2	4.00	3.75	4.00
twoHARD_1	3.00	3.00	3.00
twoHARD_2	3.33	3.33	3.33
JOB_1	3.67	3.56	3.67
JOB_2	3.00	2.00	3.00

Table 8.2: Mann-Whitney U Results on Compulsory Schemes[27]

ITEMS

Variables	Mean rank PENSION	Mean rank EPF	*p*	Mann Whitney U	—
A7	165.76	208.61	.001	**7411.50*** **	-0.18
B3	182.16	144.63	.004	**7712.50** **	-0.16
B4	182.82	142.04	.002	**7528.50** **	-0.17
B5	180.44	151.35	.024	**8189.50** **	-0.12
Idont_Aa4	170.68	189.39	.043	**8776.00** **	-0.11
C6	166.61	205.29	.003	**7647.50** **	-0.16
C8	185.26	132.51	.000	**6852.00*** **	-0.22
S2Aa1	167.31	202.56	.007	**7841.50** **	-0.15
S2Aa4	169.04	195.79	.033	**8322.00** **	-0.11
S2Ab1	183.40	139.76	.000	**7367.00*** **	-0.20
S2Ab4	182.56	143.04	.001	**7600.00*** **	-0.17
S2Ab5	183.27	140.28	.000	**7404.00*** **	-0.19
S2Ac6	182.23	144.34	.003	**7692.00** **	-0.16
S3C7	167.70	201.03	.007	**7950.00** **	-0.14
S3D10	167.71	201.01	.009	**7951.50** **	-0.14
S3D11	168.96	196.12	.036	**8298.50** **	-0.11
S3D12	166.98	203.83	.004	**7751.00** **	-0.15
S4A1	180.53	150.96	.017	**8162.00** **	-0.13
S4A2	180.85	149.73	.011	**8075.00** **	-0.14
S4A6	180.44	151.35	.018	**8189.50** **	-0.13
S4A7	183.66	138.77	.000	**7296.50*** **	-0.19
S4A10	183.31	140.15	.001	**7394.50*** **	-0.18
S4B2	180.94	149.38	.012	**8050.00** **	-0.13
S4B3	161.52	225.13	.000	**6238.50*** **	-0.27
S4B5	182.74	142.36	.001	**7551.50*** **	-0.17
S4C2	180.67	150.43	.017	**8124.50** **	-0.13
S4C4	168.25	198.89	.015	**8101.50** **	-0.13
S4C7	166.42	206.01	.002	**7596.50** **	-0.17
S4C9	181.68	146.49	.006	**7845.00** **	-0.15
S5A3	180.25	152.06	.027	**8240.50** **	-0.12
S5B3	180.42	151.42	.021	**8194.50** **	-0.12
S5B7	179.64	154.43	.047	**8408.50** **	-0.11

***Significant at the 5 percent level, ****sig at 1 percent level in the Mann Whitney U test*

Note1: Only significant variables are reported

[27] A negative r score means a variable has a low score to the extent that it falls below the mean score on that variable.

Formula of Z (Black, 2001); $Z = \frac{x_i - \bar{x}}{\sigma}$

Table 8.2: Mann-Whitney U Results on Compulsory Schemes (continued)

DEMOGRAPHICS

Variables	Mean rank PENSION	Mean rank EPF	*p*	Mann Whitney U	—
D1	169.49	194.03	.033	**8447.00****	-.11
Recode_D3	176.13	168.14	.520	9382.00	-.03
D4	171.63	185.68	.001	**9039.50*****	-.18
D5	172.63	181.79	.018	**9316.00****	-.13
D6	168.69	197.18	.014	**8223.00****	-.13
D7	163.82	216.16	.000	**6875.50*****	-.22
Recode_D8	173.43	178.69	.584	9536.00	-.03
New_D11	169.25	194.96	.033	**8380.50****	-.11
New_D12	179.89	153.49	.037	**8341.50****	-.11
New_D13	179.99	153.08	.034	**8313.00****	-.11
D14	169.35	194.58	.046	**8408.00****	-.11
AcademicC	162.98	219.44	.000	**6643.00*****	-.26
New_D16	173.64	177.85	.736	9596.00	-.02
BusMgtCat	170.39	190.52	.065	8696.00	-.10
JobTenure	176.77	165.64	.156	9204.50	-.08
New_D19	173.34	179.04	.656	9511.00	-.02
D20	166.92	204.08	.005	**7733.50****	-.15
D21	168.17	199.21	.017	**8079.00****	-.13
New_D22	174.58	174.18	.971	9811.00	.00
D28	136.65	140.72	.687	6001.00	-.02
D29	138.62	135.67	.758	6158.00	-.02

***Significant at the 5 percent level, ****sig at 1 percent level in the Mann Whitney U test*

Table 8.2: Mann Whitney U Results on Compulsory Schemes: (continued)

FACTORS

Variables	Mean rank PENSION	Mean rank EPF	*p*	Mann Whitney U	—
KNOW_1	173.61	177.96	.743	9588.00	-.02
KNOW_2	175.04	172.38	.841	9683.00	-.01
INFOR	181.89	145.65	.006	**7785.50****	-.15
IDONT_1	172.31	183.06	.253	9225.50	-.06
IDONT_2	170.72	189.24	.089	8787.00	-.09
IDONT_3	177.15	164.16	.086	9099.50	-.09
SOFT_1	175.73	169.70	.643	9492.50	-.02
SOFT_2	169.32	194.69	.055	8400.00	-.10
FEATURE_1	183.86	137.99	.000	**7241.50*****	-.19
FEATURE_2	169.98	192.12	.095	8582.50	-.09
FEATURE_3	174.03	176.35	.861	9702.50	-.01
INCOME_1	174.51	174.44	.996	9829.50	.00
INCOME_2	173.81	177.20	.797	9642.00	-.01
VOLUNTARY_1	172.28	183.18	.408	9217.50	-.04
VOLUNTARY_2	174.75	173.51	.925	9763.50	-.01
VOLUNTARY_3	177.50	162.80	.260	9003.00	-.06
HEALTH_1	182.51	143.25	.003	**7615.00****	-.16
HEALTH_2	174.37	174.99	.963	9798.50	.00
HEALTH_3	176.49	166.73	.407	9281.50	-.04
AGE_1	171.21	187.35	.225	8921.00	-.06
AGE_2	176.23	167.77	.522	9355.50	-.03
MOBILITY_1	181.05	148.96	.012	**8020.00****	-.13
MOBILITY_2	172.94	180.58	.563	9401.50	-.03
oneHARD_1	179.74	154.06	.054	8382.50	-.10
oneHARD_2	179.89	153.47	.046	**8340.50****	-.11
twoHARD_1	176.06	168.42	.490	9401.50	-.04
twoHARD_2	174.53	174.38	.991	9825.00	.00
JOB_1	177.34	163.44	.298	9048.00	-.06
JOB_2	180.25	152.06	.027	**8240.50****	-.12

***Significant at the 5 percent level, ****sig at 1 percent level in the Mann Whitney U test*

Variables B3, B4 and INFOR which test the information levels in the aspects of sufficiency, accuracy, simplicity, and overall information levels all possessed higher mean ranks in the PENSION group. This confirms that employees under the PENSION group possessed higher information than their EPF counterparts. Next, it is somewhat surprising to learn that the PENSION employees agree that they receive vast information, but practicality the EPF employees are more knowledgeable in understanding the Malaysian retirement provision. Despite having lots of information, employees appeared to fail to apply it in their decisions. The findings are consistent with the literature which suggested that DC choosers are more knowledgeable. Brown and Weisbenner (2007) also found that individuals who were most likely to be financially sophisticated were most likely to choose the DC scheme. Regarding the dissemination of information, this finding is also consistent with the literature which suggested that giving educational retirement related seminars generally led to disappointing results. For example, Benartzi and Thaler (2007) and Duflo and Saez (2002) confirmed that employees often left these seminars feeling excited about saving more, but then failed to implement it, indicating a small effect on saving for retirement purposes. Choi et al. (2001, 2004) also argued that everyone at the seminar showed an interest in saving more, but only 14 percent actually joined the savings plan, which is not much better than the 7 percent of employees who did not attend seminar but still joined the savings plan.

These findings also serve as an early indication to support the application of BRT in this study. Here, knowledge is bounded for the Malaysian public universities' employees. Information might have been given to them, yet they still failed to use it accordingly. Previous literature is also supportive of the finding. Arthur (2003) cited that individuals possessed relatively poor knowledge of their likely future pension income, which is contrary to RCT. Benartzi and Thaler (2007) also indicated that saving for retirement is a difficult decision, and most employees have little training in making the relevant decisions.

The overall results confirmed that employees in PENSION and EPF schemes **could be differentiated** by their knowledge levels of the compulsory retirement system choice.

2. $H_{1,2}$: **Demographic Factors (Traditional and Extended)** influence the choice of compulsory retirement plans.

   The traditional and extended demographic variables include all basic and further demographic variables related to work setting, history and retirement information and spouse details. The construct was measured using 29 variables under the last section (Demographic Characteristics) in the questionnaire.

   The results indicate that many demographic variables are found to be significantly different in PENSION versus EPF scheme choice. The 12 significant variables are D1, D4, D5, D6, D7, New_D11, New_D12, New_D13, D14, AcademicC, D20 and D21. The Z-statistics are all negative for all demographics. The *r* values lie between $-0.26 < r < -0.11$, an indicator of a medium size effect.

   Again, the medians, mean ranks and significant results reveal important findings. It shows that higher mean ranks are reported on significant items of D1, D4, D5, D6, D7, New_D11, D14, AcademicC, D20 and D21 under the EPF group. At the other extreme, higher mean ranks are shown on significant items of New_D12 and New_D13 under the PENSION group. There are ten demographic variables that differentiate employees choosing an EPF scheme. Employees who are "*female, of Malay race, embracing the Muslim religion, urban residents, have higher educational levels, older when first appointed as a civil servant, had worked with many different employers, have higher levels of individual and family incomes and academic"* are all predictors for choosing the EPF scheme. All these demographic variables indicate specific employee characteristics that favour the EPF against the PENSION scheme. It is expected that "marital status" may also be influential. In most situations, where an employee has a spouse who already has a retirement scheme (such as PENSION scheme), the employee will choose the EPF scheme. Husband and wife seem to complement their retirement schemes (DB versus DC). Another indirect suggestion reveals that there is a negative tendency for employees under EPF to work temporarily in the government sector (or in the same institutions). This tendency might have some kind of relationship with another significant item, residency. Here, it seems that the EPF choice is more pertinent to those civil servants working in the city area.

On the contrary, the results show 2 demographic variables which can be used to differentiate employees whose chose the PENSION scheme. There are items New_D12 (length in the university) and New_D13 (length in the civil service) which record higher mean ranks in the PENSION group. This finding confirms that those employees who are predicted to choose PENSION scheme are those who have a higher tendency to remain longer in the civil service and in the university. This might be due to the fact that civil servants will lose their PENSION scheme benefits if they fail to complete a specific number of years service in the government sector. The benefits could also be jeopardised if an employee is charged with certain incidents. This is in accordance with the act (Article 147) which states "Pension, gratuity or other pension benefit granted under pension law is not an absolute right of an officer. An officer must fulfil all the terms stipulated in the pension laws to be eligible for pension benefits" (Public Service Department, 2009). The implication from this act is that if an officer has chosen PENSION scheme and quits early or is charged of discipline breaches or criminals laws, then he or she will lose the right for all pension benefits. This situation would not happen to EPF participants.

Papke (2004) similarly confirmed that DC is preferred by employees with short tenure, younger, have dual income, and dual pension households. On the contrary, DB is preferred by older employees with longer tenure. This is due to the rationale of DB calculations, where it is based on "final-salary" in the formulas for calculating the DB scheme benefits. Dulebohn et al. (2000) also reported that an additional year of service has a strong negative effect on choosing a DC scheme but a positive effect on DB schemes.

Another finding is attributed to variable D7 (educational level) and AcademicC (Academic category). The mean ranks show that having a higher educational level and belonging to the academic category give a higher probability of employees choosing EPF instead of PENSION schemes. Additionally, the results confirmed the highest significant value at p=0.000 on both of them choosing retirement schemes. It is expected given that those with higher educational levels are normally associated with academic jobs such as professor or similar.

The overall results confirm that employees in PENSION and EPF schemes **could be differentiated** by the demographic variables of their compulsory scheme choices.

3. $H_{1,3}$: **Retirement Income Sources** influence the choice of compulsory retirement plans.

   This construct was measured using 12 variables; first by 10 items from the questionnaire (in section 3A) and second, 2 factors/components (INCOME_1 and INCOME_2) which were generated from the factor analysis. Surprisingly, none of the variables measuring retirement income are significant; neither under "items" nor under the "factors" category.

   The overall results confirm that employees in PENSION and EPF schemes **could not be differentiated** in their retirement income sources. Although this contradicts the literatures, it could be associated with a lack of awareness and needs concerning the task of setting-up their own retirement income sources, especially those working in government agencies. The regression results from Blank (1999) suggested that workers with a DB scheme appeared to have more retirement income sources than those who either had no pension or had DC schemes with generally insufficient individual savings. This might be due to the notion that civil servants generally assumed that their future retirement income streams are safe and well-protected by the government. This could also strengthen the idea that employees perceive that the burden of providing secure retirement incomes lies with the government, instead of the workers themselves. This is also supported by Dan (2004, p. 189) that in terms of worker attitudes, the government workers could be easily differentiated by having more confidence in their future retirement benefits compared to non-government workers.

   Furthermore, it might be difficult to arrive at a conclusion due to the limitations of the bi-variate analysis. Thus, it is possible to have different results for the same tested variables in the multivariate analysis (logistic regression).

4. $H_{1,4}$: **Voluntary Saving Perceptions** is the factor that influences the choice of compulsory retirement plans.

   This construct is measured by 6 variables; 13 items from the questionnaire (8 items in section 3B plus A1c, S2B4, S3A2, S4B6, S4C3) and 3 factors (VOLUNTARY_1, VOLUNTARY_2, VOLUNTARY_3) generated from the factor analysis. No variable is found significant out of all 11 variables tested. Similarly, like the

previous hypothesis, no evidence of significance can be detected, neither under "items" nor "factors" category.

The overall results confirm that employees in PENSION and EPF schemes **could not be differentiated** by their voluntary saving perceptions of the compulsory retirement systems choice. It is quite difficult to explain the reasons for this due to the nature of the bi-variate analysis. Again, it is possible to have different results in the logistic regression.

5. $H_{1,5}$: **Job Related Aspects (Job Nature & Job Satisfaction)** influence the choice of compulsory retirement plans.

   The Job Related Aspects construct is measured by 19 variables, 17 items from the questionnaire (section 5A and 5B) and 2 factors (JOB_1 and JOB_2) generated from the factor analysis. The results indicate that several job related characteristic variables are found to be significantly different in choice of PENSION versus EPF schemes. The 4 significant variables are S5B3, S5B7, S5A3, and JOB_2. Variable S5A3 and Job_2 refer to the same item. The Z-statistics are all negative with *r* values between $-0.12 < r < -0.11$; an indication that Job Related Aspects have slightly more than a small-size effect.

   The medians, mean ranks and significant results reveal important findings. Higher mean rank is reported on all significant items under the PENSION group. An employee who is satisfied with "*their retirement benefits arrangement offer, with leisure from work; believe that a younger worker has a promotion advantage against the old-age group"* tends to choose PENSION. A previous study that explained the choice of DC (EPF) in this situation is Luchak and Gellatly (2002, p. 145) who stated "contrary to rational economic expectations, job satisfaction is found to be negatively related to pension schemes".

   There are probably a number of contributing reasons for this situation. It could be said that an employee who is satisfied and feels more comfortable working in the civil service, will end up choosing the PENSION scheme. This is also an early

signal that this group will have a higher tendency to remain as civil servants and (or) work at the same institutions for the rest of his or her working life.

In conclusion, the results confirm that employees in PENSION and EPF schemes **could be differentiated** by their Job Related Aspect variables on their compulsory retirement scheme choices.

6. $H_{1,6}$: **Mobility** influences the choice of compulsory retirement plans.

This construct is measured through 10 variables, initially by 8 items from the questionnaire (in section 4A) and followed by 2 factors (MOBILITY_1 and MOBILITY_2) generated from the factor analysis. The results indicate that several Mobility variables are found to be significantly different in choice of PENSION versus EPF schemes. The 4 significant variables are items S4A1, S4A2, S4A10 and factor MOBILITY_1. The Z-statistics are all negative and the *r* values are between -0.18 < *r* <- 0.13, approaching the medium size effect.

Specifically, the medians, mean ranks and significant results reveal important findings. Higher mean ranks are recorded for all the significant variables in the PENSION group. Employees who "*have security working as civil servants; who perceive PENSION scheme as a special privilege; who intend to work in the public sector until retirement; and who find extra attractions in the public sector compared to private sector";* tend to choose PENSION.

In explaining the results, it could be assumed that an employee who intends to attain long-term security working in the civil service will end-up choosing and appreciating the PENSION scheme. In addition, among the Malaysian public sector employees, PENSION is more popular compared to the EPF scheme. This is consistent with other studies that suggest the DB plan is more favourable compared to a DC plan. This is supported by the literature, for example Brown and Weisbenner (2007) who acknowledged that the DC scheme was inferior to the DB scheme. Milevsky and Promislow (2004) also found that the DB scheme still dominated employees' decisions if they are asked to switch between DB and DC schemes.

Additionally, these findings can support the notion that someone might be attracted to work in the government sector (as a civil servant) in order to have the chance to enrol in the PENSION scheme. Thus, it is also an indication that the employees who chose EPF might have less interest in long, continued service in the government sector. This is not too surprising, since many previous studies have also obtained similar findings; for example Papke (2004) provided details of participants' choice on the Michigan State Employees Retirement System. He confirmed that DC is preferred by mobile individuals, those with short tenure, are younger and who prefer more flexibility. DB is preferred by older workers and those with greater tenure.

In conclusion, the results confirm that employees in PENSION and EPF schemes **could be differentiated** by their Mobility variables on their compulsory retirement scheme choices.

7. $H_{1,7:}$ **Extension of working years Perceptions** influence the choice of compulsory retirement plans.

   This construct is measured using 15 variables; 13 items from the questionnaire (in section 3D) and 2 factors (AGE_1 and AGE_2) generated from the factor analysis. The results indicate that few variables are found to be significantly different in the choice of PENSION versus EPF schemes. The 3 significant variables are Items: S3D10, S3D11 and S3D12. None are significant amongst the factor analysis components. The Z-statistics are all negative and the *r* values are between $-0.15 < r < -0.11$ indicating that the construct approaches the medium size effect.

   Specifically, the medians, mean ranks and significant results reveal important findings. Higher mean ranks are reported on all significant variables in the EPF group. Employees who *"prefer having more chance to choose retirement age; who prefer later date (time) to choose retirement age; and who believe there is more opportunity to be hired after retirement because has attained higher level of skills*[28] *and experiences*"; all tend to choose the EPF scheme.

[28] More chance to continue employment after the retirement age because the employee has attained a specific level of qualification. For example a Professor who is called to serve again in universities due to his/her expertise or experience.

The main finding suggests that employees under the EPF scheme intend to have several different views on retirement age or extension of working years. Specifically, the results hint that employees who hesitate or are unsatisfied in their decision of retirement scheme and retirement age most probably belong to an EPF's group. This group also has a higher tendency to argue about the retirement provision for civil servants. Thus, critics are expected to come from the EPF group who regard the Malaysian retirement system as unstable and constantly-changing.

Another important point is the indication that some of the public sector employees may have already started to see the possibility of extending their work beyond retirement age. In particular, the EPF's group believes that they are still capable of working competitively after their retirement age. At the same time, they also believe that the retirement age of 56 needs to be revised or updated like other neighbouring countries such as Singapore.

The previous studies have shown that choosing a retirement age itself is a very personal decision. Lozier and Dooris (1991) indicated that some factors could be controlled by the institutions and some could not such as employee and spouse health status, and the need for more personal time. Loretto and White (2006) also revealed that many employees expected to continue working, but various constraints hampered those expectations, especially over-rigidity in employers' approaches. The study confirmed the complex array of factors - personal, financial and institutional - which interact to influence older employees' expectations of work and retirement. It also highlighted the importance of choice, or lack of choice, in influencing individuals' preferences.

Blundell et al. (2002) found a relationship between retirement age and the different retirement scheme characteristics, as well as other socioeconomic factors. French (2005) established that the tax structure of the social security system/ retirement schemes are the key determinants of the high observed job exit rates at ages 62 and 65. Mitchell and Fields (1984) also concluded that older employees' income opportunities differ, depending on their retirement system rules, which have a powerful influence on their retirement age patterns. They also showed that retirement age differences are partly due to differences in worker preferences and

income opportunities. Specifically, Foster (1998) confirmed that factors such as retirement age and length of service do influence DB participation via employer-provided retirement schemes. Elsewhere, Manchester (2007) found that individuals who opt for a DB plan expect to retire sixteen months earlier than those who choose a DC plan.

Dorn and Sousa-Poza (2005) also indicated that generous early retirement provisions of the social security system do not only make voluntary early retirement more attractive for individuals, but also induce employers to encourage more employees to retire early. In particular, employers seem to use early retirement to reduce staffing during economic recessions and as a means to evade employment protection legislation. Using logistic regression, Szinovacz and Davey (2005) found that nearly one-third of older workers perceived their retirement as forced. Such forced retirement reflects restricted choice through health limitations, job displacement, and care obligations. Other predictors include marital status, race, assets, benefits, job tenure, and off-time (free/leisure time) retirement. On the other hand, Lozier and Dooris (1991) attempted to explore the implications of different retirement ages and under different retirement plans. Although their data do not establish a direct cause and effect relationship, their results do suggest some interactive effects between type of retirement plan and the retirement decision. However, it is not clear that in all cases early retirement is more likely under one type of plan than the other (Lozier and Dooris, 1991; p. 104). Thus, findings from this study are similar to the previous literature which supports a relationship between retirement age and choice of retirement scheme.

In conclusion, the results confirm that employees in PENSION and EPF schemes **could be differentiated** by the Extension of working years Perceptions variable on their compulsory retirement scheme choices.

8. $H_{1,8:}$ **Health Status Perceptions** influence the choice of compulsory retirement plans.

   This construct is measured through 15 variables, 12 items (9 in the section 3C plus S2B10, S2B11, S2B12) from the questionnaire and 3 generated factors

(HEALTH_1, HEALTH_2, HEALTH_3) from the factor analysis. The results indicated that only a few variables are found to be significantly different in choice of PENSION versus EPF schemes. The 2 significant variables are on items; S3C7 and on factor HEALTH_1. The Z-statistics are negative and the *r* values are between -0.16 < *r* <-0.14, indicating that the construct approaches a medium size effect.

Specifically, the medians, mean ranks and significant results reveal important findings. It is found that higher mean rank is recorded on item S3C7 in the EPF group. On the contrary, higher mean rank is recorded on the HEALTH_1 variable in the PENSION group. It could be concluded that health perceptions are indeed a predictor for choice of retirement schemes.

Thus, the results indicate two important points. First, there is evidence that employees under the EPF group tend to argue about the privilege of free medical treatment, which is only available to the PENSION group. It is a logical argument due to the fact that this incentive is provided exclusively for employees who choose the PENSION scheme. Second, it also confirms that employees in the PENSION scheme have a higher satisfaction level with health care providers in Malaysia. The satisfaction is related to having an additional source for bearing health costs, where this is available solely to the pensioners under the PENSION scheme. This privilege is withdrawn once employees decide to opt for EPF instead of the PENSION scheme. As a whole, the PENSION scheme has greater advantages. This is an important indication that employees perceive that they could guarantee their well being by selecting PENSION as compared to the EPF scheme. The task of ensuring healthy well being during retirement is treated as a very serious matter, which cannot be ignored by employees. Wong (2006) emphasised health-care for the elderly as one of the three urgent issues to deal with in Malaysia. This suggests that employee decisions are highly influenced by health status considerations.

Consequently, the results confirm that employees in PENSION and EPF schemes **could be differentiated** by the Health Status Perceptions variable on their compulsory scheme choices.

9. $H_{1,9:}$ **Plan's Features Preference** influences the choice of compulsory retirement plans.

   The Plan's Features Preference construct is measured through 19 variables; 16 items (in section 2A) from the questionnaire and then 3 generated factors (FEATURE_1, FEATURE_2, FEATURE_3) from the factor analysis. Many variables are found to be significantly different in the choice of PENSION versus EPF scheme. The 7 significant variables are on items; S2Aa1 (EPF: Lump Sum payment +), S2Aa4 (EPF: Tax relief+), S2Ab1 (PENSION: Fixed-life long monthly pension +), S2Ab4 (PENSION: dependent pension+), S2Ab5 (PENSION: Free medical treatment+) and S2Ac6 (EPF & PENSION: Golden Handshake Award +) and on factor FEATURE_1 (PENSION preferences). The notation of (+) at the end of the label indicates that the variable has a positive feature preference. All significant variables have negative Z-statistics with r values between $-0.20 < r < -0.11$, indicating this construct has up to a medium size effect.

   The medians, mean ranks and significant results reveal important findings. It is found that higher mean rank is reported on items S2Aa1, S2Aa4 in the EPF group. Additionally, higher mean rank is recorded on items S2Ab1, S2Ab4, S2Ac6 in the PENSION group. It could be concluded that Plan Feature Preferences is indeed a predictor for choice of compulsory retirement schemes.

   According to the plan features in this compulsory "employer-provided retirement scheme", there are four important findings. First, it predicts that employees choose EPF in order to benefit from either the "lump-sum" type of payment and (or) the "tax-relief" advantage features. The result is similar to Huberman et al. (2007) who stated that tax incentives are a stronger motivation for employees to participate in DC schemes. On the other hand, it disagrees with Foster (1998) who confirmed that investment earning affected DC participation. Second, employees chose PENSION to enjoy the benefits of either "Fixed-life long regular monthly payments" during retirement and (or) lifelong "free-medical" treatment at government hospitals for the rest of their life. The third point is that the "Golden-Handshake cash-award" is also an important feature in influencing employees' decisions to opt for the PENSION scheme. Although the "Golden-Handshake cash-award" is available in both schemes, employees need to remain as government servants until their mandatory retirement

age. This makes them prefer to choose PENSION due to the same requirement (work in the government sector until retirement) to be eligible for PENSION scheme benefits. Finally, five plan features which are found significant (Lump-Sum; Tax relief, Fixed life-long monthly pension, dependents pension and Free medical-treatment) are the most popular features in choosing a specific retirement scheme, if compared with other features.

The results confirm that employees in PENSION and EPF schemes **could be differentiated** by Plan's feature Preference variable on compulsory retirement choices.

10. $H_{1,10:}$ **Soft Constraints Perceptions (Peer & Family Effect and Realistic Level)** influence the choice of compulsory retirement plans.

    This construct is measured using 14 variables, 12 items (in section 1C, question B1b and S2Ac5) from the questionnaire and 2 factors (SOFT_1, SOFT_2) generated from the factor analysis. There are only a few variables which are found to be significantly-different in choice of PENSION versus EPF schemes. These significant variables are all on Items; C6 and C8. All components from the factor analysis are found insignificant. The Z-statistics are negative with *r* values between $-0.22 < r < -0.16$; showing this construct produced up to a medium size effect.

    Important findings could also be derived from the medians, mean ranks and significant results. It is found that higher mean rank is recorded on item C6 (Behave: Spouse or family influence) in the EPF group. Subsequently, higher mean rank is recorded on item C8 (Peers: Collective choice influence) in the PENSION group. It could be concluded that Soft Constraints is indeed a predictor for the choice of retirement scheme.

    Accordingly, the results indicate two important points. Firstly, spouse and (or) family have a great influence on an employee decision's to choose the EPF scheme. There are a number of contributing factors to the situation; one being that many civil servants belong to the married category and their retirement schemes might be complementing one another. For example, if the husband has already chosen the

PENSION scheme, the wife may choose the EPF scheme instead. This is because the wife is still eligible for PENSION benefit such as free medical treatment in government hospitals under the husband's scheme as his dependent. Furthermore, the wife could use other advantages in her EPF scheme at the same time such as the lump-sum feature to start a family business after retirement. This situation is further supported by the sample descriptive statistics in chapter 6 (Refer to **Table 6.10**: Family information) which recorded; 76 percent of married respondents (more than 60% in PENSION) as opposed to 22 percent unmarried (only 18% in PENSION), 85 percent (66.8% in PENSION and 18.6% in EPF) of working spouses and 56 percent (43.4% in PENSION and 12.0% in EPF) of spouses also work as civil servants. Besides, 64 percent (51.6% in PENSION and 12.4% in EPF) of spouses own a compulsory retirement scheme arrangement and 67 percent (52.7% in PENSION and 14.5% in EPF) of the respondents admit that they are entitled to receive benefits from their spouses' retirement plan.

Secondly, an employee tends to choose the PENSION scheme simply because of peer group influence. This might be due to its popularity. Earlier descriptive statistics also support this notion which reported that almost 80 percent of respondents opt for PENSION as it is the one chosen by most employees.

This finding further supports the previous literature on peer-effects. Manski (1993) and Conslik (1980) provided detailed analysis on peer effects or "endogenous social effects", while specifically, Duflo and Saez (2003) examined the peer effects in retirement savings decisions within a large university. Benartzi and Thaler (2007) admitted the difficulty in creating savings for retirement with most employees having little training to assist in making relevant decisions. Thus, an individual's might become relatively-passive, slow to join advantageous schemes, make infrequent changes and even adopt naive strategies in making their decisions. Conslik (1980) and Duflo and Saez (2003) also showed that if decision making is costly or difficult, the likely or optimal approach is to just imitate the behaviour of other individuals in the peer group. Brown and Weisbenner (2007) also revealed in their study that a majority of an individual's failed to make active decisions and end-up defaulted into DB schemes. These findings suggest that peer pressure/social norms lead to "conformity" in behaviour, a concept supported by this study. Accordingly, this study has suggested the existence of colleagues' influences on an

individual's own choice with its significant items of C8 (decision is influenced by collective choice from peers) and factor SOFT_2 (higher peer influence level). Furthermore, 80 percent PENSION choosers as compared to 20 percent EPF choosers suggest the popularity of PENSION. Indirectly, this is also an indication of simplification in the decision making process, in accordance with of BRT theory.

It could be concluded that employees in PENSION and EPF schemes **could be differentiated** by the Soft Constraints perceptions variable on their compulsory retirement scheme choices.

11. $H_{1,11:}$ **Hard Constraints1 Perceptions (Risk and Benefits Considerations)** influence the choice of compulsory retirement plans.

The Hard Constraints1 construct is measured by 16 variables, 14 items (S4A: 4,5,6,7,8, 9 and S4B: 1,2,3,4,5,6,7,8) from the questionnaire and 2 generated factors (oneHARD_1, oneHARD_2) from the factor analysis. Many variables are found significantly different in choice of PENSION versus EPF schemes. Six significant variables are found on items S4A6 (Guaranteed retirement benefits are my top priority), S4A7 (the pensions provide more monetary compensation), S4B2 (The choice gives greater satisfaction), S4B3 (Given chance Prefer to have chosen other scheme type), S4B5 (Have chosen most appropriate scheme for them) and on factor oneHARD_2 (Risk Considerations). All have negative Z-statistics with *r* values ranging between $-0.27 < r < -0.11$. This shows that the Hard Constraints1 construct approaches a medium size effect.

Again, medians, mean ranks and significant results reveal important findings. A higher mean rank is recorded on only one item i.e. S4B3 in the EPF group. Subsequently, higher mean ranks are recorded on all other significant variables in the PENSION group. This is an indication of various perceptions which could influence decisions to choose the PENSION as opposed to EPF scheme. Additionally, an employee who looks for an assured retirement benefit will go for the PENSION scheme, believing that it gives greater monetary compensation and satisfaction than EPF. On the other hand, it is difficult to say the same with the EPF scheme predictors. However, there is strong evidence that an EPF chooser could be

easily seen as not being satisfied with their decision and hopes to switch to PENSION instead.

These findings accord with other studies such as Dulebohn et al. (2000). They confirmed that risk preference, and benefits determination were among the key distinguishing variables which influence employees decisions in choosing between DB and DC schemes.

Items S4A7 and S4B3 reported the highest significant level at p=0.000. This demonstrated strong evidence that an employee who chooses the PENSION scheme believes that the scheme will give more monetary compensation than EPF. On the other hand, an employee who has already joined EPF would like to choose PENSION if allowed to do so (option to re-opt). This could signal dissatisfaction or regret among the EPF holders with their decision to enrol in the scheme.

The results confirmed that employees in PENSION and EPF schemes **could be differentiated** by the Hard Constraints1 perceptions variable on their compulsory retirement scheme choices.

12. $H_{1,12:}$ **Hard Constraints2 Perceptions (Scheme Appraisal)** influence the choice of compulsory retirement plans.

    This construct is measured using 14 variables, 12 items (in section 4C) from the questionnaire and 2 factors (twoHARD_1 and twoHARD_2) generated from the factor analysis. A few variables are found to be significantly different in the choice of PENSION versus EPF schemes. Four significant variables are found on items S4C2 (quality of PENSION is excellent), S4C4 (favour more than one time final decision), S4C7 (Prefer higher tax relief given to EPF/premium payments) and S4C9 (aware of the proposed new scheme-FPB). All factor analysis components were to be found insignificant. The Z-statistics are negative with *r* values ranging between $-0.17 < r < -0.13$; thus the construct approaches a medium size effect.

    The medians, mean ranks and significant results also reveal important findings. A higher mean rank is recorded on items S4C4 and S4C7 in the EPF group. On the

contrary, higher mean ranks are recorded on items S4C2 and S4C9 in the PENSION group. In explaining the results, first it could be said that employees under the EPF scheme demand to have more than one-final irrevocable decision in choosing a compulsory scheme (PENSION versus EPF) and demand to enjoy more tax relief for EPF contributions and insurance premium payments. Again this is evidence suggesting dissatisfaction of EPF holders with their chosen scheme. This finding is similar to the previous finding (as in hypothesis $H_{1,11}$) which also confirms that employees under the EPF scheme wish for another privilege to re-choose the scheme again. Secondly, it reveals that employees who appraised the PENSION scheme as an excellent scheme are likely to enrol in the scheme. However, it is interesting to note that this group seems to be less aware of the new proposed scheme (FPB) introduced by the government. Indirectly, this indicates that a new type of retirement plan may be less tempting for the PENSION chooser to enrol in.

Encouragingly, these findings could be related to RCT or utility theory. According to expected utility theory on how people make choice (Von Neumann and Morgenstern, 1947), individuals will go through all available alternatives before selecting the one that they judge to be the best. This theory acts as a foundation with the assumption that individuals have stable and coherent preferences. However, from the above findings, it seems that PENSION predictors are more predictable; indicating more rational decision making. On the other hand the EPF predictors are debatable; indicating violation of utility theory. Thus, Simon's BRT is arguably more appropriate in explaining the choice behaviour.

In conclusion, the results confirm that employees in PENSION and EPF schemes **could be differentiated** by the Hard Constraints2 Perceptions construct on their compulsory retirement choices.

8.3.2 Voluntary Retirement Schemes Ownership Choice

Discussions of the Mann-Whitney U results on each factor expected to be significant in choosing voluntary retirement scheme ownership are detailed below (refer to **Table 8.3** and **Table 8.4**):

1. $H_{1,1}$: **Knowledge Level** influences the choice of voluntary retirement plans.

   The results show that many knowledge level variables are found to be significantly different in their medians. This means employees in the OWN and NOT-OWN groups seem to differ in their knowledge level to make voluntary retirement plan ownership choice. There are 16 altogether from items A1a, A1c, A2, A3, A6, A7 under "knowledge", B1d, B3, B5 under "information", Idont_Aa5 , Idont_Ab1, Idont_Ac1 , Idont_Ac2 , Idont_Ac4 , Idont_Ac5 , Idont_Ac6 under "No knowledge on plan features", and 4 factors (KNOW_1, INFOR, IDONT_1, IDONT_2) generated from the factor analysis. The Z-statistics are all negative with *r* values ranging between $-0.16 < r < -0.12$, indicating that knowledge levels presented up to a medium size effect.

   Higher mean ranks are recorded for all 20 significant items on the OWN group only. This shows that employees who have a voluntary retirement scheme are more knowledgeable and more equipped with information than those who do not have it. Hence, knowledge and information are significant factors influencing voluntary retirement scheme ownership. In other words, employees who have more knowledge on the different types and effects of compulsory and voluntary retirement schemes and are of more information seeking nature all were significant predictors to OWN the voluntary retirement schemes. This provides evidence that participation in voluntary retirement schemes might be higher if employees are offered retirement education; as mentioned in the previous literatures.

   The overall results confirm that employees in the OWN and NOT-OWN groups **could be differentiated** by their knowledge levels of the voluntary retirement scheme ownership choices.

Table 8.3: Medians for Voluntary Scheme

ITEMS	MEDIAN		
Variables	Voluntary scheme		
	NOT-OWN	OWN	TOTAL
	n=216	n=132	N=348
A1a	3.00	3.00	3.00
A1c	3.00	3.00	3.00
A2	3.00	3.00	3.00
A3	3.00	4.00	3.00
A6	3.00	3.00	3.00
A7	3.00	4.00	3.00
B1d	4.00	4.00	4.00
B3	3.00	3.00	3.00
B5	3.00	3.00	3.00
Idont_Aa5	1.00	1.00	1.00
Idont_Ab1	1.00	1.00	1.00
Idont_Ac1	1.00	1.00	1.00
Idont_Ac2	1.00	1.00	1.00
Idont_Ac4	1.00	1.00	1.00
Idont_Ac5	1.00	1.00	1.00
Idont_Ac6	1.00	1.00	1.00
S2Aa4	3.00	4.00	4.00
S2Aa5	3.00	4.00	3.00
S2Ab1	5.00	5.00	5.00
S2Ac4	4.00	4.00	4.00
S2Ac6	4.00	4.00	4.00
S3A2	3.00	4.00	4.00
S3A4	3.00	4.00	3.00

ITEMS	MEDIAN		
Variables	Voluntary scheme		
	NOT-OWN	OWN	TOTAL
	n=216	n=132	N=348
S3A7	4.00	4.00	4.00
S3A10	3.00	4.00	4.00
S3B1	3.00	4.00	4.00
S3B2	4.00	4.00	4.00
S3B3	4.00	4.00	4.00
S3B4	4.00	4.00	4.00
S3B8	3.00	3.00	3.00
S3C4	4.00	4.00	4.00
S3C6	4.00	4.00	4.00
S4A3	3.00	4.00	4.00
S4A5	4.00	4.00	4.00
S4A8	4.00	4.00	4.00
S4B6	3.00	3.00	3.00
S4B7	3.00	4.00	4.00
S4B8	3.00	4.00	3.00
S4C3	3.00	3.00	3.00
S4C7	3.00	4.00	4.00
S4C8	3.00	3.00	3.00
S4C9b	3.00	3.00	3.00
S5B3	4.00	4.00	4.00
S5B9	4.00	4.00	4.00
S5B12	4.00	4.00	4.00
S5B13	4.00	4.00	4.00

Table 8.3: Median for Voluntary Scheme (continued)

DEMOGRAPHIC

Variables	MEDIAN		
	Voluntary scheme		
	NOT-OWN	OWN	TOTAL
	n=216	n=132	N=348
Demographic:			
D4	1.00	1.00	1.00
D5	1.00	1.00	1.00
D7	2.00	3.00	2.00
D8	2.00	2.00	2.00
D14	1.00	1.00	1.00
AcademicC	.00	1.00	.00
BusMgtCat	.00	.00	.00
New_D19	2.00	3.00	2.00
D20	3.00	4.00	3.00
D21	3.00	3.00	3.00
D28	2.00	1.00	2.00
D29	1.00	1.00	1.00
Factors:			
KNOW_1	3.25	3.50	3.25
KNOW_2	3.00	3.00	3.00
INFOR	3.00	3.25	3.00
IDONT_1	1.00	1.00	1.00
IDONT_2	1.00	1.00	1.00
IDONT_3	1.00	1.00	1.00
SOFT_1	4.00	4.00	4.00
SOFT_2	3.00	3.00	3.00

FACTORS

Variables	MEDIAN		
	Voluntary scheme		
	NOT-OWN	OWN	TOTAL
	n=216	n=132	N=348
FEATURE_1	4.20	4.40	4.40
FEATURE_2	3.50	3.75	3.75
FEATURE_3	3.50	3.75	3.75
INCOME_1	3.25	3.50	3.50
INCOME_2	3.00	3.50	3.00
VOLUNTARY_1	3.67	4.00	3.83
VOLUNTARY_2	3.00	3.00	3.00
VOLUNTARY_3	3.00	3.50	3.00
HEALTH_1	3.67	4.00	4.00
HEALTH_2	3.67	4.00	3.67
HEALTH_3	5.00	5.00	5.00
AGE_1	3.33	3.33	3.33
AGE_2	3.50	3.50	3.50
MOBILITY_1	4.00	4.50	4.00
MOBILITY_2	4.00	4.00	4.00
oneHARD_1	3.40	3.40	3.40
oneHARD_2	3.88	4.00	4.00
twoHARD_1	3.00	3.00	3.00
twoHARD_2	3.17	3.33	3.33
JOB_1	3.56	3.67	3.67
JOB_2	3.00	3.00	3.00

Table 8.4: Mann-Whitney U Results on Voluntary Schemes

ITEMS

Labels	Mean rank NOT OWN	Mean rank OWN	*p*	Mann Whitney U	$\bar{=}$
A1a	164.89	190.22	.015	**12181.00****	-.13
A1c	164.34	191.13	.011	**12061.00****	-.14
A2	162.69	193.83	.003	**11705.00****	-.16
A3	163.97	191.72	.008	**11982.50****	-.14
A6	165.29	189.56	.024	**12267.50****	-.12
A7	162.16	194.70	.003	**11590.00****	-.16
B1d	166.54	187.53	.045	**12536.50****	-.11
B3	165.41	189.38	.025	**12291.50****	-.12
B5	164.23	191.30	.011	**12038.00****	-.14
Idont_Aa5	168.00	185.14	.030	**12852.00****	-.12
Idont_Ab1	170.72	180.68	.011	**13440.00****	-.14
Idont_Ac1	169.03	183.45	.018	**13074.00****	-.13
Idont_Ac2	169.11	183.32	.026	**13092.00****	-.12
Idont_Ac4	168.42	184.45	.010	**12942.00****	-.14
Idont_Ac5	169.75	182.27	.028	**13230.00****	-.12
Idont_Ac6	169.78	182.23	.014	**13236.00****	-.13
S2Aa4	164.69	190.56	.013	**12136.00****	-.13
S2Aa5	163.55	192.42	.006	**11890.00****	-.15
S2Ab1	166.81	187.08	.042	**12595.50****	-.11
S2Ac4	166.03	188.35	.032	**12427.50****	-.12
S2Ac6	166.53	187.55	.044	**12533.50****	-.11
S3A2	155.82	205.07	.000	**10220.50*****	-.25
S3A4	166.26	187.98	.042	**12476.00****	-.11
S3A7	166.28	187.94	.039	**12481.50****	-.11
S3A10	159.94	198.32	.000	**11112.00*****	-.19
S3B1	149.70	215.08	.000	**8899.00*****	-.33
S3B2	163.65	192.25	.007	**11913.00****	-.14
S3B3	165.63	189.02	.023	**12340.00****	-.12
S3B4	166.17	188.13	.037	**12456.50****	-.11
S3B8	162.44	194.23	.003	**11651.50****	-.16
S3C4	156.24	204.39	.000	**10311.00*****	-.24
S3C6	160.57	197.30	.001	**11247.00*****	-.19
S4A3	165.00	190.05	.019	**12204.00****	-.13
S4A5	165.02	190.01	.016	**12209.00****	-.13
S4A8	163.03	193.26	.004	**11779.50****	-.15
S4B6	163.80	192.01	.007	**11945.00****	-.14
S4B7	165.69	188.91	.029	**12354.00****	-.12
S4B8	163.31	192.80	.005	**11840.00****	-.15
S4C3	161.99	194.97	.001	**11554.00*****	-.18
S4C7	162.10	194.79	.002	**11578.00****	-.17
S4C8	164.40	191.02	.011	**12075.00****	-.14
S4C9b	168.45	184.39	.050	**12950.00****	-.10
S5B3	166.23	188.04	.037	**12469.00****	-.11
S5B9	164.39	191.05	.011	**12071.50****	-.14
S5B12	164.23	191.30	.010	**12038.50****	-.14
S5B13	165.86	188.63	.028	**12390.50****	-.12

***Significant at the 5 percent level, ****sig at 1 percent level in the Mann Whitney U test*
Note1: Only significant variables are reported

Table 8.4: Mann-Whitney U Results on VOLUNTARY Schemes (continued)

DEMOGRAPHIC

Variables	Mean rank NOT OWN	Mean rank OWN	*p*	Mann Whitney U	—
D4	170.91	180.38	.007	**13479.50****	-.14
D5	171.91	178.74	.034	**13696.50****	-.11
D7	160.63	197.20	.001	**11260.00*****	-.19
D8	168.08	185.00	.039	**12869.50****	-.11
D14	165.61	189.05	.026	**12336.00****	-.12
AcademicC	161.28	196.14	.000	**11400.00*****	-.19
BusMgtCat	167.75	185.55	.049	**12798.00****	-.11
New_D19	164.74	190.47	.016	**12148.00****	-.13
D20	160.06	198.14	.000	**11136.00*****	-.19
D21	162.14	194.72	.003	**11587.00****	-.16
D28	155.32	110.53	.000	**6053.00*****	-.29
D29	145.50	126.75	.018	**7837.50****	-.13

FACTORS

Variables	Mean rank NOT OWN	Mean rank OWN	*p*	Mann Whitney U	—
KNOW_1	163.81	191.99	.010	**11947.00****	-.14
KNOW_2	168.08	185.00	.125	12869.50	-.08
INFOR	165.97	188.46	.042	**12413.50****	-.11
IDONT_1	166.17	188.13	.005	**12457.50****	-.15
IDONT_2	167.01	186.75	.029	**12638.50****	-.12
IDONT_3	173.41	176.28	.648	14020.50	-.02
SOFT_1	170.75	180.64	.360	13445.50	-.05
SOFT_2	175.00	173.69	.905	14149.00	-.01
FEATURE_1	167.39	186.14	.084	12720.00	-.09
FEATURE_2	161.57	195.66	.002	**11463.50****	-.17
FEATURE_3	166.46	187.66	.053	12519.50	-.10
INCOME_1	163.06	193.22	.006	**11785.00****	-.15
INCOME_2	168.77	183.87	.167	13019.00	-.07
VOLUNTARY_1	161.54	195.71	.002	**11456.50****	-.17
VOLUNTARY_2	174.47	174.55	.994	14249.00	.00
VOLUNTARY_3	160.06	198.13	.000	**11137.00*****	-.19
HEALTH_1	173.61	175.96	.830	14063.00	-.01
HEALTH_2	171.12	180.03	.417	13526.50	-.04
HEALTH_3	178.15	168.52	.325	13467.00	-.05
AGE_1	175.54	172.80	.804	14031.00	-.01
AGE_2	171.84	178.86	.522	13680.50	-.03
MOBILITY_1	169.39	182.87	.205	13151.50	-.07
MOBILITY_2	167.67	185.68	.100	12780.50	-.09
oneHARD_1	165.23	189.66	.027	**12254.50****	-.12
oneHARD_2	162.41	194.28	.004	**11645.50****	-.16
twoHARD_1	170.49	181.07	.249	13389.00	-.06
twoHARD_2	163.01	193.30	.005	**11774.50****	-.15
JOB_1	167.34	186.22	.089	12709.50	-.09
JOB_2	181.63	162.84	.076	12717.00	-.10

***Significant at the 5 percent level, ****sig at 1 percent level in the Mann Whitney U test*

2. $H_{1,2}$: **Demographic Factors (Traditional and Extended)** influence the choice of voluntary retirement plans.

   The results indicate that many demographic variables are significantly different in the OWN versus NOT-OWN groups. The 12 significant variables are D4, D5, D7, D8, D14, AcademicC, BusMgtCat, New_D19, D20, D21, D28 and D29. The Z-statistics are all negative with *r* values between -0.29 < *r* <- 0.11, indicating that the demographics approach a large size effect.

   Higher mean ranks are recorded for all 10 significant items in the OWN groups, while another 2 items (D28 and D29) are in the NOT-OWN group. Specifically, employees - who are Malays, live in the city, attain higher educational levels, are married, have worked under many different employers, academics, work in business/management faculties, work in larger-sized faculties and earn higher levels of individual and family income - are all significant predictors for the OWN the voluntary retirement schemes. On the contrary, employees who have a spouse that bought his/herself a commercial retirement scheme and those entitled to benefits from his/her spouse's retirement scheme are two significant predictors for NOT-OWN any voluntary retirement scheme.

   This construct triggers two major findings. First, the situation implies that more variables are required by employees in making their decision to buy voluntary scheme. The contributing motivation might be attributable to the fact that owning a voluntary scheme means utilising employees own money. Thus, they will be deliberating thoroughly before deciding to purchase them. This is consistent with the impression that an individual is usually controlled by his/her self-interest and makes economic decisions by rationally evaluating the consequences of different alternatives. Second, it is common for employees who have attained a higher living status, experience, job and education levels to be more interested in buying this additional type of retirement scheme. Third, employees under the NOT-OWN group reveal that they might not be interested in buying any voluntary retirement scheme because of their spouse's situation. This is refers to spouses who have already bought voluntary schemes and employees (D28) who are entitled to enjoy benefits from their spouse's retirement schemes (D29). These two variables are found to be significantly different at p =0.00 and 0.018 respectively. It is a rational decision not

to buy any voluntary scheme for them if they can enjoy the retirement benefits derived from their spouse's scheme. Marital status might also affect the situation: marital status was a significant variable influencing employees to OWN voluntary retirement schemes. Finally, all of these demographic variables give ideas about specific employee characteristics that favour the voluntary scheme.

The overall results confirm that employees in OWN and NOT-OWN groups **could be differentiated** by their demographic variables of voluntary retirement scheme ownership choices.

3. $H_{1,3}$: **Retirement Income Sources** influence the choice of voluntary retirement plans.

   The results indicate that many variables are significantly different in the Choice of OWN versus NOT-OWN groups. Those 5 significant variables are items S3A2 (annuities/insurance policies), S3A4 (spouse), S3A7 (savings account), S3A10 (real estates) and factor INCOME_1 (Basic sources of retirement income). The Z-statistics are all negative with r values ranging between $-0.25 < r < -0.11$, approaching the large sized effect on construct.

   Specifically, higher mean rank is recorded in all 5 significant items under the OWN group. These are predictors influencing the decision to buy voluntary retirement schemes. These findings give an idea that those individuals who possess many sources of retirement incomes will also buy voluntary retirement schemes too. It might also be said that those with more awareness of the different types of "additional non-compulsory" retirement savings will possibly be more interested in buying voluntary retirement schemes using their own money. Additionally, the highest significance at $p = 0.000$ is recorded on items S3A2 and S3A10, which means that both sources (insurance products and real estates) play major roles in voluntary ownership choices.

   The overall results confirm that employees in OWN and NOT-OWN groups **could be differentiated** by their Retirement Income Sources of the voluntary retirement scheme ownership choices.

4. $H_{1,4}$: **Voluntary Saving Perceptions** influence the choice of voluntary retirement plans.

   The results indicate that many variables are significantly different in the choice of OWN versus NOT-OWN groups. Those 11 significant variables are items S3B1 (will/own an annuity or life insurance policy), S3B2 (disciplined savings each month), S3B3 (will/own a real estate), S3B4 (will/own investment), S3B8 (commercial scheme is highly needed), A1c (have knowledge about annuities), S3A2 (retirement income from annuity/insurance sources), S4B6 (Confident in Malaysian commercial retirement schemes), S4C3 (appraised that Quality of commercial scheme is excellent) and factor VOLUNTARY_1 (voluntary savings), VOLUNTARY_3 (Commercial scheme trust). The Z-statistics are all negative with *r* values ranging between $-0.33 < r < -0.11$, indicating that the construct has a large size effect.

   Specifically, higher mean rank is recorded in all 11 significant items under the OWN group. The results obtained do not contradict with the private pension plan literature. Additionally, James (1998) warned that mandatory saving (as in EPF and PENSION) may not increase total private saving if individuals find ways to offset them against other voluntary saving or accumulated assets. This also suggests that sometimes there is an 'unhealthy' interaction between the first and second pillars of retirement systems. Alternatively, the increased interest in having a voluntary (commercial) retirement scheme might also demonstrate that compulsory retirement schemes are perceived as insufficient. Another possible explanation might be that civil servants are now able to recognize the importance of having dual/integrated sources of retirement arrangements: from work and from personal arrangements. This also suggests that dependency on only one source of retirement system might change in the long run. Finally, the result suggests an increased confidence in Malaysian insurance products.

   The overall results confirm that employees in OWN and NOT-OWN groups **could be differentiated** in their voluntary saving perceptions of the voluntary retirement scheme ownership choices.

5. $H_{1,5}$: **Job Related Aspects (Job Nature & Job Satisfaction)** influence the choice of voluntary retirement plans.

   There are 4 significant variables; S5B3, S5B9, S5B12 and S5B13. None of the generated factors (from the factor analysis) are significant. The Z-statistics are all negative with *r* values between -0.14< *r* <- 0.11 indicating that the Job Related Aspects have a medium size effect.

   Specifically, higher mean rank is recorded on all 4 significant items under the OWN group. It could be said those employees who are satisfied with: their retirement benefits arrangement offered from work; job security; location of work; and overall aspects of the job, all are predictors of buying voluntary schemes. Interestingly, employees who admitted that they are currently satisfied with many job aspects are the ones who end-up buying voluntary schemes for themselves. This is against the expectations of a rational decision. Employees arguably seek an alternative retirement plan if they are not comfortable with their job. They might also have more awareness to diversify their retirement funds. Further reasons are yet to be explored.

   In conclusion, the results confirmed that employees in the OWN and NOT-OWN groups **could be differentiated** via their Job Related Aspect variable on their voluntary retirement scheme ownership choices.

6. $H_{1,6}$: **Mobility** influences the choice of voluntary retirement plans.

   There is only one item found significant, which is item S4A3 (preference: Private sector offers better job). The Z-statistic is negative with *r* = -0.13, indicating a medium size effect.

   Specifically, a higher mean rank is recorded for this significant item in the OWN group. Thus, employees who believe that "private sector could offer better career opportunities as compared to public sector" could be influenced to buy voluntary retirement schemes. It could also be assumed that personal arrangements to buy commercial schemes from employees' own money are more popular with those who perceive better career expectations for employment outside the public sector.

Similarly, the finding could suggest that the OWN group is more attracted to work in the private sector compared to the government sector. Additionally, it is an indication that employees who choose to own voluntary schemes might have less interest in long-term service in the government sector.

Overall, the results confirm that employees in OWN and NOT-OWN schemes **could be differentiated** by the Mobility variable on their voluntary retirement scheme ownership choices.

7. $H_{1,7:}$ **Extension of working years Perceptions** influence the choice of voluntary retirement plans.

   This construct is measured using 15 variables, 13 items (in section 3D) and another 2 factors (AGE_1 and AGE_2). For this hypothesis, no evidence of significance can be detected; neither under "items" or under the "factors" category. All results are found insignificant. These confirm that employees in OWN versus NOT-OWN groups could not be differentiated in this construct. The finding suggests that public sector employees have less concern about their long-term career planning with ownership of voluntary retirement schemes. However, the results confirm that employees in OWN and NON-OWN groups **could not be differentiated** by the Extension of working years Perceptions variable. It is quite difficult to explain the reasons at this level due to the nature of bi-variate analysis. It is possible to have different results in the logistic regression.

8. $H_{1,8:}$ **Health Status Perception** influences the choice of voluntary retirement plans.

   The Health Status Perceptions construct is measured using 15 variables, 12 items (9 in section 3C plus S2B10, S2B11, S2B12) and 3 factors (HEALTH_1, HEALTH_2 and HEALTH_3). The results indicate that only a few variables are found significantly different in the Choice of OWN versus NOT_OWN schemes. The 2 significant variables are on items; S3C4 (will/have own a health insurance policy) and S3C6 (medical bills settled by employer/insurance) and none from the generated factors. The Z-statistics are all negative with r values ranging between $-0.24 < r < -0.19$, indicating a medium size effect.

Specifically, it is found that higher mean rank is recorded on all significant items in the OWN group. Thus, the results could indicate two important points. First, employees who buy voluntary schemes also make arrangements to safe-guard their health with insurance. They also belong to those who normally settle their medical bills via employers or insurance companies. This might indicate that civil servants are concerned with their health protection. Furthermore, Malaysian civil servants have developed more awareness in making their own arrangements to take care of their health. In conclusion, the results confirm that employees in OWN and NON-OWN groups **could be differentiated** by their Health Status Perceptions variable on their voluntary retirement scheme ownership choices.

9. $H_{1,9:}$ **Plan's Features Preference** influences the choice of voluntary retirement plans.

   The Plan's Features Preference construct is measured using 19 variables, 16 items (in section 2A) and another 3 generated factors (FEATURE_1, FEATURE_2, and FEATURE_3). There are 6 significant variables: Items S2Aa4 (EPF: Tax relief+), S2Aa5 (EPF: investment choices+), S2Ab1 (PENSION: Fixed-life long monthly pension +), S2Ac4 (EPF & PENSION: Time to receive benefits), S2Ac6 (EPF & PENSION: Golden Handshake Award +) and on factor FEATURE_2 (EPF preferences). The notation of (+) at the end of the label indicates that the variable has a positive feature preference. The Z-statistics are all negative with *r* values between $-0.17 < r < -0.11$, to indicate a medium size effect.

   Specifically, higher mean ranks are recorded on all significant items in OWN group only. It is also found that the highest significance was recorded for FEATURE_2 at p=0.002 indicating this is an important predictor in influencing employees to buy voluntary schemes.

   The results indicate a few important points. First, it could be predicted that employees who choose to buy a voluntary retirement scheme are mainly those who favour many positive features of the EPF scheme. At the other extreme, only one PENSION feature which is the "Fixed-life long regular monthly payment" is found

to be significantly influencing an employee to buy a voluntary scheme. This might indicate that there are more predictors for buying commercial retirement schemes than for the choosers of EPF compared to the PENSION. Additionally, an employee who has given an overall consideration on the different timing of receiving retirement benefits and consequences of the "Golden Handshake cash-award" would also tend to buy a voluntary retirement scheme.

In conclusion, the results confirm that employees in NOT-OWN and OWN groups **could be differentiated** by their Plan's feature Preference variable on their voluntary retirement schemes ownership choices.

10. $H_{1,10:}$ **Soft Constraints Perceptions (Peer & Family Effect and Realistic Level)** influence the choice of voluntary retirement plans.

    This construct is measured through 14 variables. The results indicate that none of the variables were able to differentiate choice of OWN versus NOT-OWN voluntary retirement scheme. This suggests that Soft Constraints Perceptions cannot be a predictor at this level of analysis. Surprisingly, this soft constraints construct, which is known as "Endogenous Social Effect" by Manski (1993), fails to differentiate employees' choices. Thus, it contradicts the findings from the previous literature (Duflo and Saez, 2003; Benartzi and Thaler, 2007; Conslik, 1980; and Brown and Weisbenner, 2007). This could be due to the fact that social norms or imitation could not automatically be followed when it comes to an individual's own money. In conclusion, the results confirm that employees in OWN versus NOT-OWN groups **could not be differentiated** using this construct.

11. $H_{1,11:}$ **Hard Constraints1 Perceptions (Risk and Benefits)** influence the choice of voluntary retirement plans.

    The Hard Constraints1 construct is measured through 16 variables; 14 items (S4A:4,5,6,7,8, 9 and S4B:1,2,3,4,5,6,7,8) in the questionnaire and another 2 generated factors (oneHARD_1, oneHARD_2). The results indicate that many variables are found significantly different in the choice of OWN versus NOT-OWN of voluntary retirement scheme. Seven significant variables were items S4A5, S4A8,

S4B6, S4B7, S4B8 and on factor oneHARD_1, & oneHARD_2. The Z-statistics are all negative with r values between $-0.16 < r < -0.12$, to indicate that the construct has approaching a medium size effect.

The results found a higher mean rank on all significant items and factors in the OWN group. These indicate that there are many perceptions which could influence an employee's decision to OWN a voluntary scheme. Specifically, employees who: set guaranteed security as a main priority; appreciate income tax relief; expect a higher standard of living after retirement; expect better future retirement benefits; have confidence in promised retirement benefits; have considered scheme risks; are all predictors for owning a voluntary retirement scheme. On the contrary, the test failed to detect any predictor that could explain why employees refuse to buy any voluntary retirement scheme. It could be said that there is strong evidence that an employee who buys a voluntary retirement scheme belongs to the group who have higher retirement planning awareness. It might also suggest that employees who OWN the scheme tend to show more preparation for their retirement compared to their less aware counterparts.

The results confirm that employees in OWN versus NOT-OWN groups **could be differentiated** using this construct.

12. $H_{1,12:}$ **Hard Constraints2 Perceptions (Scheme Appraisal)** influence the choice of voluntary retirement plans.

    The Hard Constraints2 construct is measured using 14 variables; 12 items (in section 4C) and another 2 generated (twoHARD_1, twoHARD_2). The results indicate that a few variables are found significantly different in the choice of OWN versus NOT-OWN voluntary retirement scheme. Four significant variables are items S4C3 (Appraisal: Quality of commercial scheme is excellent), S4C7 (Appraisal: Prefer that higher tax relief should be given to EPF/premium payments), S4C8 (aging is a challenge) and S4C9b (Appraisal: FPB is better than EPF) and the factor twoHARD_2 (Favour existing scheme). The Z-statistics are all negative with r values ranging between $-0.18 < r < -0.10$ to indicate that the Hard Constraints2 construct has approaching a medium size effect.

Specifically, the results found that higher mean rank is recorded on all significant items and factors in the OWN group. None of the mean ranks are higher in the variables under the NOT-OWN group. These findings are logical and consistent with global concerns about the problems of an aging population and the sustainability of the Malaysian retirement system as a whole. Sole-dependency on compulsory retirement schemes may no longer be enough. This is also an indication that employees have become increasingly aware of the need to choose a reliable and cost-effective method of old-age support. Thus, self-arrangements such as buying commercial retirement schemes voluntarily could offer a quick solution to the problem. On the other hand, the test fails to detect any predictor that could differentiate (predict) why employees refuse to own (buy) any voluntary retirement scheme.

In conclusion, the results confirm that employees in OWN versus NOT-OWN groups **could be differentiated** by their Hard Constraints2 Perceptions (Schemes Appraisal) variable on their voluntary retirement schemes ownership choices.

8.4 Conclusion

The results derived from the bivariate analysis provide some intuition into the determinants of retirement scheme choice. In addition, this univariate analysis has provided us with an early indication of the items which influence employee's choice via the indication of the significant variables found in the Mann-Whitney U results. However, conclusions cannot be reached based on the univariate/bivariate analysis alone. Further examination of the relationship between variables should be conducted. Thus, in achieving research objective 1 effectively, the next step is to employ logistic regression analysis. There is no guarantee that a variable that is not significant in univariate analysis could not make an important contribution in a multivariate context.

CHAPTER 9: CHOICE: MULTIVARIATE ANALYSIS AND INTERVIEWS

This chapter is the most important part of the study. It is intended to identify the factors which predict the choice of retirement schemes using multivariate analysis. Thus, a more powerful tool is employed in exploring the relationship among variables. Specifically, due to the nature of the dependent variables, this study uses logistic regression in the analysis. Accordingly, four logit models - LOGIT1, LOGIT2, LOGIT3 and LOGIT4 - were analysed and discussed. The findings from interview are reported to support the quantitative (multivariate analysis) results, thus reinforcing the researcher's arguments on factors that influence retirement schemes choice.

9.1 Introduction

A dependent variable that is discrete, truncated or censored is a limited dependent variable (Wang, 2009) which is applicable in this study. The output of choices in this study is in the form of binary choice; first, alternatives in compulsory retirement scheme (DB versus DC) and second, two alternatives in the voluntary retirement ownership (Own versus NOT-OWN). Thus a binary choice model is adopted. This research aims to present more robust empirical evidence related to the models' predictive power by using logistic regression. Logistic regression is a part of statistical models called generalised linear models which allow the researcher to predict a discrete outcome or a group membership (EPF/PENSION) and (OWN/NOT-OWN) from a set of variables (predictors) that may be continuous, discrete, dichotomous, or a combination of any of these three attributes.

This chapter specifically tries to fulfil **research objective 1**, which is to identify individual characteristics and the factors that may predict the decision (selection) of Malaysian public universities' employees in choosing their retirement plan (schemes) and establish how these factors influence decision on choice.

The previous chapters have also endeavoured to answer research objective 1, presenting results from Mann-Whitney U-tests for the differences between "EPF versus PENSION" schemes and "OWN versus NOT-OWN", which revealed that some of the independent variables are statistically significant. However, the use of univariate analysis such as Mann-Whitney U tests has its weaknesses. Based on the one-to-one

variables tested, this method failed to detect the interrelation among all variables listed in the research framework. However, this could be solved by using multivariate analysis.

9.2 Logistic Regression

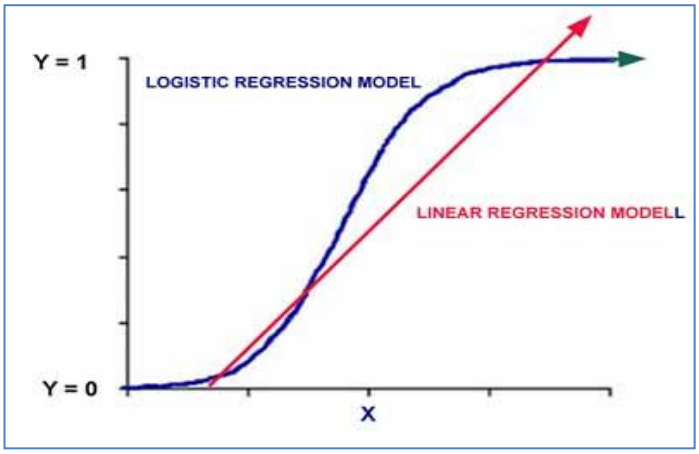
Wang (2009) indicated that the logit model is commonly known as logistic regression which is derived from the logistic function. Logistic regression identifies variable patterns which can effectively-differentiate between members of two different categories. Unlike linear regression which looks for scores, this technique predicts category membership. In this study, the researcher examines the pattern of variables that best differentiates between people who select EPF from those who opt for the PENSION schemes.

Logistic regression applies maximum likelihood estimation versus ordinary least squares (OLS) estimation in linear regression. It calculates changes in the log-odds of the dependent variable but not changes in the dependent variable itself as OLS regression does.

Logistic regression has many analogies to OLS regression; logit coefficients correspond to *b*-coefficients in the logistic regression equation, the standardised logit coefficients correspond to beta weights, and a pseudo R^2 statistic is available to summarise the strength of the relationship. However, unlike OLS regression, logistic regression does not assume linearity of relationship between the independent variables and the dependent variables. It does not require normally-distributed variables, does not assume homoscedasticity, and in general has less stringent requirements.

The logistic curve (DeMaris, 2004; Hair et al., 2010) illustrated in **Figure 9.1** is more appropriate for modelling binary dependent variables coded 0 or 1 because it comes closer to the y=0 and y=1 points on the Y-axis. The logistic function is bounded by 0 and 1, whereas the OLS-regression function may predict values above 1 and below 0.

Figure 9.1: Logistic Curve



Sources: DeMaris, 2004; Hair et al., 2010

Field (2005), Menard (1995), Long (1997), Howitt and Cramer (2005), Peng et al. (2002) and Wang (2009) described the rationale behind logistic regression. In a simple linear regression, the outcome of variable Y is predicted from a straight line equation:

$$Y_i = b_o + b_1X_1 + \varepsilon_i$$

Where b_o is the Y-intercept, *bi* is the gradient of a straight line, X_1 is the value of the predictor variable and E is a residual term. Furthermore, in a multiple regression, there are several predictors and their own coefficients and thus the equation becomes:

$$Y_i = b_o + b_1X_1 + b_2X_2 + ... + b_nX_n + \varepsilon_i$$

In which b_n is the regression coefficient (weight) of the corresponding variable X_n.

In a logistic regression, instead of predicting the value of *Y*, it predicts the probability of Y occurring given known values of X_1 or (X_s). In the simplest form, similar to linear regression with only one predictor variable, the logistic regression equation from which the probability of Y is predicted is:

$$P(Y) = 1/(1+ e^{-(bo + b1X1 + \varepsilon i)})$$

Where P(Y) is the probability of Y occurring and *e* is the base natural logarithm. It is also possible to extend the equation to include several predictors as:

$$P(Y) = 1/(1+ e^{-(bo + b1X1 + ……..+bnXn + \varepsilon i)})$$

The **odds** of an event occurring is defined as the probability of an event occurring divided by the probability of that event not occurring. The probability of the event not occurring is:

$$\text{Odds} = P(\text{event}) / P(\text{no event})$$

$$P(\text{event Y}) = 1/(1+ e^{-(bo + b1X1 + \varepsilon i)})$$

$$P(\text{no event Y}) = 1 – P(\text{event Y})$$

The logarithm of the odds is the log odds ratio. The term "logit" is then adopted. Many authors argued that the odds ratio is like a probability. Basically, it is the ratio of the numbers in one category to the number of cases in the other category.

Binary choice models with logistic regression have been traditionally applied to social science researches, employment studies, health services and insurance (Wang, 2009, Brock and Durlauf, 2001). Respondents in this study choose between the two alternatives given for their compulsory retirement scheme. This is an example of a binary choice decision; employees are required to choose between a DB and DC plan. Similarly, the second choice is on voluntary scheme ownership which also provides two alternatives; either to own or not to own. Thus, employees make choices aimed at achieving higher utility from their retirement scheme. Accordingly, there are two binary logistic regressions that will be used in this study.

9.2.1 Model of Compulsory Retirement Scheme Choice (PENSION versus EPF)

The binary or dichotomous outcomes take only two values. Applying the concept of a mutually exclusive event in this study; 0 refers to a person who chooses PENSION and 1 refers to a person who chooses EPF. It was clear that respondents could only select one scheme. The combination of outcomes is as follows:

Outcomes	Coded	Percentage	Type of dependent variable	Type of model
• PENSION	0	80 %	Binary	Logistic regression
• EPF	1	20 %		

The following logit model is used as the basis to explain employees' choices for compulsory retirement schemes. The dependent variable is defined as the probability of

employees choosing EPF as opposed to a PENSION scheme. The variables have been defined in the research framework.

The probability of success is a logistic function of:

Where: z = 1 if an employee chooses EPF scheme; and
z = 0 if an employee chooses PENSION.

As the model includes several predictors, Z is the linear combination of:

Where:

X_1= Knowledge level
X_2= Demographic
X_3= Retirement-Income-Sources
X_4= Voluntary savings perceptions
X_5= Job related aspects
X_6= Mobility
X_7= Extending Work
X_8= Health status
X_9= Plan feature preferences
X_{10}= Soft constraints
X_{11}= Hard constraints 1
X_{12}= Hard constraints 2

9.2.2 Model of Voluntary Scheme Ownership Choice (OWN versus NOT-OWN)

This study is extended to analyse another model of logistic regression of the employees' possession of voluntary schemes. These are situations where respondents might also own an additional (voluntary) retirement scheme such as a private annuity. The second combination of outcomes will be as follows:

Outcomes	Coded	Percentage	Type of dependent variable	Type of model
• Not own any voluntary scheme	0	62 %	Binary	Logistic regression
• Own voluntary scheme	1	38 %		

The logit model used in this analysis is the same the logit model used in the analysis for compulsory retirement schemes. However, the dependent variable is defined as the probability of employees owning any voluntary retirement scheme offered by commercial insurance companies as opposed to not owning any of the schemes.

The dependent variable;

z = 1 if an employee owns a voluntary retirement scheme, and

z = 0 if an employee does not own any voluntary retirement schemes.

9.3 Logistic Regression Analysis

The first concern is about the number of cases in the sample and the number of independent variables. The model might fail to converge if there are small samples with a large number of predictors. This is especially the case in categorical predictors with limited cases in each category. This problem has been solved by combining small categories with the big ones in demographics (Recode: D3, D8, D9, D10, D11, D16, D19). They are age, marital status, number of dependents, year appointed as civil servant, age appointed as civil servant, business faculty category and size of faculty, respectively.

The second consideration concerns the issue of equal proportion for the dependent variables (DV). The compulsory retirement choice group resulted in 20 percent EPF and 80 percent PENSION respectively. With the ratio of 20:80, it shows that there is less than half of the percentage of respondents under the EPF category. However, this percentage is acceptable. First, it does not give a major effect on the results as shown in **Table 9.2**; the predictive power of each of the models are excellent with more than 80 percent of prediction accuracy. Second, CEUPACS (2008) has in fact revealed that 43,000 out of 2 million civil servants selected EPF or a mere 2 percent from the total

workforce. This indicates only a small number of employees who opted for EPF which is only around 2 percent. The voluntary scheme choice groups did not incurred any problem due to a good proportion of OWN versus NOT-OWN of 36:64. Furthermore, the assumption of equal proportion is not a vital assumption as compared to the first consideration above (assumption on the adequate number of cases in independent variables).

Next is to consider the effect of multicollinearity. It is important to test for collinearity following logistic regression as multicollinearity could affect the parameters of the regression model and needs to be eliminated. Pallant (2007) and Menard (1995) suggested that a tolerance value of less than 0.10 almost certainly indicates a serious collinearity problem. Myers (1990) also suggested inspecting the value of the Variance Inflation Factor (VIF) which if greater than 10 indicates a collinearity problem between variables. The multicollinearity-diagnostic has been tested for all LOGIT models.

Specifically, Tolerance is an indicator of how much of the variability of the specified independent variable is not explained by other independent variables in the model (Pallant, 2007). Garson (2009) and Field (2005) referred to Tolerance as $1\text{-}R^2$ for the regression of an independent variable on all other independents, ignoring the dependent. There will be as many tolerance coefficients as independents. The higher inter-correlations of independents, the closer tolerance will approach zero. If the tolerance value is very small (<0.10), it indicates that the multiple correlation with other variables is high (multicollinearity problem).

VIF is simply the reciprocal of Tolerance. A high VIF indicates high multicollinearity and instability of the *b* and beta coefficients (Garson, 2009). Thus, it is best to omit the variable with the highest VIF. Field (2005) and Hair et al. (2010) suggested the solution of either dropping the one with a high inter-correlating variable, or to form a composite variable with the scores of 2 highly-correlated variables.

A few cases were deleted from the original N of 348 applicable to LOGIT1. The final N for LOGIT1a and LOGIT1b are 344 and 348 respectively. There was no deletion for the rest of the LOGITs (2, 3, and 4). The deletions were done in order to reduce the highest outliers which would not fit into the model (Pallant, 2007; Field, 2005) and aimed for a parsimonious model. Deletion of outliers has been made only in LOGIT1, which made

the model more accurate in its prediction capability. Outliers removed are cases with the *ZResid* values above 9.00. From the demographic variables, the variable ***age*** (Recode _D3) is excluded. This is because the age could also be revealed through other important variables such as *length in civil services* (New_D13) and *Age appointed* (New_D11). Implementing this action has help to eliminate multicollinearity problems.

9.4 Logistic Regression Results

The logistic regression results are summarised in **Table 9.1.** It shows which of the related hypotheses are found significant in the choice of compulsory and voluntary schemes. The next sections will provide detailed explanation on each on the logistic models.

Table 9.1: Hypotheses and Logistic Regression Results: Model LOGIT 1,2, 3,4

	Hypotheses	Variable name	Compulsory Choice LOGIT:				Voluntary Choice LOGIT:			
			1	2	3	4	1	2	3	4
1	$H_{1,1}$ & $H_{2,1}$	Knowledge	✓	-	-	✓	✓	-	-	✓
2	$H_{1,2}$ & $H_{2,2}$	Demographic	✓	✓	✓	-	✓	✓	✓	-
3	$H_{1,3}$ & $H_{2,3}$	Retirement Income	✓	-	-	✓	✓	-	✓	✓
4	$H_{1,4}$ & $H_{2,4}$	Volunt. saving Perceptions	✓	-	-	-	✓	-	✓	✓
5	$H_{1,5}$ & $H_{2,5}$	Job related	-	-	✓	✓	✓	-	-	✓
6	$H_{1,6}$ & $H_{2,6}$	Mobility	-	-	✓	✓	-	-	-	✓
7	$H_{1,7}$ & $H_{2,7}$	Extension of working years	-	-	-	✓	✓	-	-	✓
8	$H_{1,8}$ & $H_{2,8}$	Health	-	-	✓	✓	✓	-	✓	✓
9	$H_{1,9}$ & $H_{2,9}$	Plan feature	✓	✓	-	✓	-	-	-	-
10	$H_{1,10}$ & $H_{2,10}$	Soft Constraints	-	-	-	✓	✓	-	-	✓
11	$H_{1,11}$ & $H_{2,11}$	Hard Constraints1	-	-	✓	✓	✓	-	-	✓
12	$H_{1,12}$ & $H_{2,12}$	Hard Constraints2	-	-	-	✓	-	-	✓	✓
	Total # of significant hypothesis		5	2	5	10	9	1	5	10

Note: "✓"= significant predictor, "-"=non-significant predictor

Table 9.2 reports the summary of the selected criteria for all the logistic regression models of LOGIT 1, 2, 3, and 4; segregated by choices of compulsory retirement schemes and choices to own any voluntary retirement scheme.

Table 9.2: Extraction of Selected Statistics: Comparison on LOGIT 1,2,3,4

MODEL	LOGIT 1	LOGIT 2	LOGIT 3	LOGIT4
COMPULSORY SCHEMES CHOICE [EPF= 1, PENSION= 0]				
Accuracy	Overall:91.3% EPF=67.2%, PENSION= 97.1%	Overall:83.0% EPF= 33.8%, PENSION= 95.7%	Overall:90.5% EPF= 67.6%, PENSION=96.4%	Overall:89.4% EPF= 66.2%, PENSION=95.3%
R^2	C =40.3%, N = 64.2%	C = 24.8%, N = 38.9%	C= 42.8%, N= 67.3%	C= 37.3%, N= 58.6%
N	344	348	348	348
LR (-2LL)	161.917	253.025	157.523	189.793
Constant	1.028	5.271**	2.891	-0.430
df	63	39	65	17
Var included	44 [D=15,O=29]	18 [D=12,O=6]	44 [D=12,O= 32]	150 [D=0, O=150]
# of sig items	20	3	7	16
VOLUNTARY SCHEMES CHOICE [OWN= 1,NOT-OWN= 0]				
Accuracy	Overall: 82.0% OWN= 70.1%, NOT-OWN=88.6%	Overall: 71.9% OWN= 59.6%, NOT-OWN=80.0%	Overall: 79.2% OWN= 72.5%, NOT-OWN= 83.6%	Overall: 74.4% OWN= 59.8%, NOT-OWN=83.3%
R^2	C = 46.9%, N = 64.4%	C = 25.5%, N = 34.5%	C= 33.8%, N= 45.7%	C= 29.5%, N= 40.1%
N	328	348	348	348
LR (-2LL)	219.819	287.639	255.304	341.414
Constant	-1.515	-6.114**	-8.465**	-8.475**
df	63	38	74	43
Var included	44 [D=15,O=29]	33 [D=12,O=11]	59 [D=12, O=47]	43 [D=0, O=43]
# of sig items	33	1	5	16

Note: *Shaded = the best model for each of criteria, N= no of cases*
Accuracy = Prediction of accuracy in the classification of group membership
LR= log-likelihood ratio test, R^2: C=Cox &Snell, N = Nagelkerke
D = demographic variables, O= Other variables, df = degree of freedom
***= stat. significant at 5 % level, *** = stat. significant at 1 % level*

Some of the demographic variables belong to the categorical type, thus creating a higher number of degrees of freedom of the model. The insignificant variables have also been included in calculating the degrees of freedom. Demographic variables were excluded in LOGIT4. The best criteria on each model are shaded. In terms of accuracy of

predictions, it is concluded that LOGIT1 and LOGIT4 were the best in explaining factors that predict choice. However, LOGIT1 was the most superior of all. This is because based on accuracy of predictions, it is concluded with highest overall-accuracy among all (refer to **Table 9.2**); also the R^2 values are high. This was justifiable as the demographic variables were carefully chosen based on specific reasons. Additionally, all the *factors,* created after the factor analysis procedure, were included in the model. It allows testing of all hypotheses in the theoretical framework. Deletion of outliers has been made in LOGIT1, making it more accurate in its prediction capability. Thus, based on accuracy of predictions, it is concluded that LOGIT 1 is the best in explaining factors that predict choice with its parsimonious model.

9.4.1 Compulsory Scheme Choice

There are 4 logistic models which have been estimated in the study namely:

LOGIT1 is the logistic regression model with predictors (44) derived from selected demographics plus all factors. Factors (29) were taken from the factor analysis and demographic items (15) were selected based on the theoretical framework and **parsimonious** model. The researcher has to eliminate[29] variables and outliers from the full model to attain a more parsimonious fit. The same variables were used for both compulsory and voluntary scheme applied in LOGIT1.

LOGIT2 is also a logistic regression with predictors (18) comprising factors (6) along with demographics (12) items. It differs from LOGIT1 since it includes only the **significant** predictors either from factors and demographic variables derived from Mann-Whitney U results.

LOGIT3 is a logistic regression with all predictors (44) consisting of variables (32) as well as demographic (12) items. This means taking all significant demographic items from the Mann-Whitney U results (**univariate**). No factors from the factor analysis were used here. It placed more emphasis on the individual's items in the questionnaire.

[29] Deletion of the variable: variable "age" is excluded because the age could also be revealed through other variables such as *length in civil services* (New_D13) and *Age appointed* (New_D11). Deletion of outliers were based on suggestions made by the SPSS output.

LOGIT4 is a logistic regression that includes all predictors from the questionnaire (150 items) excluding the demographic variables. Nothing from the factor analysis and Mann Whitney U tests were used here. The objective is to observe which individual items from the questionnaire are significant. It will signify the most important question based on the level of each individual item and modelled with the **STEPWISE**–Forward LR method. Other models (LOGIT1 to 3) were solely based on the ENTER method.

Table 9.3 displays the results of predictors (independent variables) which are found significant under the categories of Demographics, Factors and Items.

Table 9.3: LOGIT 1, 2, & 3 of Compulsory Choice (DEMOGRAPHICS)

Model		LOGIT 1	LOGIT 2	LOGIT 3
Dependent variable: SelectSch (EPF versus PENSION)				
D1	Gender	**Yes (+)**	-	-
Recode_D3	Age	-	n/a	n/a
D4	Race	n/a	**Yes (+)**	-
D5	Religion	n/a	-	-
D6	Residence	**Yes (+)**	-	-
D7	Education level	**Yes (+)**	-	-
Recode_D8	Marital status	-	n/a	n/a
New_D11	Age appointed	**Yes (-)**	**Yes (-)**	**Yes (-)**
New_D12	Length in this university	n/a	-	-
New_D13	Length civil services	**Yes (-)**	-	**Yes (-)**
AcademicC	Academic category	-	-	-
D14	Number previous employer	n/a	-	-
New_D16	University	**Yes (+)**	n/a	n/a
BusMgtCat	Business-faculty category	-	n/a	n/a
JobTenure	Tenure of job	-	n/a	n/a
New_D19	Size of faculty	-	n/a	n/a
D20	Individual income	**Yes (+)**	-	-
D21	Household income	**Yes (-)**	-	**Yes (-)**
New_D22	Retirement Age	-	n/a	n/a
D28	Spouse bought commercial sch.	n/a	n/a	n/a
D29	Spouse benefits entitle to respondent	n/a	n/a	n/a
	Total # variables used	15	12	12

Note: *`**Yes'** = sig. at 5 % level, ` **-'** = not sig. (but included in model),* ***n/a****= not included in model, (+) = positive significance, (-) =negative significance. LOGIT4 has no demographic variables included in the model.*

Table 9.3: LOGIT 1 & 2 of Compulsory Choice (*FACTORS*), continued

Model		LOGIT 1	LOGIT 2
Dependent variable: SelectSch (EPF versus PENSION)			
KNOW_1	Basic knowledge	-	n/a
KNOW_2	Advanced knowledge	-	n/a
INFOR	Information level	**Yes (-)**	-
IDONT_1	No knowledge: Overall?	**Yes (+)**	n/a
IDONT_2	No knowledge: EPF?	-	n/a
IDONT_3	No knowledge: PENSION?	-	n/a
SOFT_1	Realistic level	-	n/a
SOFT_2	Peer influence	-	n/a
FEATURE_1	PENSION Prefer	**Yes (-)**	**Yes (-)**
FEATURE_2	EPF Prefer	**Yes (+)**	n/a
FEATURE_3	Negative scheme Prefer	-	n/a
INCOME_1	Basic sources of retirement income	-	n/a
INCOME_2	Supplementary sources of retirement income	**Yes (+)**	n/a
VOLUNTARY_1	Voluntary saving perceptions	-	n/a
VOLUNTARY_2	Debt obligations	-	n/a
VOLUNTARY_3	Commercial scheme trust	-	n/a
HEALTH_1	Healthcare providers satisfy	-	-
HEALTH_2	Good health	-	n/a
HEALTH_3	Bad health	-	n/a
AGE_1	Extension of working years willingness	-	n/a
AGE_2	Ordinary retirement	-	n/a
MOBILITY_1	Public sector attractiveness	-	-
MOBILITY_2	Private Sector attractiveness	-	n/a
oneHARD_1	Benefit confidence	-	n/a
oneHARD_2	Risk consideration	-	-
twoHARD_1	Proposed new scheme (FPB)	-	n/a
twoHARD_2	Existing schemes quality	-	n/a
JOB_1	Job satisfaction	-	n/a
JOB_2	Young age advantage	-	-
	Total # variables used	29	6

Further discussion covers only LOGIT1 and LOGIT4 as these models give the best fit. The following models were run with only significant independent variables.

A multicollinearity test was carried out on LOGIT1a and LOGIT4a. The outcomes showed there was no Tolerance <0.10 and VIF >10, proving that the models used in this study did not have any multicollinearity problems. The results are presented in **Appendix A1d.** Specifically in **Table Appendix A1d(a)** for LOGIT1a and **Table Appendix A1d(bi)** for LOGIT 4a.

The next section discusses the two choices of retirement schemes based on LOGIT1 and LOGIT4 since they were the best two models.

Table 9.3: LOGIT 3 & 4 of Compulsory Choice (ITEMS), continued

Model		LOGIT 3	LOGIT 4
Dependent variable: SelectSch (EPF versus PENSION)			
A1a	Know about EPF	n/a	**Yes (+)**
A1c	Know about annuities/insurance	n/a	**Yes (+)**
A7	Know about tax deductible item	-	n/a
B1a	Information from universities/JPA	n/a	**Yes (-)**
B3	Information sufficient about ret.sch	-	n/a
B4	Information accurate received	-	**Yes (-)**
B5	Information simple and easy	-	n/a
Idont_Aa4	No knowledge: EPF tax relief	-	n/a
C6	Behave spouse/ family influence	-	n/a
C8	Peers collective-choice followed	-	**Yes (-)**
S2Aa1	EPF lump sum payment (+)	-	n/a
S2Aa4	EPF tax relief (+)	-	**Yes (+)**
S2Ab1	P fixed life-long monthly pension(+)	-	n/a
S2Ab2	P PENSION gratuity +	n/a	**Yes (+)**
S2Ab4	P dependent pension (+)	-	n/a
S2Ab5	P free medical treatment (+)	-	**Yes (-)**
S2Ac6	E&P golden hand shake award (+)	-	n/a
S3A1	income sources-EPF/pensions	n/a	**Yes (-)**
S3C7	Health: free medical treatment for EPF	**Yes (+)**	**Yes (+)**
S3D10	Age: prefer more chances on retirement age	-	n/a
S3D11	Age: later date to choose ret age	-	n/a
S3D12	Age: good chance to work after retire	-	**Yes (+)**
S4A1	P: secure as civil servants	**Yes (+)**	n/a
S4A2	P: pension as privilege to civil servants	-	n/a
S4A6	P: guaranteed ret benefits as top priority	-	n/a
S4A7	P: PENSION provide more monetary	-	-
S4A10	P_M intend work in public sector until retire	-	**Yes (-)**
S4B2	C: Choice have greater satisfaction	-	n/a
S4B3	C: given chance prefer choose other sch.	**Yes (+)**	**Yes (+)**
S4B5	C: appropriate scheme chosen	-	n/a
S4C2	Excellent quality of PENSION	-	n/a
S4C4	Prefer more than one final decision	-	**Yes (+)**
S4C7	Prefer higher tax relief given to EPF/ins	-	n/a
S4C9	FPB awareness	-	**Yes (-)**
S5A3	Younger people preference	**Yes (-)**	**Yes (-)**
S5B3	Satisfied job-retirement benefits	-	n/a
S5B7	Satisfied job-leisure	-	n/a
	Total # variables used	32	17

LOGIT1a

Logistic regression analysis was performed to assess the impact of predictors on the likelihood that respondents would report that they belong to the group who chose EPF as their retirement scheme. As shown in **Table 9.4**, there are 20 significant items from 11 categories.

Table 9.4: LOGIT1a: Predicting Likelihood of Choosing an EPF Scheme (N=344)

Variables	Label	B	S.E.	Wald	df	Sig.	Odds Ratio	95.0 % C.I. for Odds Ratio	
								Lower	Upper
Demographic									
D1(1)	Gender	1.125	.539	4.355	1	**.037***	3.080	1.071	8.858
D6(1)	Residence	1.399	.697	4.030	1	**.045***	4.052	1.034	15.882
D7	Education level			9.926	3	**.019***			
New_D11(1)	Age appointed	-2.733	1.259	4.714	1	**.030***	.065	.006	.767
New_D11(2)	"	-3.739	1.399	7.137	1	**.008***	.024	.002	.369
New_D13	Length civil services			14.134	3	**.003***			
New_D13(3)	"	-4.940	1.473	11.254	1	**.001****	.007	.000	.128
New_D16	University			9.691	3	**.021***			
D20	Individual income			14.861	5	**.011***			
D20(3)	"	5.257	2.064	6.485	1	**.011***	191.905	3.357	10971.383
D21	Household income			12.673	5	**.027***			
D21(1)	"	-3.192	1.199	7.088	1	**.008***	.041	.004	.431
D21(2)	"	-4.965	1.654	9.008	1	**.003***	.007	.000	.179
D21(3)	"	-3.313	1.484	4.985	1	**.026***	.036	.002	.667
D21(4)	"	-4.210	1.624	6.724	1	**.010***	.015	.001	.358
Factors									
INFOR	Information level	-1.219	.438	7.767	1	**.005***	.295	.125	.696
IDONT_1	Overall?	3.077	1.326	5.383	1	**.020***	21.692	1.612	291.823
FEATURE_1	PENSION Prefer	-2.457	.577	18.139	1	**.000****	.086	.028	.265
FEATURE_2	EPF Prefer	1.389	.537	6.696	1	**.010***	4.009	1.401	11.478
INCOME_2	Supplementary sources	1.117	.338	10.905	1	**.001****	3.055	1.575	5.928
Constant		1.028	3.625	0.080	1	.777	2.795		

*= stat. significant at 5 % level, ** = stat. significant at 1 % level

Moreover, **Table 9.5** gives the model performance criteria. The full model that contains all predictors was statistically significant, χ^2 (63, N=344) = 177.310, p< 0.001, indicating that the model was able to distinguish between respondents who chose the EPF scheme against those who chose the PENSION scheme. Hence, it is the difference between the model containing only a constant (-2LL = 339.227) and the model containing all variables (-2LL=161.917), which yields a significant value of χ^2= 177.310 with degrees of freedom of 63. The non-significant value of the H&L test (p= 0.823) and significant Omnibus test (p=0.000) show good performance of the model. As a whole, the model itself explains between 40.3 percent (Cox and Snell R^2) and 64.2 percent (Nagelkerke R^2) of the variance in choosing the EPF scheme. The classification table shows that out of 277 of employees who chose PENSION scheme, 269 are classified correctly. Alternatively, out of the 67 employees who chose EPF, 45 are in the correct group. Overall, the model correctly classified 91.3 percent [EPF=67.2 percent

and PENSION=97.1 percent] of cases, which is higher than its baseline of 80.5 percent, leading to an excellent model performance.

The goodness of fit is given by the -2LL value, and by the Hosmer and Lemeshow (H&L) test. A good fit is attained if there is larger reduction between the initial and final steps in the -2LL value and a weaker outcome in H&L test. The Cox and Snell R^2 and also the Nagelkerke R^2 are also used as indications of goodness of fit of the model. They focus on the model's explanatory power. As it tests the statistical significance between group differences, the weaker the test, the better the fit of the model is estimates.

Omnibus is known as the "goodness-of-fit" test. The 4 models were found to be satisfactory; significant at 0.000 indicating very good fit. The omnibus test of model coefficients gives us an indication of how well the model performs compared to results obtained from block 0. The researcher needs to aim for a highly significant value (sig < 0.05), so that the full model (with the set of predictors) is better than the original guess in block 0, which assumed that everyone would report the norms.

The Hosmer and Lemeshow Test is interpreted differently from the omnibus test since it signifies "poor-fit". With a non-significant value (more than 0.05), all four models were deemed fit. The poor fit is represented by a significance value < 0.05. H&L is used to support the worthiness of our model. Pallant (2007) and others claimed that it is the most reliable test-of-model-fit in SPSS.

The Cox & Snell R^2 and Nagelkerke R^2 provide an indication of the amount of variation in the dependent variable explained by the model.

Based on the Log-likelihood (LL) the results for all 4 models were very good, showing a large reduction from the *initial* to the *final* -2LL. It is safe to proceed since all models have been examined and produced good results.

The -2LL is presented in the same table of "Model-Summary". It is a measure of error, or unexplained variation, in categorical models (Field, 2005). It is an indicator of how much unexplained information is left after the model has been fitted. A larger value

indicates poorly-fitted statistically models, because more unexplained observations exist.

The classification accuracy produced ratios which were mostly greater than the standard value for proportional chance criterion (>50 percent) in both overall and group-specific level. In addition, the overall model fit acceptance (H&L) has also been complied with. The overall predictive accuracy is in the form of the percentage of correct predictions. A higher percentage indicates better predictive accuracy of the model. This is similar to the SEE (the standard error of the estimate) in standard OLS regression.

The statistical significance of any independent variables is measured using a Wald (W) statistic, which follows a Chi-Square distribution. This is equivalent to the t-value computed in standard OLS regression.

The partial contribution of each independent variable in explaining the dependent variable is represented by the odds ratio, expressed by Exp(B). When applied to different categories of a single variable, the odds ratio reflects the deviation with respect to the base, or reference category. Thus if it is above unity, the odds ratio indicates an increase in the conditional probability of an event occurring relative to its reference category.

All four models resulted in a variety of sensible odds values for the demographics and "*factors"* predictors. Furthermore, in all models, none produced a confidence interval equal to 1, indicating good estimates. Exp(B) is known as the odds ratio. It is a point estimate or guess at the true value, based on the sample data. Exp(B) is the predicted change in odds for a unit increase in the corresponding independent variable (Garson, 2009; Field, 2005). Ratios less than 1 correspond to decreases and ratios more than 1 indicate increases in odds. A 95 percent confidence-interval denoted as "95.0 percent CI for EXP(B)" is displayed after Exp(B), providing a lower and an upper value. This is the range of our confidence (95 percent) on the true value of the odds ratio. If the confidence interval contained the value of 1, then odds ratio would not be statistically significant at $p < 0.05$. The study would not rule out the possibility that the true odds ratio is 1, indicating equal probability of two responses (yes/no~ EPF/PENSION).

Table 9.5: LOGIT1a: Classifications, Model Summary, Omnibus, H&L Test

LOGIT1a Compulsory, N=344

A: Classification Table[a]

Observed		Predicted		
		Scheme selection		
		0 Pension	1 EPF	Percentage Correct
Scheme selection	0 Pension	269	8	97.1
	1 EPF	22	45	67.2
	Overall Percentage			**91.3**

a. The cut value is .500

B: Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	177.310	63	.000
	Block	177.310	63	.000
	Model	177.310	63	.000

C: Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	**161.917[a]**	.403	.642

a. Estimation terminated at iteration number 8 because parameter estimates changed by less than .001.

D: Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	4.363	8	.823

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LOGIT4a

As shown in **Table 9.6**, there are 16 significant items from 11 categories. **Table 9.7** details the model's performance criteria. The full model that contains all predictors was statistically significant, χ^2 (17, N=348) =162.333, p< 0.001, indicating the model was able to distinguish between respondents who chose the EPF scheme against respondents who chose the PENSION scheme. Hence, it is the difference between the model containing only a constant (-2LL =352.127) and the model containing all variables (-2LL=189.793), which yields a significant value of χ^2= 162.333 with degrees of freedom of 17. The non-significant value of the H&L test (p=0.894) and significant Omnibus test (p=0.000) show a good performance of the model. The model explains between 37.3 percent (Cox and Snell R^2) and 58.6 percent (Nagelkerke R^2) of variances in choosing the EPF scheme. The classification table shows that out of 277 of employees who chose the PENSION scheme, 264 are classified correctly. Alternatively, out of 71 employees who chose EPF, 47 are in the correct group. Overall, the model correctly classified 89.4 percent [EPF=66.2 percent and PENSION=95.3 percent] of cases which is higher than its baseline of 79.6 percent, leading to very good model performance.

Table 9.6: LOGIT4a: Predicting Likelihood of Choosing an EPF Scheme (N=348)

Variables	Label	B	S.E.	Wald	df	Sig.	Odds Ratio	95.0 % C.I.for Odds Ratio	
								Lower	Upper
Items									
A1a	knowledge	.706	.293	5.820	1	**.016***	2.027	1.142	3.597
A1c	Knowledge	.687	.273	6.341	1	**.012***	1.987	1.164	3.392
B1a	knowledge	-.506	.241	4.409	1	**.036***	.603	.376	.967
B4	knowledge	-.610	.240	6.475	1	**.011***	.543	.339	.869
S2Aa4	Plan Feature	1.026	.260	15.627	1	**.000****	2.791	1.678	4.642
S2Ab2	Plan Feature	.598	.297	4.054	1	**.044***	1.819	1.016	3.258
S2Ab5	Plan Feature	-1.422	.307	21.393	1	**.000****	.241	.132	.441
S3A1	Ret Income Sources	-.910	.272	11.202	1	**.001****	.403	.236	.686
S4A7	Plan Feature	-.461	.246	3.525	1	.060	.630	.389	1.021
S3C7	Health status	.802	.256	9.847	1	**.002***	2.230	1.351	3.680
S3D12	Extension of working years	.678	.225	9.069	1	**.003***	1.971	1.267	3.064
S4A10	Mobility	-.548	.223	6.042	1	**.014***	.578	.373	.895
C8	Soft Constraints	-.825	.222	13.837	1	**.000****	.438	.284	.677
S4B3	Hard Constraints 1	1.029	.232	19.629	1	**.000****	2.798	1.775	4.410
S4C4	Hard Constraints 2	.522	.243	4.632	1	**.031***	1.686	1.048	2.713
S4C9	Hard Constraints 2	-.326	.166	3.857	1	**.050***	.722	.521	.999
S5A3	Job Related	-.747	.210	12.661	1	**.000****	.474	.314	.715
Constant		-.430	1.752	.060	1	.806	.651		

*= stat. significant at 5 % level, ** = stat. significant at 1 % level

The item descriptions of the variables in LOGIT4a are:

- A1a = know about EPF
- A1c = know about annuities/insurance
- B1a = info from universities/JPA
- B4 = info accurate received
- C8 = peers-collective choice followed
- S2Aa4 = EPF tax relief
- S2Ab2 = PENSION gratuity
- S2Ab5 = PENSION free medical treatments
- S3A1 = Income sources-EPF/pensions
- S3C7 = Suggest free medical treatments for EPF
- S3D12 = Good chance to work after retire
- S4A10 = Intend to work with public sector until retirement
- S4B3 = given chance, prefer to choose another
- S4C4 = prefer more than one FINAL decision
- S4C9 = FPB (new scheme) awareness
- S5A3 = younger people preference on promotion
- *Note: other (non significant but included in the model) S4A7* = pension provides more monetary compensation (from PLAN FEATURE).

Table 9.7: LOGIT4a: Classifications, Model Summary, Omnibus, H&L Test

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LOGIT4a Compulsory, N= 348

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A: Classification Table[a]

Observed		Predicted		
		Scheme selection		
		0 Pension	1 EPF	Percentage Correct
Scheme selection	0 Pension	264	13	95.3
	1 EPF	24	47	66.2
	Overall Percentage			**89.4**

a. The cut value is .500

B: Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	162.333	63	.000
	Block	162.333	63	.000
	Model	162.333	63	.000

C: Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	189.793[a]	.373	.586

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

D: Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	3.571	8	.894

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Empirical Discussion of Compulsory Scheme Choice

It has been identified that LOGIT1 remains the most superior model among all. Thus, thorough discussion is presented on **LOGIT1 only**. Demographic variables represent the individual items, while the factors represent the perceptions in factor form obtained from the factor analysis.

Basically, the *base-category* is "female, rural residence, Malay, Muslim, low education, unmarried, less than 25 years old when first appointed as civil servant, not-confirmed yet in his/her job, opted for retirement age less than 55, works in a newly-established university, works in a small sized faculty, receives low individual and household gross monthly income of less than RM1,000, administrative type of job, works in business-faculty, temporary type of job". If the individual has a spouse and the spouse does "own commercial retirement schemes, the individual is entitled to his/her spouse's retirement benefit".

The LOGIT1a model indicated the variables/predictors that affect individuals' decisions to choose EPF as their compulsory retirement scheme. They were **demographically**:

> *"Males; urban residence; low educational level; Appointed aged between 21-30 years old; length of service less than 3 years (not yet confirmed) and more than 16 years of service (approaching retirement group); working in a new-established university; earned gross individual monthly income less than RM1000 (lowest) and between RM3001-4000; and earned gross household monthly income less than RM9000"*

These individuals also have significant **perceptions** of having higher:

> *"Information level; knowledge on the overall retirement schemes features, preferred both in EPF and PENSION plan features; arrangement on the supplementary retirement income sources during retirement"*

Other predictors which have not been mentioned above were statistically insignificant.

The odds ratios indicated which outcomes were the strong predictors in choosing EPF. Specifically, "*males were 3.08 times more likely than women, those residing in an urban area were 4.05 times more likely than in rural, earning income between RM3001-4000 were 191.91 times higher than group of RM1000 to choose EPF*". Similarly, under perceptions, with "*more knowledge on the overall retirement schemes features were 21.69 times more likely, preferred EPF plan features were 4.00 times more likely and have arrangement for the supplementary retirement income sources during*

retirement were 3.06 time more likely" than others to choose EPF schemes". **In summary, the highest predictors of choosing EPF are "individuals earning income between RM3001-4000 on demographics variables and the knowledge of overall retirement schemes features on perception variables".**

At the other extreme, the odds ratios "less-than-1" under the demographic indicate that for every additional unit with *"appointed age between 21-25 years old were 0.07 times less likely; between 26-30 years old were 0.02 times less likely; on the length of year services more than 16 years were 0.007 times less likely; earned household income between RM1000-RM3000, RM3001-RM5000, RM5000-RM7000, RM7001-RM9000 were 0.04, 0.01, 0.04, 0.02 times less likely respectively"* to choose EPF schemes, controlling for other predictors in the model. While under the perceptions the odds ratios "less-than-1" indicate that for every additional unit of the respondents' perceptions on *"information level were 0.30 times less likely; preferred PENSION plan features were 0.09 times less likely"* to choose EPF schemes, controlling[30] for other predictors in the model.

Generally, all the findings make good sense. They suggested that individuals will be **more likely** to choose EPF under these conditions:

1. Being male.

   This supports Clark et al. (2004) who found that females are more likely to choose the DB plan (PENSION) compared to males. The descriptive statistics in **Table 6.9** stated a higher percentage of males choosing EPF (males: 11.5 percent, females: 8.9 percent). Masud (2008) also indicated that there are significant differences in retirement income sources between genders in Malaysia. Perhaps women are more risk averse than men which explain the fact that they preferred a DB plan which provide a specific amount of benefits and no requires no individual contributions.

2. Resided in an urban area.

   It is logical that the urban area provides more job opportunities compared to the rural areas. It would be an advantage to the employee if they chose EPF due to the mobility (portability) nature of the fund. Thus, employees could easily change job if

[30] Controlling for other variables means that controlling for other predictors in the model, i.e., keeping other variables unchanged.

they are concerned about the risk of losing their retirement fund. Empirically, people who live in urban areas are 4 times more likely to choose EPF.

3. Earning individual income between RM3001-RM4000.
   This is normally the range of salary for officers and junior level lecturers in Malaysian university. EPF might be more popular to them than the other scheme.

4. Having higher knowledge of the overall features of retirement schemes.
   In reality fewer employees opted for EPF compared to PENSION. Therefore opting for EPF is related to a deeper knowledge of the retirement systems. Being knowledgeable enables employees to choose the best retirement scheme that suits them after making effective comparison between schemes. The findings have empirically revealed that employees with more knowledge are nearly 22 times more likely to choose EPF, thus reflecting the power of knowledge in influencing decisions. It is assumed that employees use their knowledge in reaching a decision after comparing the different features of the schemes offered.

5. Having a high preference for the EPF plan features.
   As expected, employees who preferred the plan features in EPF are 4 times more likely to choose them.

6. Having arrangements on supplementary sources of retirement income during retirement.
   As EPF benefit is paid in lump sum amount upon retirement, there is a tendency for the retirement benefit to be depleted earlier. Thus, the availability of supplementary income sources from their spouse, children or other family members on top of the EPF during retirement years promises some security to those employees. These additional finances act as support to hedge for the riskiness associated with EPF instead of relying on the plan as the sole source. The AARP (2005) survey found a small score (4 percent) on family support from expected source of retirement incomes, while Martin (1989) mentioned that elderly males have a positive effect if living with children. Masud (2008) indicated that in Malaysia, the majority of the elderly received income from their children. This study found that by having these other forms of "income support sources", the probability to choose EPF increased by 3 times. Therefore, this factor suggests that

the EPF chooser has arranged additional sources of retirement incomes in order to reduce risk associated with the sole-dependence on compulsory retirement schemes.

In contrast, the findings from the odds ratios which are "less-than-1" showed that individuals will be **less likely** to choose EPF if she or he has the following attributes, which also implied tendencies to choose PENSION schemes:

1. Belong to the group of employees with appointed age between 21-25 or 26-30 years of age.

   The only rational explanation might be that these younger cohorts are more influenced by the norm in the civil service, which is not to choose EPF (DC plan). This supports Clark et al. (2004) in which they found that newly-hired university employees who are older when appointed tended to choose DB plan (PENSION).

2. Having served in the civil service more than 16 years.

   This is sensible due to the fact that they have a long working record/experience in the civil service and might have already decided to remain in this sector. It will be more beneficial to this group if they selected PENSION in order to enjoy or not to risk some of the retirement benefits. For example, calculation of gratuity and golden hand shake awards will be more rewarding under PENSION with a longer period of service. The situation is similar to Foster (1998) who indicated that from the employer's perspective, DB plan participation is based on a benefit formula, retirement age, length of service, and pre-retirement earnings. Meanwhile, DC plans include contribution amount and investment earnings.

3. Earning gross household monthly income more than RM9000.

   This refers to the moderate to high level income earners. Household income is a combination of incomes of all family members. Perhaps these employees with families and they are more risk averse as such they were less likely to choose EPF scheme as the benefits payment is not confirmed and it is highly dependence on the amount of contribution. Another possible explanation is the possibility of family arrangements for diversification of retirement plan sources. For example if the husband already chose EPF then the wife will choose PENSION. Thus, for those who have a spouse working in the private sector; they already have one EPF scheme holder, discouraging them to opt for the same. Furthermore, private sector

employees only have one option which is to enrol in EPF as their compulsory retirement schemes. This is further supported by descriptive statistics in **Table 6.10** revealing a higher percentage (76.4 percent) of the respondents are married, and 64 percent of their spouses have their own compulsory retirement schemes with only 15.8 percent of them choosing EPF.

4. Having more information level perception.

   Since the odds ratio recorded a value of less than 1, this indicates that the more information a person gets, the less likely he/she is to choose EPF schemes. Technically, for every unit of information obtained, the odds of him/her choosing EPF decrease by a factor of 0.30, all other variables being equal. This shows the limitation in processing information in order to make decisions. However, this is rather contradictory since earlier findings did suggest that employees who were more likely to choose EPF have a wider knowledge of overall schemes features. One possible explanation might be that employees may not fully utilise the information given or might not have the right information in order to help them with their decision. Thus, decisions are made without in-depth consideration. This reality is related to the main issue in the theory of bounded rationality where information is limited, imperfect or misleading. They make choices according to their interpretation of the situation which is often a simplification. Rationality is "bounded", e.g. persons seldom have access to all relevant information and must rely on a 'strategy of satisficing', i.e. to make the best decision based on limited information. This further supports Simon's BRT which suggests that an individual employs the use of heuristic (common sense) to make decisions rather than strict rigid rules of optimisation.

5. Having higher preferences for PENSION plan features.

   Empirically, it is reported that the higher preferences for PENSION's features perceived, the less likely (0.09 times) employees will choose EPF. This is a very logical finding where individuals have a higher probability of selecting the scheme that is most preferred. This might be due to the higher number of positive features provided by PENSION compared to EPF scheme. The PENSION popularity which has been discussed in Section 3.2.2.1 might also explain the higher preferences on PENSION.

9.4.2 Voluntary Scheme Ownership Choice

The same procedures were performed for the analysis of voluntary scheme choice. However, there were different numbers or predictors used as below:

LOGIT1 with predictors (44); derived from selected demographics plus all factors. Factors (29) were taken from the factor analysis and demographic items (15).

LOGIT2 with predictors (23); comprises of factors (11) plus demographic (12) items.

LOGIT3 with all predictors (59); consists of variables (47) plus demographic (12) items.

LOGIT4 is a logistic regression that includes all predictors from the questionnaire (150 items) excluding the demographic variables.

Table 9.4 shows the results of the significant independent variables under categories of Demographics, Factors and Items.

Table 9.8: LOGIT 1, 2, 3 & 4 of Voluntary Choice (DEMOGRAPHICS)

Model		LOGIT 1	LOGIT 2	LOGIT 3
Dependent variable: VoluntarySch (OWN versus NOT-OWN)				
D1	Gender	-	n/a	n/a
Recode_D3	Age	-	n/a	n/a
D4	Race	n/a	-	-
D5	Religion	n/a	-	-
D6	Residence	-	n/a	n/a
D7	Education level	-	-	-
Recode_D8	Marital status	-	-	-
New_D11	Age appointed	-	n/a	n/a
New_D12	Length in this university	n/a	n/a	n/a
New_D13	Length civil services	**Yes (+)**	n/a	n/a
D14	Number previous employer	n/a	-	-
AcademicC	Academic category	**Yes (+)**	-	-
New_D16	University	**Yes (-)**	n/a	n/a
BusMgtCat	Business-faculty	**Yes (+)**	-	-
JobTenure	Tenure of job	**Yes (-)**	n/a	n/a
New_D19	Size of faculty	**Yes (+)**	-	-
D20	Individual income	**Yes (+)**	-	-
D21	Household income	**Yes (+)**	-	-
New_D22	Retirement Age	**Yes (+)**	n/a	n/a
D28	Spouse bought commercial scheme	n/a	**Yes (-)**	**Yes (-)**
D29	Spouse benefits entitle to respondent	n/a	-	-
	Total # variables used	15	12	12

Note:`***Yes'*** *= sig. at 5 % level, ` **-'** = not sig. (but included in model),* ***n/a****= not included in model, (+) = positive significance, (-) =negative significance. LOGIT4 has no demographic variable included in the model.*

Table 9.8: LOGIT 1 & 2 of Voluntary Choice (*FACTORS*), continued

Model		LOGIT 1	LOGIT 2
Dependent variable: VoluntarySch (OWN versus NOT-OWN)			
KNOW_1	Basic knowledge	-	-
KNOW_2	Advanced knowledge	-	n/a
INFOR	Information level	**Yes (+)**	-
IDONT_1	Overall?	-	-
IDONT_2	EPF?	-	-
IDONT_3	PENSION?	-	n/a
SOFT_1	Realistic level	**Yes (-)**	n/a
SOFT_2	Peer influence	**Yes (-)**	n/a
FEATURE_1	PENSION Prefer	-	-
FEATURE_2	EPF Prefer	-	n/a
FEATURE_3	Negative scheme Prefer	-	n/a
INCOME_1	Basic sources	**Yes (+)**	-
INCOME_2	Supplementary sources	**Yes (+)**	n/a
VOLUNTARY_1	Voluntary savings perceptions	**Yes (-)**	-
VOLUNTARY_2	Debt obligations	**Yes (+)**	n/a
VOLUNTARY_3	Commercial scheme trust	**Yes (+)**	-
HEALTH_1	healthcare providers satisfy	-	n/a
HEALTH_2	Good health	**Yes (-)**	n/a
HEALTH_3	Bad health	**Yes (-)**	n/a
AGE_1	Extension of working years	**Yes (-)**	n/a
AGE_2	Ordinary retirement	-	n/a
MOBILITY_1	Public sector attractiveness	-	n/a
MOBILITY_2	Private sector attractiveness	-	n/a
oneHARD_1	Benefit confidence	-	-
oneHARD_2	Risk consideration	**Yes (+)**	-
twoHARD_1	Proposed new scheme(FPB)	-	n/a
twoHARD_2	Existing schemes quality	-	-
JOB_1	Job satisfaction	**Yes (-)**	n/a
JOB_2	Young age advantage	**Yes (-)**	n/a
	Total # variables used	29	11

Table 9.8: LOGIT 3 & 4 of Voluntary Choice (ITEMS), continued

Model		LOGIT 3	LOGIT 4
Dependent variable: VoluntarySch (OWN versus NOT-OWN)			
A1a	Know about EPF	-	-
A1b	Know about PENSION	n/a	-
A1c	Know about annuities/insurance	-	n/a
A2	Know about pro/cons of EPF	-	n/a
A3	Know about pro/cons of PENSION	-	n/a
A6	Know about effect of inflation	-	n/a
A7	Know about tax deductible item	-	n/a
B1b	Information from peers/friends	n/a	**Yes (-)**
B1d	Information from media	-	n/a
B2	Information sufficient from university	n/a	-
B3	Information sufficient about ret.sch	-	n/a
B4	Information accurate received	n/a	**-**
B5	Information simple and easy	-	n/a
Idont_Aa2	No knowledge: EPF pre-withdrawals	n/a	-
Idont_Aa4	No knowledge: EPF Tax relief	n/a	-
Idont_Aa5	No knowledge: EPF tax investment choice	-	-
Idont_Ab1	No knowledge: PENSION monthly pension	-	n/a
Idont_Ab3	No knowledge: PENSION disability	n/a	-
Idont_Ac1	No knowledge: ALL contributions	-	n/a
Idont_Ac2	No knowledge: ALL security funds	-	n/a
Idont_Ac3	No knowledge: ALL uncertainty benefits	-	n/a
Idont_Ac4	No knowledge: ALL timing	-	-
Idont_Ac5	No knowledge: ALL majority choice	-	-
Idont_Ac6	No knowledge: ALL GCR award	-	n/a
C1	behave- decide based on info	n/a	**Yes (-)**
C2	behave- realistic decision maker	n/a	-
S2Aa4	EPF tax relief (+)	-	-
S2Aa5	EPF investment choice (+)	-	n/a
S2Ab1	P fixed life-long monthly pension(+)	-	n/a
S2Ab5	P free medical treatments +	n/a	-
S2Ac4	E&P time to receive (+-)	-	n/a
S2Ac6	E&P golden hand shake award (+)	-	n/a
S3A2	Ret. income: annuities/insurance	-	**Yes (+)**
S3A3	Ret. income income-post-retirement employment	n/a	**Yes (-)**
S3A4	Ret. income: spouse	-	n/a
S3A7	Ret. income: savings account	-	n/a
S3A10	Ret. income: real estate	**Yes (+)**	n/a
S3B1	Voluntary: annuity/ins	**Yes (+)**	**Yes (+)**
S3B2	Voluntary: savings	-	n/a
S3B3	Voluntary: house/real estate	-	n/a
S3B4	Voluntary: other investment	-	n/a
S3B8	Voluntary: needs commercial scheme	-	n/a

……continue….

Table 9.8a: LOGIT 3 & 4 of Voluntary Choice (ITEMS), continued

Model		LOGIT 3	LOGIT 4
Dependent variable: VoluntarySch (OWN versus NOT-OWN)			
S3C4	Health: own health insurance	-	**Yes (+)**
S3C6	Health: Employer/ins pay medical bills	**Yes (+)**	n/a
S3D4	A retirement age should be increased	n/a	**Yes**
S3D7	A work full-time after retirement	n/a	-
S3D8	A start business after retirement	n/a	-
S3D10	A prefer more chances about retirement age	n/a	-
S3D11	A prefer later date to choose retirement age	n/a	**Yes**
S3D12	A good chance to work after retire	n/a	**Yes (+)**
S4A1	P secure as civil servant	n/a	-
S4A3	P: private sector offer better job	-	**Yes (+)**
S4A5	P: guaranteed security as top priority	-	n/a
S4A8	P: income tax relief appreciated	-	n/a
S4A12	P_M consider other job with better pay/etc	n/a	-
S4A14	P_M consider ret. scheme when change job	n/a	**Yes**
S4B1	C indifferent between EPF/Pension	n/a	**Yes (+)**
S4B2	C choice have greater satisfaction	n/a	**-**
S4B3	C given chance, prefer to choose another	n/a	**Yes (+)**
S4B5	C appropriate scheme chosen	n/a	**-**
S4B6	Confident in commercial retirement scheme	-	n/a
S4B7	Post ret living standard is higher	-	n/a
S4B8	Future ret benefits better than existing	-	n/a
S4C1	excellent quality of EPF	n/a	-
S4C3	Excellent quality of commercial scheme	**Yes (+)**	**Yes (+)**
S4C5	PENSION benefits outweigh EPF	n/a	-
S4C7	Prefer higher tax relief given to EPF/ins	-	n/a
S4C8	Growing elders a challenge to retirement system	-	n/a
S4C9	FPB (new scheme) awareness	n/a	**Yes**
S4C9b	FPB better than EPF	-	-
S5B3	Satisfied job-retirement benefits	-	-
S5B5	Satisfied job-other benefits (medical, hose-loan etc)	n/a	**Yes**
S5B9	Satisfied job-job security	-	-
S5B10	Satisfied job-career development/rank	n/a	-
S5B12	Satisfied job-work location	-	-
S5B13	Satisfied job-overall job	-	n/a
	Total # variables used	47	43

The next section discusses the two choices of retirement schemes based on LOGIT1 and LOGIT4 since they were the best two models.

A multicollinearity test was carried out on LOGIT1b & LOGIT4b**.** The values of tolerance and VIF for the two models are within the variables described. It was found that the results were favourable. None of the variables have "Tolerance < 0.10, and VIF > 10", denoting no multicollinearity problem among the explanatory variables used in the models. The results are presented in **Appendix A1d.** Specifically in **Table Appendix A1d(a)** for LOGIT1b and **Table Appendix A1d(bii)** for LOGIT 4b.

LOGIT1b

Logistic regression analysis was performed to assess the impact of predictors on the likelihood that respondents would report owning any voluntary schemes. As shown in **Table 9.9**, there are 33 significant items derived from 17 categories. **Table 9.10** details the model's performance criteria. The full model that contains all predictors was statistically significant, χ^2 (63, N= 328) = 207.565, p<0.001; indicating that it was able to distinguish between respondents with voluntary schemes against respondents without. Alternatively, it is the difference between the model containing only a constant (-2LL= 427.384) and model containing all variables (-2LL= 219.819), which yields a significant value of χ^2=207.565 with degrees of freedom of 63. The non-significant value of the H&L test (p=0.286) and significant Omnibus test (p=0.000) evidence good performance. As a whole, the model explains variances of 46.9 percent (Cox and Snell R^2) and 64.4 percent (Nagelkerke R^2) in having voluntary schemes. Subsequently, the classification table shows that out of 208 employees who chose not to own voluntary retirement scheme, 187 are classified correctly. Alternatively, out of 117 employees who chose to OWN a voluntary scheme, 82 are in the correct group. Overall, the model correctly classified 82.0 percent [OWN=70.1 percent and NOT-OWN=88.6 percent] of cases which is higher than the baseline of 64.3 percent, leading to very good model performance.

Table 9.9: LOGIT1b: Predicting Likelihood of OWN Voluntary Schemes (N=328)

Variables	Label	B	S.E.	Wald	df	Sig.	Odds Ratio	95.0 % C.I.for Odds Ratio	
								Lower	Upper
Demoraphic									
New_D13	Length civil services			15.156	3	**.002***			
New_D13(1)	"	2.881	.755	14.566	1	**.000****	17.831	4.061	78.290
New_D13(2)	"	2.226	.866	6.605	1	**.010***	9.267	1.696	50.624
New_D13(3)	"	1.898	.852	4.964	1	**.026***	6.673	1.256	35.437
AcademicC(1)	Academic Category	4.939	1.325	13.889	1	**.000****	139.568	10.394	1874.002
New_D16	University			15.601	3	**.001****			
New_D16(2)	"	-2.357	.675	12.176	1	**.000****	.095	.025	.356
BusMgtCat(1)	Business-faculty cat	1.281	.494	6.721	1	**.010***	3.600	1.367	9.482
JobTenure(1)	Tenure of job	-3.369	.826	16.626	1	**.000****	.034	.007	.174
New_D19	Size of faculty			16.003	3	**.001****			
New_D19(3)	"	2.667	.771	11.960	1	**.001****	14.403	3.176	65.313
D20	individual income			12.651	5	**.027***			
D21	household income			20.405	5	**.001****			
D21(1)	"	5.372	1.820	8.717	1	**.003***	215.322	6.086	7618.391
D21(2)	"	5.731	1.971	8.459	1	**.004***	308.385	6.482	14672.437
D21(3)	"	4.757	1.964	5.866	1	**.015***	116.342	2.478	5462.782
D21(5)	"	6.655	2.164	9.458	1	**.002***	776.655	11.174	53979.864
New_D22	Retirement Age			10.123	3	**.018***			
New_D22(1)	"	3.505	1.528	5.259	1	**.022***	33.267	1.664	664.937
Factors									
INFOR	Information level	1.029	.329	9.759	1	**.002***	2.798	1.467	5.337
SOFT_1	Realistic level	-.984	.345	8.130	1	**.004***	.374	.190	.735
SOFT_2	Peer influence	-.941	.243	15.058	1	**.000****	.390	.243	.628
INCOME_1	Basic sources	1.064	.352	9.130	1	**.003***	2.897	1.453	5.776
INCOME_2	Supplementary sources	.663	.287	5.345	1	**.021***	1.941	1.106	3.407
VOLUNTARY_1	Volun. Savings percept	-.824	.351	5.514	1	**.019***	.438	.220	.873
VOLUNTARY_2	Debts obligations	.573	.244	5.519	1	**.019***	1.773	1.100	2.860
VOLUNTARY_3	Commercial scheme trust	1.608	.555	8.385	1	**.004***	4.995	1.682	14.837
HEALTH_2	Good health	-1.116	.345	10.455	1	**.001****	.328	.167	.644
HEALTH_3	Bad health	-1.011	.253	16.037	1	**.000****	.364	.222	.597
AGE_1	Extension of working years	-1.398	.300	21.687	1	**.000****	.247	.137	.445
oneHARD_2	Risk consideration	1.021	.419	5.950	1	**.015***	2.776	1.222	6.308
JOB_1	Job satisfaction	-.811	.411	3.890	1	**.049***	.444	.198	.995
JOB_2	Young age advantage	-1.066	.268	15.859	1	**.000****	.344	.204	.582
Constant		-1.515	3.197	.225	1	.635	.220		

*= stat. significant at 5 % level, ** = stat. significant at 1 % level

Table 9.10: LOGIT1b: Classifications, Model Summary, Omnibus, H&L Test

LOGIT1b: Voluntary, N= 328

A: Classification Table[a]

Observed		Predicted		
		Scheme selection		
		0 No, Not own	1 Yes, Own	Percentage Correct
Voluntary scheme purchased	0 No, Not own	187	24	88.6
	1 Yes, Own	35	82	70.1
	Overall Percentage			**82.0**

a. The cut value is .500

B: Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	207.565	63	0.000
	Block	207.565	63	0.000
	Model	207.565	63	0.000

C: Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	**219.819[a]**	.469	.644

a. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

D: Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	9.708	8	.286

The classification table shows the Percentage Accuracy in Classification (PAC). All LOGIT models are found to be satisfactory in providing the desired improvements. PAC indicates how well the model is able to predict the correct category (PENSION/ EPF) or (OWN/NOT-OWNED) for each case.

LOGIT 4b

As shown in **Table 9.11**, there are 16 significant items derived from 10 categories. **Table 9.12** details the model's performance criteria. The full model was statistically significant at χ^2 (43, N=348) = 121.539, with p<0.001; producing an excellent model to distinguish between respondents who reported owning voluntary retirement schemes against those who did not own any. Subsequently, it is the difference between the model containing only a constant (-2LL= 461.953) and the model containing all variables (-2LL= 340.414), which yields a significant value of χ^2= 121.539 with degrees of freedom of 43. The non-significant value of the H&L test (p=0.193) and significant Omnibus test (p=0.000) were indicators of good performance. The model explains variances of 29.5 percent (Cox and Snell R Square) and 40.1 percent (Nagelkerke R Squared) in choosing to OWN voluntary schemes. Furthermore, the classification table shows that out of 216 of employees who chose not to own voluntary retirement schemes, 180 are classified correctly. Meanwhile, out of the 132 employees who chose to OWN voluntary schemes, 79 are in the correct group. Overall, the model correctly classified 74.4 percent [OWN= 59.8 percent and NOT-OWN= 83.3 percent] of cases which is higher than the baseline of 62.1 percent, leading to a very good model performance.

Table 9.11: LOGIT4b: Predicting Likelihood of OWN Voluntary Schemes (N=348)

Variables	Label	B	S.E.	Wald	df	Sig.	Odds Ratio	95.0 % C.I.for Odds Ratio	
								Lower	Upper
B1b	knowledge	-.409	.200	4.170	1	**.041***	.664	.449	.984
S3A2	Ret Income Sources	.400	.166	5.785	1	**.016***	1.491	1.077	2.066
S3A3	Ret Income Sources	-.384	.170	5.068	1	**.024***	.681	.488	.952
S3B1	Voluntary perceptions	.498	.176	8.007	1	**.005***	1.645	1.165	2.321
S4C3	Voluntary perceptions	.586	.229	6.529	1	**.011***	1.797	1.146	2.818
S3C4	Health status	.425	.169	6.344	1	**.012***	1.529	1.099	2.128
S3D4	Extension of working years	-.425	.130	10.767	1	**.001****	.654	.507	.843
S3D11	Extension of working years	-.469	.151	9.686	1	**.002***	.626	.466	.841
S3D12	Extension of working years	.505	.187	7.316	1	**.007***	1.657	1.149	2.390
S4A3	Mobility	.282	.140	4.065	1	**.044***	1.326	1.008	1.745
S4A14	Mobility	-.550	.216	6.510	1	**.011***	.577	.378	.880
S5B5	Job Related factor	-.451	.206	4.813	1	**.028***	.637	.425	.953
C1	Soft Constraints	-.521	.231	5.063	1	**.024***	.594	.377	.935
RcodeS4B1	Hard Constraints 1	.576	.165	12.106	1	**.001****	1.778	1.286	2.459
S4B3	Hard Constraints 1	.371	.154	5.851	1	**.016***	1.450	1.073	1.959
S4C9	Hard Constraints 2	-.332	.124	7.129	1	**.008***	.718	.562	.916
Constant		-8.475	1.720	24.274	1	**.000****	.000		

*= stat. significant at 5 % level, ** = stat. significant at 1 % level

LOGIT 4b used the ordinary STEPWISE method using all 43 individual items which resulted from ordinary ENTER method of originally 150 Items. The items descriptions are:

- B1b = information from peers/friends
- S3A2 = income-Annuity/insurance
- S3A3 = income-post-retirement employment
- S3B1 = Voluntary annuity/insurance
- S4C3 = excellent quality of commercial scheme
- S3C4 = own/will own health insurance
- S3D4 = retirement age should be increased
- S3D11 = prefer later date to choose retirement age
- S3D12 = good chance to work after retire
- S4A3 = private sector offer better job
- S4A14 = consider retirement scheme when change job
- S5B5 = satisfied-with other benefits (medical, house loan etc)
- C1 = behave- decide based on information
- RcodeS4B1 = indifferent between EPF/pension
- S4B3 = given chance, prefer to choose another
- S4C9 = FPB (new scheme) awareness

Table 9.12: LOGIT4b: Classifications, Model Summary, Omnibus, H&L Test

LOGIT4b: Voluntary, N= 348

.

A: Classification Table[a]

Observed		Predicted		
		Scheme selection		
		0 No, Not own	1 Yes, Own	Percentage Correct
Voluntary scheme purchased	0 No, Not own	180	36	83.3
	1 Yes, Own	53	79	59.8
	Overall Percentage			74.4

a. The cut value is .500

B: Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	121.539	43	0.000
	Block	121.539	43	0.000
	Model	121.539	43	0.000

C: Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	340.414[a]	.295	.401

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

D: Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	11.160	8	.193

Empirical Discussions Voluntary Scheme Ownership Choice

The results from the LOGIT1b model indicate the variables that make individuals more likely to OWN any voluntary retirement schemes. **Demographically**, they are employees with:

> *"Length of service less than 3 years (not yet confirmed), between 4-10 years or between 11-15 years, more than 16 years of service (approaching retirement group); working as an academic either in a new university or in a well established university in the northern part of the peninsular of Malaysia, belong to business faculty category, a permanent type of job, size of faculty either less than 50 persons (very small) or greater than 250 persons (very large); gross monthly income of less than RM1000 (lowest); gross household monthly incomes less than RM7000 and more than 9000 (highest), and chose retirement age of less than 55 years of age (early retirement) or 55 years old (ordinary retirement age)"*

These individuals also have significant **perceptions** of having higher:

> *"information level; realistic level; peer influence; arrangement on basic and supplementary retirement income sources during retirement; voluntary savings, debt obligations, commercial scheme trust, health considerations (bad or good), extending work, risk consideration, job satisfaction and young age advantage considerations"*

Other predictors, which have not been mentioned above, did not show any relationship with the choice of voluntary retirement scheme ownership.

The odds-ratio depicts that the strong predictors in choosing the OWN group of voluntary retirement schemes are: *"individuals with length of service between 4-10 years were 17.83 times more likely, between 11-15 years were 9.27 times more likely, and more than 16 years were 6.67 times more likely than the group of less than 3 years of service; academics were 139.57 times more likely than the administration category; business faculty category were 3.60 times more likely than non-business faculty categories; large size of faculty were 14.40 times more likely than the small size faculty; earning gross household monthly income between RM1001-RM3000 were 215.32 times more likely, between RM3001-RM5000 were 308.39 times more likely, between RM5001-RM7000 were 116.34 times more likely, and more than RM9000 were 776.66 times more likely compared to the group with less than RM1000; who chose the retirement ordinary retirement age of 55 years were 33.27 times more likely than who chose the early retirement age group*" in predicting the employees' decision to own the voluntary retirement scheme.

Similarly, under perceptions, with *"more information level were 2.80 times more likely; have arrangements for basic and supplementary retirement income sources during retirement were respectively 2.90 times and 1.94 times more likely; more debts obligations were 1.77 and more commercial scheme trust were 5.00 times more likely; more risk consideration were 2.78 times more likely"* than others to buy voluntary schemes. **In summary, the highest predictors of choosing to own voluntary retirement schemes are gross household monthly income more than RM9000 and commercial scheme trust.**

On the other hand, odds ratios of "less-than-1" for the demographics indicate that for every additional unit who is *"working in a well established university at the northern part of the peninsular of Malaysia were 0.10 times less likely and have a permanent type of job were 0.03 times less likely"* to OWN voluntary schemes, controlling for the other predictors in the model. Meanwhile, under the perceptions, odds ratios of "less-than-1" indicate that for every additional unit of the respondents' perceptions on: "*realistic level were 0.37 times less likely; peer influence were 0.39 time less likely; voluntary savings (bank account savings/ real estates/ investments) were 0.44 times less likely; good health and bad health were respectively 0.33 and 0.37 times less likely; extending work willingness were 0.25 times lesser; job satisfaction were 0.44 times less likely and young age advantage preference were 0.34 times less likely"* to OWN voluntary schemes, controlling the other predictors in the model.

Generally all the findings were sensible suggesting that individuals will be **more likely** to OWN (buy) voluntary retirement schemes if they:

1. Have been working as civil servants for more than 3 years.

   Unlike the newly-employed, this group of employees might buy voluntary retirement schemes. After working more than 3 years, they arguably have a sense of job security. One explanation is that to the upgrading of working status from temporary to permanent (confirmed) in the civil service was generally completed after 3 years.

2. Belong to the academic category.

   Empirically, the academics are found to be nearly 140 times more likely to buy this private retirement scheme. This indicates more awareness among the academics for additional retirement arrangements in ensuring retirement income adequacy. This

finding is expected due to the fact that the academics are normally related to high levels of thinking and awareness. Additionally, extra financial precautions for academics might lead to this situation even though it means to pay from their own money. Thus, they are more prepared and financially equipped to enjoy their retirement phase.

3. Belong to the business-faculty type of category.
   Individuals in this category might be interested in buying voluntary schemes due to the same rationale as the academic-category variable. Thus, those in the business faculty category might also have higher awareness and proper retirement planning compared to the non-business faculty type. This makes them have nearly a 4 times higher probability to buy voluntary schemes.

4. Belong to the large size faculties consisting more than 250 persons.
   Those in large size faculties are more than 14 times more likely to own voluntary schemes. This effect of size might be related to other predictors which were also found significant, namely peer effects under the perceptions factors.

5. Earned high household gross monthly income which is between RM1000-RM7000 or greater than RM9000.
   Generally, it could be said that the higher the income, the higher the probability to own voluntary retirement schemes. This is consistent with study by Gandolfi and Miners (1996). Indirectly, this could also suggest that for those in the lowest income bracket (<RM1000) prefer not to buy any voluntary scheme. Interestingly, these predictors where among the highest where the 4 groups of income brackets all reported high odds-ratios at least 100 times higher. The household income bracket of more than RM9000 was the highest with 776 times more likely to own voluntary schemes. One explanation could be that such a high salary provides opportunity and affordability to buy private retirement schemes offered by insurance companies. Surprisingly, those in the income bracket between RM7001-RM9000 are found not significant.

6. Opted to retire at the age of 55 which is the ordinary retirement age.
   This group is 33 percent times more likely to own voluntary schemes. A possible explanation might be that this group has planned to enjoy double sources of

retirement plan at the normal retirement age. They might prefer to top up their compulsory retirement scheme (PENSION or EPF) fund with their voluntary retirement scheme. Kim and Devaney (2005) also found that older workers with a DB plan or both with DB and DC plans are more likely to retire fully from work beyond their mandatory retirement age.

7. Have higher information level perception.

   Empirically, employees with higher information levels are nearly 3 times more likely to buy voluntary schemes. Logically, since owning voluntary retirement schemes means own expenditure, employees would tend to gather more information in helping them to decide prior to the purchase of the scheme.

8. Have arranged/will arrange for the basic and supplementary retirement income sources during retirement.

   These are two generated-variables after the factor analysis procedures. The basic sources refer to sources from employees' individual set up including: *"savings account, stocks/bonds/mutual fund/trust, income-business investment and real estate".* On the other hand, the supplementary sources were more related to the family factors which cover: *support from children/family members"*. Findings suggest that employees perceived that combining both of the basic and supplementary sources with the purchase of voluntary retirement scheme could ensure financial adequacy during retirement. Those having basic arrangements are 3 times more likely to purchase voluntary schemes, and those with supplementary sources will be 2 times likely to own one. This finding further highlights the impact of changing family structure similar to Asher (1998), Subrahmanya (2002), Beattie (2000, 1998) and Caraher (2003a, 2003b) who pointed out that informal family support systems are declining in the Southeast Asia region. This could also be related back to Devaney and Su (1997) who found that older workers tend to rely on employer provided schemes or social security, while younger workers additionally regard their income from their personal savings and investments as their most important source of retirement income. Specifically, the international survey on retirement security by AARP (2005) stated that the proportion personal savings recorded was only 7 percent from the total expected sources of retirement income.

9. Have more debt obligations.

   This is an interesting finding where individuals with higher debt seem more interested in buying voluntary schemes, which also means adding more financial obligations to them. This unusual behaviour might be due to increased awareness of the group in correcting their financial situation for retirement preparedness. For example, additional burden in premium payments for an annuity policy could be important in securing their long-term financial stability.

10. Have higher confidence in the commercial schemes in Malaysia.

    This suggests that higher trust in commercial scheme providers (insurance companies) could influence employees in purchasing voluntary schemes. Empirically, trust creates nearly 5 times more likelihood to purchase voluntary schemes.

11. Have more risk-evaluation.

    The more risk evaluation made of specific retirement schemes leads to an individual being 3 times more likely to buy voluntary schemes. It suggests that a careful decision process has been made prior to the purchase.

In contrast, findings from odds ratios "less-than-1" suggested that individuals will be **less likely** to OWN voluntary schemes if she or he has the following attributes:

1. Working in a well-established university in the northern part of the peninsular of Malaysia.

   This category refers to universities located at the northern part, far from the capital city of Malaysia, Kuala Lumpur. This region normally is characterized by rural environments. This geographical constraint could be a reason for receiving less advertising efforts from commercial insurance providers promoting their retirement scheme products. This lack of advertisements could make employees have less interest in purchasing such products.

2. Have a permanent type of job.

   It was found that employees who have been confirmed in their job status have less interest in buying voluntary schemes.

3. Have higher level of realism[31].

   Since the odds-ratio value was less than 1, this indicates that the more realistic a person thinks he/she is, the less likely he/she is to own any voluntary retirement scheme or 0.37 times less likely to buy; all other variables being equal. So the more realistic a person is, the more reluctant he/she is to purchase private schemes. This finding is arguably in accordance with Simon (1979); a theory which emphasises that people decide rationally only in a limited number of situations. This finding supports the application of Simon's theory in the Malaysian civil servants' decisions. Indirectly, it also suggests that a sense of sufficiency has already been fulfilled via compulsory retirement scheme arrangements.

4. Have higher peer influence.

   Employees who are heavily influenced by their peers have a lower probability (0.39 times lower) of purchasing voluntary schemes. The *peer-effect* or *norms* in behaviour were stressed in Benartzi and Thaler (2007), Conslik (1980) and Brown and Weisbenner (2007) and indicated that individuals' decision are affected by the decisions of others in their peer group and lead to conformity in their behaviour. Duflo and Saez, (2003) also added that the decision of retirement plans is a difficult one, thus it might be best to follow peers decisions. However, this study found a contradicting result since peers have a negative effect on buying voluntary schemes. The situation could be explained by the fact that imitation involves payments from their own money. Another reason might be that civil servants' sense of sufficiency has already been fulfilled by compulsory retirement scheme arrangements.

5. Have additional voluntary savings.

   Individuals who already have personal voluntary retirement savings such as bank account savings, real estate or investment funds tend to be 0.44 times less likely to own voluntary schemes. One reasonable explanation might be due to the need for voluntary retirement schemes (such as by annuities) being replaced by personal savings (such as owning a house). Thus, employees might feel secure in using just one mechanism to meet their voluntary retirement arrangements. It is common practice in some countries like Singapore where real estate would be considered as retirement assets (Asher, 2000; Croissant, 2004). Singapore has extensively played a major role in public housing, where the Singaporean CPF (Central Provident

[31] Pragmatic attitude with reliance on facts rather than ideal or moral influences

Fund) acts as the main mortgage finance mechanism in Singapore (Asher, 2000). In comparison, the Malaysian retirement system still has limited withdrawals for housing offered by EPF (EPF, 2009). Thus, Malaysian employees need to set up their own to finances or to invest in real estate as their retirement assets can be liquidated later if need be.

6. Have good or bad health status.

   Employees who admitted having good-health status are 0.33 times less likely to own voluntary schemes. Surprisingly, the bad health group are more reluctant to buy voluntary schemes, where they are 0.37 times less likely to own. Bakar et al. (2006) found that 96 percent of their Malaysian sample who had health insurance had a satisfactory level of health or better. These results show that individuals who perceived extreme deterioration of health are less motivated to buy commercial schemes. These two groups might have a high dependency on the national health care system to take care of their future being during retirement. This might be due to the sense of sufficiency received for medical treatments provided by the government which are generally free of charge. Wong (2006) and Ramesh (2002) claimed that the Malaysian government has a continuous need and effort to promote good service in its healthcare systems. Additionally, in 1995, Malaysia even developed the "Special-Health Care Program" for the Elderly (Wong, 2006). The previous literature and this study all claim that a Malaysian national healthcare system for retirees is still well considered by employees. In the sector effect, Propper (1989) found that private employees are more likely to own health insurance compared to civil servants. The other group between these two extremes with uncertain future health status (supporting French, 2005), are the most appropriate target for insurance companies to promote their annuities or life insurance scheme.

7. Willing to work beyond retirement age.

   Employees' willingness to extend their retirement age tends to reduce the probability of buying voluntary retirement schemes. This study as many others (Manchester, 2007; Lozier and Davis, 1991; Mitchell and Fields, 1984; Blundell, 2002; French, 2005; Dorn and Sousa-Poza, 2005; Kim and Devaney (2005); Szinovacz and Davey, 2005) were able to relate the retirement age/extending work with retirement plan or choice issues. Specifically, Loretto and White (2006)

uncovered various barriers hampering decisions to extend employment. They listed factors that played a part in decisions on extension of working years including gender, size of organisation and health. This array of various factors was supported with findings from this study where the extension of working year's variable and the earlier variable (health status) were both found to be significant in simultaneously lowering the likelihood to purchase voluntary schemes. This supports the existing notion that a combination of different variables affect decisions to purchase voluntary schemes.

8. Have higher job satisfaction (JOB_1)

   Empirically, individuals with higher job satisfaction will be 0.44 times less likely to own voluntary schemes. This is an interesting finding as regards to rational economic expectations; the more satisfied a person is in their job, the less they want to add to their voluntary retirement fund. This finding is similar to Luchak and Gellatly (2002) where they found that job satisfaction is negatively related to expected accruals under the pension plan. One explanation might due to the overall sense of comfort and security perceived by working under government sectors which leads to superior satisfaction.

9. Have a workplace where younger workers have more advantage (JOB_2).

   This is the second variable used to measure dimensions of job related aspects. Empirically, it reported that the higher preferences for younger workers in the workplace, the less likely are employees to buy voluntary schemes. This is an intriguing finding. This variable has been originally designed to measure if older workers are considered to be less favoured in job advancement and opportunities. One logical reason might be that with a bias towards young staff, this could create dissatisfaction in the work place for these senior individuals. As retirement decisions might be influenced by many interrelated factors, may be those people did not set up voluntary schemes with uncertainty about their long term career; which may affect their retirement planning. Manchester (2007) has found that individuals choose voluntary retirement plans (individuals accounts) to diversify their sources of retirement income. Thus, this group might feel that diversification through voluntary arrangements is still too early to be considered with their uncertain positions in the job. On the other hand, these employees might even have

higher reliance on other types of retirement sources, such as compulsory retirement schemes, own savings accounts or family sources.

9.5 Interview Findings: CHOICE

This section presents findings for questions on "*the factors that lead to their staff's final choice of selecting their retirement schemes choice".* The findings are summarised in **Table 9.13** for each of the predictors-name. Based on the number of occurrences, the researcher concluded the five strongest variables which could predict choice of either DB or DC retirement plan. These variables were knowledge, peers, plan feature, mobility and lastly demographics.

This analysis was partly for section1 & section2 as appeared in interview schedule. It is aimed to have a broader picture in relation to choice making in Malaysian public universities. It will answer if a specific variable was able to influence employee choice. Thus, the following objectives should be realized. The variables were also ranked according to their importance.

Rankings

In terms of ranking, knowledge followed by peer effects and plan features are the three outstanding factors in making retirement plan choice. The results suggested that respondents acknowledged the vital role of the knowledge factor in making their decisions. Subsequently, after knowledge, peer effects seem to step in, which aligns with Conslik (1980) and Duflo and Saez (2003) suggesting that making the optimal approach in decision is to just imitate the behaviour of other individuals in the peer group. Additionally, plan features will also be considered important by employees, a factor which is also being considered by employers prior to setting up the company retirement plan in the first place.

1st Objective: ***Knowledge*** (Information) Level ~ *1st rank*

The findings indicated that knowledge is the most important predictor in making choice. All respondents admitted that employees' choices are based on the knowledge they possessed. Despite the high importance of the knowledge variable, they admit that

levels of knowledge gained were considerably low. Some also stressed that there were problems in the disseminating of information in their organisations. The situation is made worse as not all employees are willing to go through the information seeking process.

Table 9.13: Results of the Significant Factors from Interviews

	Influencing Factors	Examples	Yes/ no	# yes occur	#opposed	Rank
1	Knowledge level	*Retirement systems and implications, etc.*	√	11	0	1
2	Demographic	*age, sex, income, spouse…*	√	5	-	5
3	Retirement income sources	*employer, own savings, family, business.*	√	1	5	8
4	Voluntary saving perceptions	*Savings account, real estates*	No	0	6	-
5	Job related	*job nature, importance & satisfaction.*	No	0	9	-
6	Mobility	*changing job effect*	√	6	1	4
7	Extension of working years	*retirement age, post retirement work*	No	0	4	-
8	Health status	*healthy versus unhealthy*	√	3	1	6
9	Plan feature preferences	*lump sum payment, gratuity, pre-withdrawals, ...*	√	7	-	3
10	Soft constraints (Peer effect)	*majority of chosen scheme*	√	8	1	2
11	Hard constraints (Decision behaviour & Appraisal)	*Security versus benefits, schemes appraisal*	√	2	2	7
12	Others	*Inflation adjustments/ multiple objective*	√	2	n/a	9

Note:

"√"= influenced variable, no = not an influenced variable, n/a = not applicable,
"# yes occur"= number of respondents agree, "#opposed" = number of respondent disagree,
"others"= new variables emerge from the interview

Quoting a respondent:

> *"Of course knowledge is very important. How are you going to choose if you don't have any information regarding the schemes available? The explanation of the schemes is normally given at induction/seminar course at the beginning of employment. Yet, decision is made 3 years after being in service. They might use the knowledge gained at inception or they might have forgotten about it. Most employees will not be bothered but some will. It actually depends on their own self, whether they want to try to seek for information or not".*

Then another feedback captured:

> *"Personally, I perceived a trend which I called the "culture" of working in public/government institution where civil servants tend to be spoon-fed for information. Little or no efforts are shown for self-seeking. They rely heavily on what they have been told and what information has been disseminated".*

Apart from ordinary interviews with the management level, the researcher has also attended an actual session where employees are briefed on the compulsory retirement schemes they are about to choose. The seminar was really effective in giving insights into the matters surrounding their retirement decision especially for the new universities. The session was handled by representatives from EPF and PENSION departments, providing an avenue to seek more information and clarification. These two personnel could give first hand and reliable information from respectable sources. Due to its unique advantage, PENSION scheme tends to dominate employees choice as it is catered exclusively for civil servants. However, EPF scheme is not without support. The EPF representative seems to give an active role in promoting the scheme to attract participants. Surprisingly, some of the well-established universities tend to ignore this kind of seminars by providing brief sessions conducted by their own personnel, which were later found to be insufficient for the employees. Few respondents also described that some of the universities tend to be biased in promoting certain types of retirement schemes to new employees in their briefing. Sadly, this could lead to dissatisfaction with the decision made which is later regretted.

2nd Objective: ***Demographic*** Factors ~ *5th rank*

Five respondents comprehended that demographic factors do influence decisions, while none are against it. Gender, marital status, and income were among the popular demographic factors which influenced employees' decisions and these factors were undisputable. The most outstanding demographic factor to influence retirement choice was marital status. It is reasonably common in Malaysia for working individuals to settle down in marriage. Thus, most of the civil servants are married, creating dual-income families which require them to make dual-retirement scheme decisions. Roughly, all respondents indicate that couples make retirement scheme decisions to complement or integrate on each other funds. A comment was noted:

> *"Undoubtedly, most of my subordinates agreed that marital status does affect their decision on retirement choice. Many married employees decided to match their choices against their spouse's decisions. For example if the husband had chosen PENSION, the spouse will choose EPF instead. This integration is actually a good diversification of retirement funds. The same goes with voluntary schemes; they will try not to rely on similar scheme but diversify their choice to get the best out of it*."

These results strongly supported the previous studies which found significant effects of either spouse/couples/family on retirement related decisions. For example, Gustman and Steinmeier (2004) on family retirement decision; Moen et al. (2001), Kim and Moen (2002), Smith and Moen (1998) on spouse impact and the decision to retire; Blundell et al. (2002) on spouse's economic characteristics impact and the early retirement decision; and Craig and Toolson (2008) on the surviving spouse impact on DB versus DC choice. Therefore, this suggests that retirement related decisions are strongly influenced by marital status; whenever applicable.

3rd Objective: ***Jobs Related*** *Aspects*

Nine respondents did not think that job-related factors could affect staff decisions in selecting their retirement schemes choice. This finding suggests that the variable imposes less importance in employee considerations to make their choice.

4th Objective: ***Extending Work*** Perception

Similar to the previous factor, four respondents did not perceive extension of working years/ retirement age factor could influence staff choice of retirement scheme. Thus, it could be said that this variable imposes less importance in employee considerations to make their choice.

5th Objective: ***Mobility*** *~ 4th Rank*

Mobility does play a significant role in determining choice of scheme; this was agreed by six respondents. Only one respondent argued against it. Findings indicate that Mobility is an important predictor in making choice. The retirement plan type depends on either remaining longer in government service or not. One respondent said:

> *"If an employee wants to work in government service until their retirement; they will definitely choose PENSION. Otherwise, if they are the adventurous type who loves job hopping, they will go for EPF. Additionally, the management could develop a monitoring device, based on employee choice of the retirement plan. For example as the head of the department who relied on certain key*

person I will think that whoever chooses EPF might have higher tendency to quit and join the private companies for better job salary because without risking his accumulated EPF fund with the job change".

Another respondent raised concerns strong argument about loyalty:

"From my personal observation, there are several noticeable trends in employees' decision to choose between PENSION and EPF. Senior workers mostly opted for PENSION and new workers prefer EPF. Employees who have long service history in government services will remain in PENSION as shifting to other scheme will jeopardize their retirement benefits and privileges. Indirectly, they are loyal to the government, up until retirement. Those who chose EPF usually are less inclined to remain in government service and EPF is more mobile, in which the scheme could be carried along with other employment. In addition, EPF is preferred by many academicians; with their high qualification, they have better job opportunity outside the university."

Another finding relates to irrevocable decisions. According to O'Rourke (2000), with the increased in job mobility, employees may be required to make decisions for more than eight times during their working career. Thus this makes choice among retirement plans more crucial, due to the irrevocable decision made only once in during employment. The choice between PENSION and EPF was only given once; which was in the first 3 years of employment. Therefore, employees could not do anything after the decision has been made. Findings clearly support that Mobility variable is a strong predictor to choose EPF scheme. An insightful comment was extracted from one respondent:

"Employees can only choose once. Normally, they need to decide after their induction course. Remember that this is one-time final decision. The choice is irrevocable, so later if they are not happy with their choice, they still need to put up with it until they retire."

6th Objective: ***Health Status*** Perception

There were four responses to this variable: three respondents agree that the variable does influence choice and one is against the notion. Most of them agree that health and well being issues are secured under PENSION - this being their main reason of saying that health status is a factor to be considered in their retirement decision. Feedback from respondent was:

"Somehow, there is a link between old age and poor health. Employees are better-off if they opt for PENSION. Its post-retirement health care privileges do not only cover the employee, but the family as well. Just show them the pension card and everything will be fine."

Another different opinion stated:

"When you choose EPF, you are no different from the rest of the public. There will be no privileges as civil servants; you might end-up with hefty medical bills to pay. In case of hospitalisation, you will put in the third class, treated with no difference as private sector workers. If an employee chooses EPF, he/she needs to buy medical insurance, if they are concerned about their health well being".

The arguments indicate that the tendency to choose between PENSION and EPF was motivated by health matters. PENSION scheme provides better post-retirement health care coverage. Indirectly, this suggests that the Malaysian national healthcare system is considered good as supported by (Wong, 2006; Ramesh, 2002) despite claims from other researchers, that the present system is inadequate and inappropriate for the elderly (Mohamed, 2000). Therefore, it might not be profitable for insurance companies to promote their health insurance products amongst the group of civil servants who opted for the PENSION scheme as their health issues are sufficiently cared for.

7th Objective: Peer Effect (***Soft Constraints***) ~ *2nd Rank*

Eight respondents agreed that *peer/colleagues effect* can influence choice of retirement scheme, while only one respondent thinks oppositely. It suggests that more respondents support this factor, implying that *peer/colleagues effect* is an important predictor for employees to make their choice. Some even think that peer effect is the most outstanding factor to influence an employee's decision; not only for retirement scheme but for other employees' decisions too. Many agreed that employees' decisions will normally conform to the norms in their department. To quote a respondent:

"When you are deliberating about an important decision, you will surely look at what others have done. Employees are given time to choose the retirement scheme and submit their decisions. Normally, they will consult their friends before deciding as they feel insecure to choose differently from the rest of their friends. For example, many choose PENSION simply because their senior friends did the same and this trend will continue."

Findings also indicate that peer effects provide a sense of control. One respondent says:

> *"It is a common culture in the public service; employees will look at what have been done (decide) by their colleagues. If everybody chooses PENSION scheme, then they surely will do the same and vice versa. They think if they make mistake, they could rectify it easily. By being in a large group, the government might even change the retirement provision later to suit their wants"*

This *peer-effect* and *norms* in behaviour were also being stressed in Duflo and Saez (2003), saying that retirement plan decisions are difficult and it is very likely that individuals' decision are affected by the decisions of others in their peer group, leading to conformity in their behaviour.

8th Objective: ***Hard Constraints*** (Decision Behaviour & Appraisal)

Interestingly, two respondents supported and another two opposed the idea that *Hard Constraints* could influence choice of employee retirement schemes. These equal pros and cons make it difficult to understand/interpret real perceptions on the variable. One good explanation might be due to the variable's character which is more difficult to be answered due to its specialisation nature. For example this variable asked questions on the assessment of the "security versus benefits implications" of the retirement schemes.

9th Objective: **Plan Feature** Preferences ~3rd Rank

Without any dispute, most respondents (7) agreed that *plan feature* could affect choice of the retirement scheme. These indicate that the plan feature is indeed a very important predictor for employees to participate in a certain retirement scheme. Findings show that the important plan features for the PENSION scheme are the life-long fixed monthly pension, gratuity service payments and life-long free medical treatments in government hospitals. On the other hand, EPF schemes are chosen due to its mobility, lump-sum payments and income-tax relief.

From a different perspective, the drawback of PENSION scheme is the un-transferable fund constraint. Many admitted that it is known to all employees that she or he will lose all PENSION benefits by leaving the civil services sector. On the contrary, the monthly deduction of salary for EPF contributions is the disadvantage of EPF. One of the heads of departments said:

"The civil servants normally received low salary; even a small contribution to retirement scheme will result in financial difficulties to them. Salary deduction is always a big issue. Although they might use the pre-withdrawals incentive from EPF scheme, but employees have more urgent need for money such as for children's education and monthly instalments for a car or house"

Some of these findings generally support other studies. For example, Dulebohn et al. (2000) who identified primary predictors distinguishing plan selection found that employee' preferences for plan features (investment choice for a DC plan, benefit formula for a DB plan, and portability for a hybrid plan) explained significant variation in their selection. Specifically, this includes lump-sum, benefit determination, investment choice, portability (mobility) and survivor benefits.

10th Objective: ***Retirement Income Source**s*

Only one respondent agreed with the impact of retirement income sources as an influencing factor, while five others are against the idea. This finding conforms to results from the survey that the Retirement-Income-Source variable is not having a serious impact or it plays a minor role compared to other factors. This suggests that employees are less affected by this variable. However, one respondent gave a very good elaboration in explaining the overall scenario surrounding the compulsory retirement scheme choice:

"The main retirement income source definitely comes from either EPF or PENSION, established by work related retirement plan arrangements. I do believe that this compulsory fund should be adequate for them. By working as civil servants, they just relied on the government provided fund. Also if they decide to spend their retirement ages living in rural area, then these sources should be enough. The elderly care in terms of health is secure for the government pensioners. It is also common for them to have accumulated savings to buy a house or land before they retire. These kinds of asset could later be liquidated if necessary. Apart from that, I have many colleagues who want to venture into business after retirement. They will use EPF lump-sum or PENSION gratuity-money to start the business, but this is too risky. As for health care, the civil servants are far better. Subsequently, I don't think that family care will still be an option in the future. It is so sad to see more and more elderly end-up in care-homes. Yes, they do have children who could care for them when they become old, but nowadays, in the era of modernization; this is not a guaranteed matter."

And then commenting on the voluntary retirement scheme choice:

> *"Voluntary schemes are not popular to civil servants; I believe civil servants rely on either EPF or PENSION as their only source of retirement income. Other sources are irrelevant and I strongly-think even the concept of retirement planning was too complicated to understand by civil servants. Moreover, words such as annuities are unknown or foreign to them. The priority for common employees is to live and to survive the present. So I don't think they care about retirement sources yet, too early for them to deal with."*

The findings suggested that the adequacy of retirement incomes sources were attainable by compulsory schemes. Voluntary retirement arrangements are not commonly used by employees. Another interesting finding acknowledged the increasing trend of less dependency on traditional family care. Paradoxically, it found that employees do have higher reliance on their employer-sponsored retirement plan, especially because it is provided by the government. It also found that there is higher dependency on government provided elderly-care. This is supported by other studies such as Shuey and O'Rand (2004), Childs et al. (2002), Gustman and Mitchell (1994) and others. Accumulation of real estate or involvement in business ventures might become other popular mechanisms to generate retirement income sources among government servants.

11th Objective: ***Voluntary Savings*** *Perception*

The voluntary schemes ownership variable does not influence staff decisions with six respondents against it. None support the variable as a predictor. Their disagreements have similar justification to the Retirement-Income-Sources variable.

Other/Additional Objective*: ***New Theme*** *Emerges*

Two new separate issues emerged from the interview sessions which could not be classified into other themes which also influence retirement choice. This is the advantage of qualitative method which could give richness of subjective data. They are:

i. *inflation adjustment*
ii. *multiple objective*

First, the *Inflation adjustment* (including pay rise impact) variable relates to the case where employees will choose the scheme which has been indexed to the inflation rate. It is referred to a government decision relating to increasing benefit payments for inflation

adjustments. This could be applied to any retirement scheme such as on the PENSION's life-long monthly benefit scheme or on the EPF's lump-sum benefit. This shows that employees have high expectations of the future benefits of the scheme they choose.

Second, findings indicate that employees might also have *multiple objectives* that complicate their decision making process. The respondent does indicate that it was impossible to fulfil each and every need, but employees seem to arrange their retirement objectives based on rank. Then they will choose the most outstanding objective from the list and choose the retirement scheme which could fulfil that objective. This has also supported the application of BRT in employees' decisions.

9.6 Conclusion

The limitation of univariate analysis from the previous chapter was overcome by the multivariate analysis in this chapter; which takes into account the interrelationships among independent variables. Thorough discussions have been presented in explaining the significant results for the choice predictors. The highest predictors of choosing EPF were individuals earning between RM3001-RM4000 and knowledge of overall retirement schemes features. While the highest predictors of owning voluntary retirement schemes were gross household monthly income of more than RM9000 and confidence in the commercial scheme. In examining the knowledge variable, the level of information is frequently found significant, indicating its importance. It reveals that respondents have recognized the need for gathering and processing information in their decision making. This study confirms that the choice of compulsory retirement scheme is associated with demographic variables. Many respondents seem to favour the features of PENSION scheme compared to the EPF. The BRT is possibly applied in an employee's decision to choose their compulsory and voluntary retirement schemes.

The findings suggested more than one utility functions. Employees tend to have limits in formulating and solving complex problems and in processing information and they also tend to do simplification processes. Employees also tend to choose the first opportunity that seems satisfactory rather than seek the best solution. All these conform

to Simon's BRT (Simon, 1991). The theory emphasised that perfectly-rational decisions are often not feasible in practice due to finite computational resources available. Here, the output supports Simon's theory which suggests that individuals employ the use of heuristic (common sense) to make decisions rather than a strict, rigid rule of optimisation. For example, in deciding to choose the compulsory or voluntary retirement schemes, individuals made simple heuristics which are able to satisfy their simple preferences rather than theoretically-optimal procedures by looking at variables which were found significant and were repeated as significant in different logit models. Rationality is "bounded" and thus individuals rely on a "strategy of satisficing". It has been discussed earlier in the compulsory choice that decisions were made without in-depth consideration. This proved that in reality, information is limited, imperfect or misleading which further supports BRT.

The interview findings have given meaningful insight into choice of retirement schemes from a qualitative perspective. Its findings complemented those found in the quantitative analysis, with no major contradictions. Based on the number of occurrences, the researcher concluded the 5 strongest variables which could affect choice of retirement plan. These variables were knowledge, peers, plan features, mobility and lastly demographics. The other 3 variables which were also found to influence choice were retirement income sources, health status and hard-constraints. On the other hand, there were three variables that do not contribute towards influencing retirement schemes choice. These were voluntary savings perceptions, job related aspects and extension of working years. Employees are also perceived to be satisfied with their decision and the systems.

CHAPTER 10: SATISFACTION

This chapter is intended to examine the satisfaction level of Malaysian public universities employees with their retirement scheme choice. Descriptive statistics were used to analyse satisfaction levels by reporting frequencies, means, medians, standard deviations and shape. Factor analysis and normality tests were then performed before embarking on the Mann-Whitney U to test for significant differences among choices.

10.1 Introduction

Research objective 2 is "*to analyse the level of satisfaction with different choices of retirement schemes perceived by employees in Malaysian Public Universities"*. The **research questions (3&4)** to be answered are "*What is the level of satisfaction perceived by the Malaysian public universities employees with the different types of retirement schemes choice?"* and "*Is there any difference in the level of satisfaction between the retirement schemes choices?*" Thus, the related **hypothesis** is "*H3: There is a significant difference in satisfaction level perceived by different retirement schemes choice"*.

Respondents were asked to what extent they agree with the positive statement on the different types of satisfaction measured as described in Section 5.5. The discussion is divided first by compulsory retirement scheme chosen (EPF versus PENSION) and second by voluntary scheme ownership (OWN versus NOT OWN). In each section, the first analysis is based on descriptive statistics. Secondly, Mann-Whitney U tests were used to find out whether there are significant differences in satisfaction between the different groups of retirement schemes.

10.2 Descriptive Statistics for the Satisfaction Variables

There are two types of variables used in this section: first, 14 variables which appeared originally as individual questions in the questionnaire; and second, 4 generated variables from the data reduction techniques of the factor analysis. They are referred to as *items* and *factors* respectively; as depicted in **Table 10.1**. The table reports the mean, median, standard deviation (SD), skewness and kurtosis of each variable used in

measuring satisfaction. The *mean* and *median* values of compulsory and voluntary schemes are not reported here as they will be elaborated on later.

Table 10.1: Satisfaction Variables: Descriptive Statistics (N=348)

Variables	Labels	MEAN	MED	SD	Skewness	kurtosis
Items						
	Satisfied with:					
S2B1	power (right) to choose	4.09	4	.924	-.817	.322
S2B2	time available to decide	3.71	4	.989	-.585	-.017
S2B3	quality chosen scheme	3.68	4	.878	-.444	.154
S2B4	variety of the schemes	3.41	3	.949	-.219	-.235
S2B5	promised benefits	3.68	4	.905	-.274	-.256
S2B6	financial sufficiency	3.55	4	.895	-.141	-.283
S2B7	asset management	3.50	3.5	.871	-.193	-.054
S2B8	flexibility to change scheme	3.28	3	1.058	-.391	-.243
S2B9	government effort improve scheme	3.56	4	1.057	-.491	-.263
S2B10	family support	3.76	4	.911	-.554	.098
S2B11	healthcare system	3.57	4	1.057	-.565	-.121
S2B12	elderly care system	3.51	4	1.107	-.477	-.379
S4D1	current choice	3.57	4	1.000	-.468	-.026
S4D2	current provision/act	3.51	3	.931	-.204	-.002
Factors						
Satis_SYSTEMS_1	Surround systems satisfaction	3.68	4	.966	-.522	-.035
Satis_SYSTEMS_2	Personal systems satisfaction	3.82	4	.834	-.577	.684
Satis_CHOICE_1	Choice satisfaction	3.57	4	1.000	-.468	-.026
Satis_CHOICE_2	Provision satisfaction	3.51	3	0.931	-.204	-.002

The *items* part is extracted from questions in Section 2B and Section 4D. The *factors* investigated four aspects of satisfaction, namely *Surround systems satisfaction, Personal system satisfaction, Choice satisfaction* and *Provision satisfaction*. The first two were generated from factor analysis as explained in detail in the next section. They originally belonged to 12 items under Section2B (*Retirement Systems satisfaction*) in the questionnaire. The *Surround systems satisfaction* is a combination derived from questions S2B (9, 10, 11, 12) while *Personal system satisfaction* is a combination derived from questions S2B (1, 2, 3). Both variables were testing the "**systems**" satisfaction. First the *surround systems satisfaction* variable is investigating satisfaction with the general support systems in Malaysia. Questions involved were asking satisfaction with government retirement schemes, family support availability and health care and elderly care systems to support future pensioners in Malaysia. Conversely, the second variable, the *personal systems satisfaction*, is specific to the employee which deals with the immediate/direct effect of a person's satisfaction. The questions were meant to uncover the satisfaction of an individual with the time given to choose, quality of chosen scheme and the existence of the choice itself to employees. On the other hand

the last two variables relate to "**choice and provision**" satisfaction. They belong to the stand-alone questions under *Overall satisfaction* questions in Section 4D (numbers 1 and 2). The first one asks about satisfaction with the choice of compulsory retirement scheme and the second asks about satisfaction with the current provision of retirement arrangements for Malaysian civil servants.

10.3 Early Findings

The factor analysis and normality test results are presented here. Subsequently, the frequency distributions, mean scores and standard deviations together with clustered bar charts are used in an early examination of the satisfaction variables.

10.3.1 Factor Analysis Results

The internal reliability of the satisfaction variable, the Cronbach-Alphas (α), has been reported in **Table 6.4**. All α's were above the value of 0.70 for these 5-point Likert scales. The values ranged from 0.716 to 0.927, indicating all measures of the scales used are internally reliable. Furthermore, Cronbach's Alpha for the total satisfaction items (14) as a whole is high at 0.921, representing very good internal consistency. All these imply good construction of the questionnaire, which has been developed in this study.

Next, in order to manage all 14 items effectively, data reduction techniques using factor analysis were applied, so that independent variables are well-represented. This better representation could be achieved as suggested by Field (2005' p.619) factor analysis can reduce a data set to a more manageable size while retaining as much as of the original information as possible. He also highlighted that multicollinearity can be a problem, and the factor analysis can be used to solve it by combining variables that are collinear. The procedure is similar to factor analysis tests in the earlier Chapters. The appropriateness of factor analysis with the data in this research has also been met (See **Table 10.2** for the summary).

The results signify that the factors developed by the factor analysis were very good. There were no multicollinearity and singularity problems and the new Cronbach-alphas

were all good (reliable) - exceeding the value of 0.7. The loading range produced by the 2 factors were excellent ranging from 0.82 to 0.94, thus explaining more than 80 percent of the *Retirement Systems Satisfaction* variable. Additionally, the overall factors are very good - explaining 79 percent of the variance. In order to verify data suitability for factor analysis, Pallant (2007) listed two requirements: a significant value (<0.05) of BTS and 0.6 or above for the KMO. The BTS had a significant result of 0.000 for each dimension. The KMO statistic was 0.84. Kaiser (1974) supported that KMO statistics recommend a lowest value of 0.5, values between 0.5 to 0.7 are mediocre, values between 0.7 to 0.8 are good, values between 0.8 to 0.9 are great (very good), and values above 0.9 are very superb (excellent). For these data, the value was 0.8 which falls into the range of being very good. Thus, factor analysis is appropriate for the data. Furthermore, previous studies on choice also found high alpha values. Danehower and Lust (1995) specifically reported an α of 0.873 (based on 4 items) on satisfaction with university retirement plan and 0.863 (based on 2 items) on satisfaction with the voluntary/ life insurance.

Table 10.2: Satisfaction: Factor Matrices Summary for Each Dimension/Item

Variables	Items	n	a.	Loading range	Eigen.	KMO	% expl	α
			0.008			0.84	79	
Ret systems satisfaction								
1.Satis_SYSTEMS_1	S2B [9,10,11,12]	4		0.827-0.936	4.240			0.91
2.Satis_SYSTEMS_2	S2B [1,2,3]	2		0.825-0.892	1.270			0.85
Choice satisfaction								
1.Satis_CHOICE_1	S4D1	1			N/A			
2.Satis_CHOICE_2	S4D2	1			N/A			

BTS had a significant result of 0.000 for each dimension
Eigen = Eigenvalues, % expl= Percentage of variance explained, α= Cronbach-α
Determinant (a.)= testing for Multicollinearity & Singularity problem
N/A = cannot be computed due to only 1 item extracted.

10.3.2 Normality Test Results

Normality testing has been conducted on the variables; both on individual items and on factors. Results indicated that all variables were not normally distributed, shown by the Kolmogorov-Smirnov Test of Normality. Pallant (2007, p. 62) stated that a non-significant result (value > 0.05) indicates normality. However, all items reported Sig. value of 0.000, violating the assumption of normality. This is common in larger samples, which is applicable in this study with N=348 cases. In choosing statistical tests to perform comparisons of group means, a non-parametric test of Mann-Whitney U will be used due to the non-normality grounds.

10.3.3 Compulsory Scheme Satisfaction: Descriptive Statistics

Means and standard deviation scores for these satisfaction variables are presented in **Table 10.3**. The **bold** print indicates the highest value in each column. **Table 10.3** reports that most of the variables have means values above 3.0. Each aspect measured reported values between 3 (neutral) and 4 (satisfied); none achieved a mean higher than 4. This result suggests that respondents (employees) are generally satisfied with their retirement choice, provision and surrounding systems. Both schemes have a similar pattern of results. The highest satisfaction's TOTAL score was from *personal systems satisfaction* (3.82), followed by *surrounding systems satisfaction* (3.68), *choice satisfaction* (3.57) and *provision satisfaction* (3.51). In both EPF and PENSION choice categories, all four means differ slightly from one another. As for the EPF scheme, the highest satisfaction mean is on *personal systems satisfaction* (3.48), and lowest on *provision satisfaction* (3.24). The same highest and lowest variables were also recorded in the PENSION scheme, with the highest being 3.91, and lowest being 3.58. None of the mean values in EPF schemes outnumber PENSION, which indicates that employees under the PENSION category have higher satisfaction levels than EPF scheme holders.

In terms of SD, scores for all four EPF variables were higher than PENSION. Howitt and Cramer (2005) stated that SD is an index of how much scores deviate or differ on average from the set of scores of which they are members. In examining satisfaction scores, variability around the mean is higher for EPF scores compared to PENSION scores. None of PENSION groups reported a SD higher than 1.00. On the other hand, EPF have two scores greater than 1.00 showing that there is higher variation in

employee satisfaction towards *surround systems satisfaction* and *choice satisfaction*. In terms of the TOTAL score variable choice satisfaction produced the largest SD of 1.00, indicating a relatively high variability in employee satisfaction with their choice.

Table 10.3: Satisfaction: Descriptive Statistics for Compulsory Schemes (N=348)

Variables Name	Satisfaction aspects	Scheme selection:				TOTAL	
		EPF		PENSION			
		Mean	SD	Mean	SD	Mean	SD
Satis_SYSTEMS_1	1.Surround systems satisfaction	3.37	**1.045**	3.76	0.929	*3.68*	*0.966*
Satis_SYSTEMS_2	2.Personal systems satisfaction	**3.48**	0.939	**3.91**	0.784	***3.82***	*0.834*
Satis_CHOICE_1	3.Choice satisfaction	3.32	1.039	3.64	**0.982**	*3.57*	***1.000***
Satis_CHOICE_2	4.Provision satisfaction	3.24	0.978	3.58	0.907	*3.51*	*0.931*

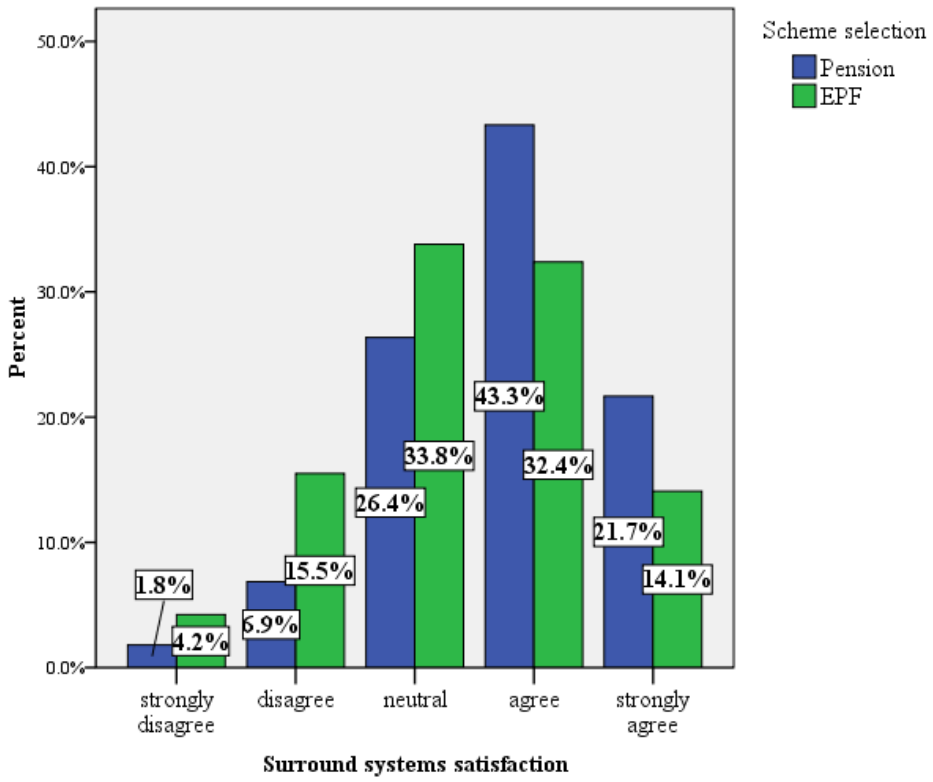
Next, **Table 10.4** shows the distribution of respondents according to satisfaction levels with their compulsory retirement scheme chosen. It shows that the majority of respondents, either from EPF or PENSION schemes, are satisfied with respect to the four variables. These are illustrated by **Figure 10.1**, **10.2**, **10.3**, and **10.4** respectively.

Table 10.4: Satisfaction Levels: Respondents Distribution on Compulsory Schemes

Satisfaction on Compulsory retirement scheme	EPF		PENSION		TOTAL	
	N	%	N	%	N	%
	71	**20.4 %**	**277**	**79.6 %**	**348**	**100 %**
1. Surround systems satisfaction						*100.0 %*
Strongly disagree	3	4.2 %	5	1.8 %	8	2.3 %
Disagree	11	15.5 %	19	6.9 %	30	8.6 %
Neutral	24	**33.8 %**	73	26.4 %	97	27.9 %
Agree	23	32.4 %	120	**43.3 %**	143	**41.1 %**
Strongly agree	10	14.1 %	60	21.7 %	70	20.1 %
2. Personal systems satisfaction						*100.0 %*
Strongly disagree	2	2.8 %	3	1.1 %	5	1.4 %
Disagree	7	9.9 %	4	1.4 %	11	3.2 %
Neutral	26	36.6 %	69	24.9 %	95	27.3 %
Agree	27	**38.0 %**	141	**50.9 %**	168	**48.3 %**
Strongly agree	9	12.7 %	60	21.7 %	69	19.8 %
3. Choice satisfaction						*100.0 %*
Strongly disagree	5	7.0 %	8	2.9 %	13	3.7 %
Disagree	7	9.9 %	22	7.9 %	29	8.3 %
Neutral	27	**38.0 %**	88	31.8 %	115	33.0 %
Agree	24	33.8 %	104	**37.5 %**	128	**36.8 %**
Strongly agree	8	11.3 %	55	19.9 %	63	18.1 %
4.Provision satisfaction						*100.0 %*
Strongly disagree	5	7.0 %	4	1.4 %	9	2.6 %
Disagree	7	9.9 %	18	6.5 %	25	7.2 %
Neutral	30	**42.3 %**	117	**42.2 %**	147	**42.2 %**
Agree	24	33.8 %	88	31.8 %	112	32.2 %
Strongly agree	5	7.0 %	50	18.1 %	55	15.8 %

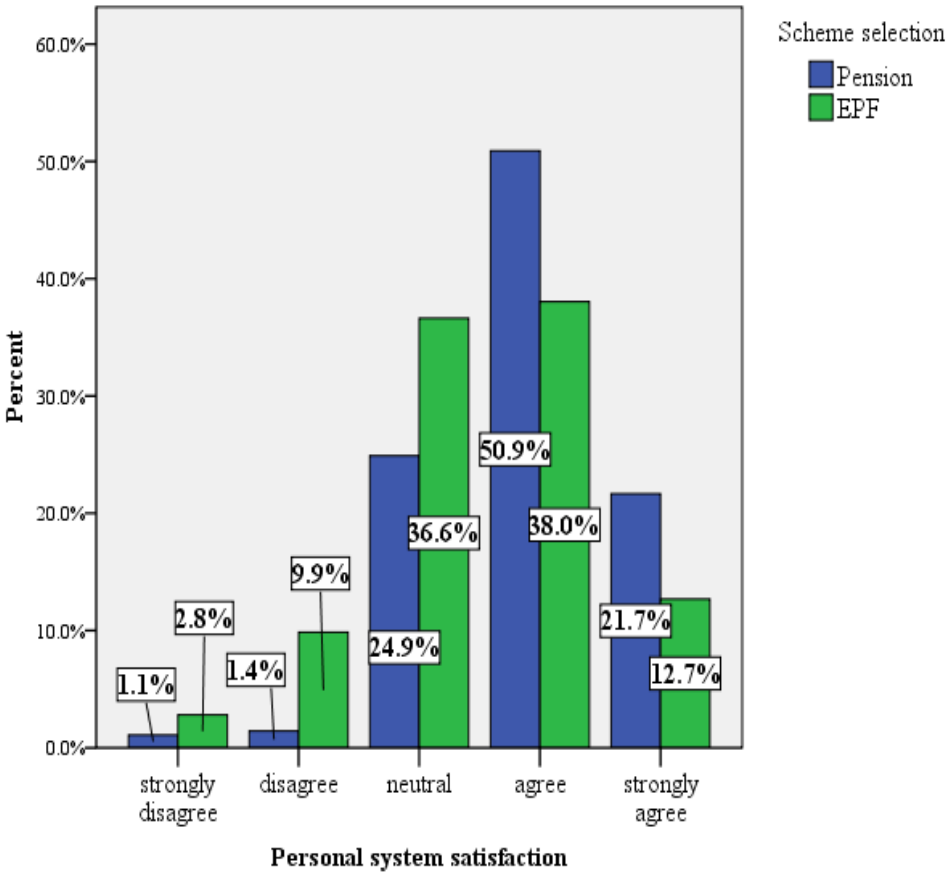
The factor analysis procedure was able to reduce the "systems" satisfaction variables into two groups. The first one was called "Surrounding Systems Satisfaction". This group was taken from an average of 4 selected items. It was a combination derived from questions in Section 2B (9, 10, 11, and 12) from the questionnaire: "*the Government efforts to improve the retirement scheme"*, second *availability of family support when they are old*, third *Prospects of Malaysian health care* and fourth *Prospects of Malaysian elderly care system"*. As depicted in **Figure 10.1**, the clustered bar chart shows that the data is skewed towards the upper end (strongly agree). The results revealed that the majority of respondents are satisfied with the general retirement systems surrounding them. Although PENSION and EPF schemes produced similar patterns, a higher percentage of satisfaction was found from PENSION (65 percent) compared to EPF (46.5 percent) adding the scores scale 4 (agree) and scale 5 (strongly agree). There were no conflicting results between these schemes. Only a small percentage of people on PENSION schemes (8.7 percent) felt dissatisfied as compared to EPF's colleagues (19.7 percent). The findings were obtained by combining scores for disagree (scale 2) and strongly disagree (scale 1).

Figure 10.1: Surround Systems **S**atisfaction



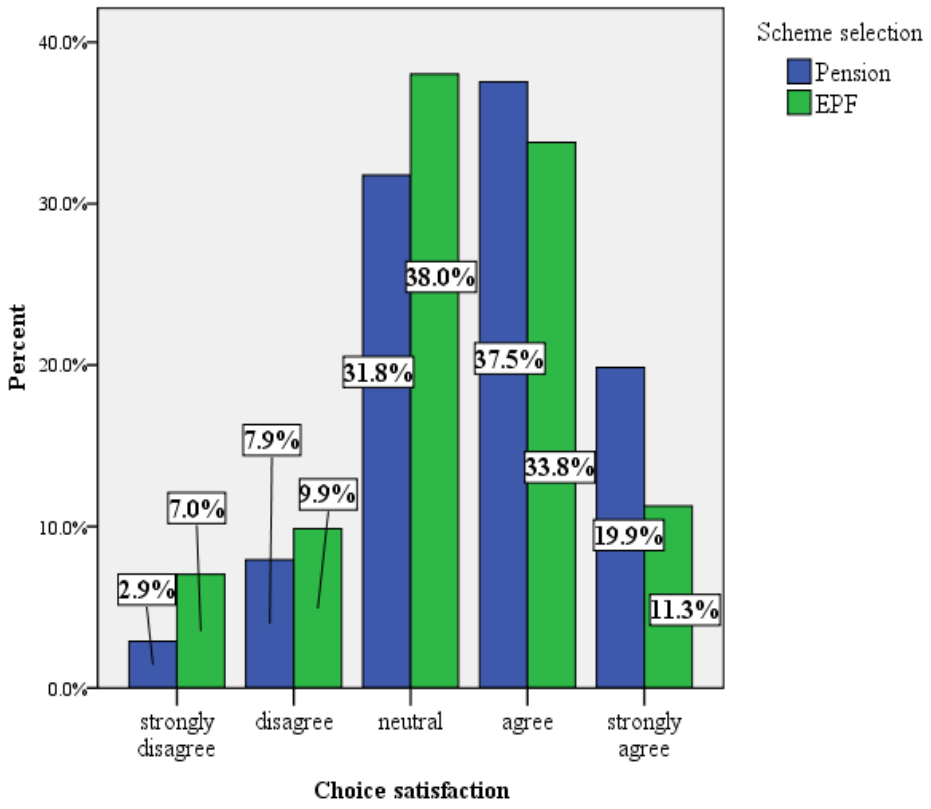
The second "systems" satisfaction variable, derived from the factor analysis procedure is called "personal systems satisfaction". The three selected items were taken from Section 2B (1, 2, 3) in the questionnaire "first *the individual right to make choice*, second *length of time available for making the choice* and third *quality of the chosen scheme"*. **Figure 10.2** revealed a similar pattern; there are a higher percentage of responses shown for scale 3 and above. This could be an indication that more respondents are satisfied with their personal systems surrounding. About 72.5 percent of pension-holders and half of EPF-holders are satisfied (scales 4 & 5) with their personal system. Similar to the previous variable, there were no conflicting results between the two schemes, and there is a very small percentage of dissatisfaction among those in the PENSION scheme (2.5 percent) compared to the other scheme (12.7 percent).

Figure 10.2: Personal Systems Satisfaction



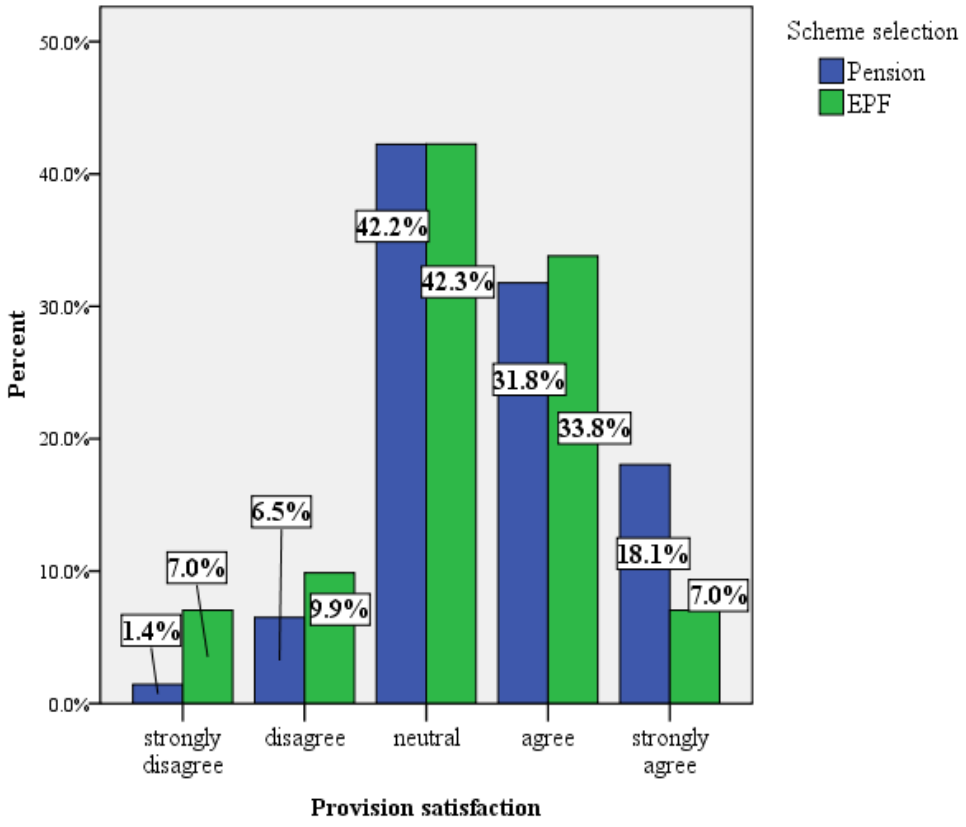
The third variable, "Choice satisfaction", was specifically designed to test satisfaction with the "choice" made. It was a stand-alone question numbered as D1 in Section 4 (Attitudes and Perceptions). D1 asks "*Overall, I am satisfied with the current choice of my compulsory retirement scheme (EPF versus pension)*". **Figure 10.3** depicts respondents' responses, which show that 57.4 percent of PENSION-holders and 45.1 percent of EPF-holders are satisfied with their choice. At the other extreme, there is a slightly-lower rate of dissatisfaction; 10.8 percent and 16.9 percent among PENSION and EPF holders respectively. Again, the graph shows a similar mode with **Figure 10.1** and **Figure 10.2**, indicating a small variation in terms of dissatisfaction (scales 1 & 2). However, **Figure 10.3** appear to record a slightly higher percentage of dissatisfaction compared to the percentages recorded in the first two figures (**Figure 10.1** and **Figure 10.2)**.

Figure 10.3: Choice Satisfaction



"Provision satisfaction" is the last satisfaction variable to measure satisfaction. It focuses on the provision or acts applied to Malaysian civil servants. It relates to satisfaction from the perspective of government arrangements made for civil servants. It was taken from the stand-alone question D2 in Section4 asking "*Overall, I am satisfied with the current provision (act) of the retirement system for Malaysian civil servants*". The responses illustrated in **Figure 10.4**. Again, there were no surprising outcomes with this variable. Almost 50 percent of those in PENSION and 41 percent of EPF-holders are generally-satisfied with the provisions for both schemes. On the contrary, only slight dissatisfaction was perceived; 7.9 percent and 16.9 percent for PENSION and EPF respectively.

Figure 10.4: Provision Satisfaction



To conclude, the overall results failed to identify any major differences in the level of satisfaction perceived between the two schemes. Both tend to have similar patterns indicating higher levels of satisfaction, regardless of their retirement choices and the related systems. Furthermore, it was found that most respondents were indifferent (with the scale equal 3).

However, the present results are still significant in at least two major aspects. First, they indicate general satisfaction among respondents, regardless of scheme chosen. This is an indicator of employees' appreciation towards retirement schemes offered by the government. Subsequently, the satisfaction implies that they have confidence in these schemes as compared to private retirement plans offered by the private sector.

Second, despite the generally similar trend in both schemes, it can be seen that there was a much lower percentage of dissatisfaction with the PENSION compared to the EPF scheme. The analysis reported the highest rates of dissatisfaction; 10.9 percent on PENSION (Choice satisfaction) and 19.7 percent on EPF (surround systems satisfaction) respectively. On the other hand, PENSION has surpassed the EPF scores for all four satisfaction variables. This is expected as the majority of respondents choose PENSION against EPF. The highest percentage of satisfaction was for *personal systems satisfaction* in PENSION (72.6 percent) as opposed to EPF (50.7 percent). However, the smallest variation (less than 10 percent) was found in the *provision satisfaction* variable between the schemes.

10.3.4 Voluntary Scheme Satisfaction: Descriptive Statistics

This section will discuss the level of satisfaction perceived among respondents in the group who OWN and NOT-OWN any voluntary retirement schemes. The voluntary retirement scheme covers personal arrangements made by employees in buying life insurance policies and annuities offered by commercial insurance companies in Malaysia.

In analysing voluntary scheme satisfaction, a similar mode of analysis was used as in the previous section. Mean and SD scores for these variables are presented in **Table 10.5**. The table shows that most of the variables have means that lie in between 3.00 to 4.00; implying either indifference or satisfied. Generally speaking, employees appear to be satisfied in all four aspects of satisfaction. Both categories OWN versus NOT-OWN reported mean values with little variation from one another. The **bold** print indicates the highest value in each column.

Table 10.5: Satisfaction: Descriptive Statistics of Voluntary Schemes

Variables Names	Satisfaction Aspects	Voluntary Scheme:				TOTAL	
		OWN		NOT-OWN			
		Mean	SD	Mean	SD	Mean	SD
Satis_SYSTEMS_1	1.Surround systems satisfaction	3.66	0.923	3.69	0.993	*3.68*	*0.966*
Satis_SYSTEMS_2	2.Personal systems satisfaction	**3.86**	0.799	**3.79**	0.856	***3.82***	*0.834*
Satis_CHOICE_1	3.Choice satisfaction	3.75	0.960	3.46	1.011	*3.57*	*1.000*
Satis_CHOICE_2	4.Provision satisfaction	3.67	0.895	3.42	0.941	*3.51*	*0.931*

In the OWN group, *personal systems satisfaction* and *surround systems satisfaction* each reported the highest and lowest means - at 3.86 and 3.66 respectively. As for the NOT-OWN group, *personal-systems satisfaction* was also the highest (3.79) and *provision satisfaction* has the lowest (3.42) mean. Except for *Surround systems satisfaction*, all other variables in the OWN group outnumbered the NOT-OWN; implying greater satisfaction among those who have voluntary retirement schemes. Regardless of types of voluntary scheme owned, the highest mean value on the second variable reflects employee satisfaction with personal systems.

In terms of SD, the scores for NOT-OWN group for all variables were higher than the OWN group. This signifies that a larger variability exists among those who do not own any voluntary retirement scheme. The choice satisfaction variable in the NOT-OWN groups has an SD of greater than 1.00, indicating greater variability in employees' satisfaction about their *Choice satisfaction*. On the other hand, none of the variables in the OWN group had an SD of more than 1.00.

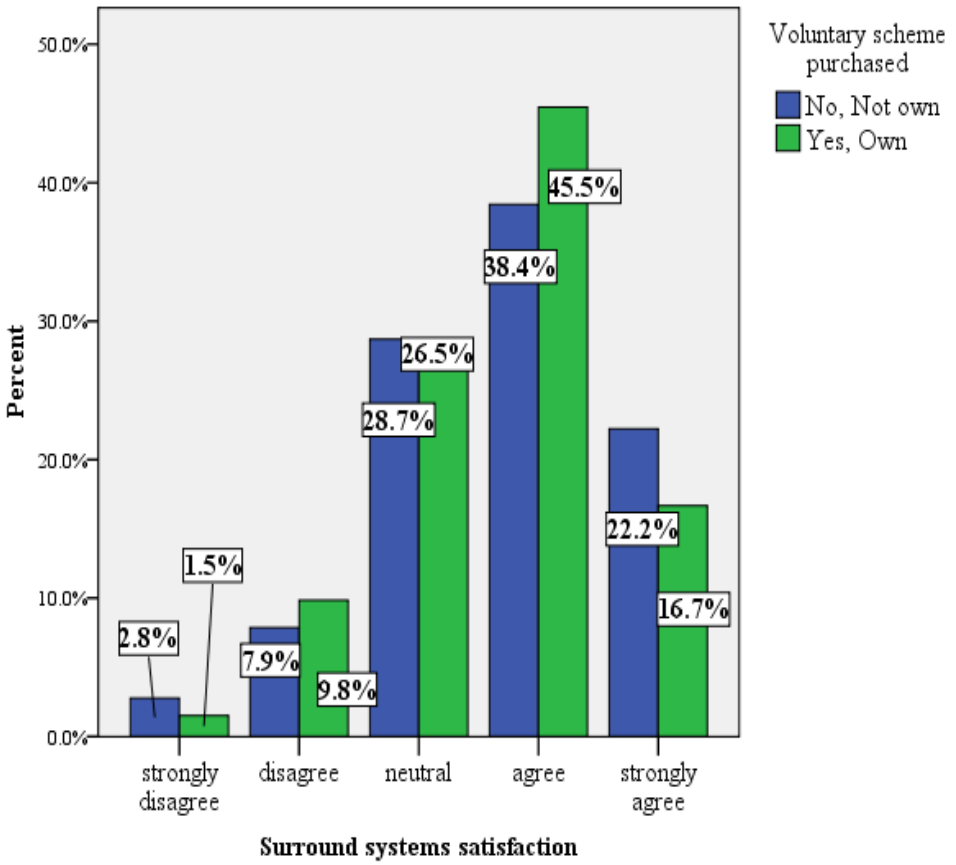
Next, **Table 10.6** shows the distribution of respondents according to their satisfaction levels and voluntary scheme ownership (OWN versus NOT-OWN). It shows that a majority of respondents in both groups are satisfied with the four variables measuring on their satisfaction levels. These are clearly illustrated by **Figures 10.5**, **10.6**, **10.**7, and **10.8**.

Table 10.6: Satisfaction Levels: Respondents Distribution on Voluntary Schemes

Satisfaction on Voluntary schemes ownership	OWN		NOT-OWN		TOTAL	
	N	%	N	%	N	%
	132	**37.9 %**	**216**	**62.1 %**	**348**	**100 %**
1. Surround systems satisfaction						*100.0 %*
Strongly disagree	2	1.5 %	6	2.8 %	8	2.3 %
Disagree	13	9.8 %	17	7.9 %	30	8.6 %
Neutral	35	26.5 %	62	28.7 %	97	27.9 %
Agree	60	**45.5 %**	83	**38.4 %**	143	41.1 %
Strongly agree	22	16.7 %	48	22.2 %	70	20.1 %
2. Personal systems satisfaction						*100.0 %*
Strongly disagree	2	1.5 %	3	1.4 %	5	1.4 %
Disagree	2	1.5 %	9	4.2 %	11	3.2 %
Neutral	34	25.8 %	61	28.2 %	95	27.3 %
Agree	68	**51.5 %**	100	**46.3 %**	168	48.3 %
Strongly agree	26	19.7 %	43	19.9 %	69	19.8 %
3. Choice satisfaction						*100.0 %*
Strongly disagree	4	3.0 %	9	4.2 %	13	3.7 %
Disagree	6	4.5 %	23	10.6 %	29	8.3 %
Neutral	39	29.5 %	76	**35.2 %**	115	33.0 %
Agree	53	**40.2 %**	75	34.7 %	128	36.8 %
Strongly agree	30	22.7 %	33	15.3 %	63	18.1 %
4. Provision satisfaction						*100.0 %*
Strongly disagree	2	1.5 %	7	3.2 %	9	2.6 %
Disagree	7	5.3 %	18	8.3 %	25	7.2 %
Neutral	48	36.4 %	99	**45.8 %**	147	42.2 %
Agree	50	**37.9 %**	62	28.7 %	112	32.2 %
Strongly agree	25	18.9 %	30	13.9 %	55	15.8 %

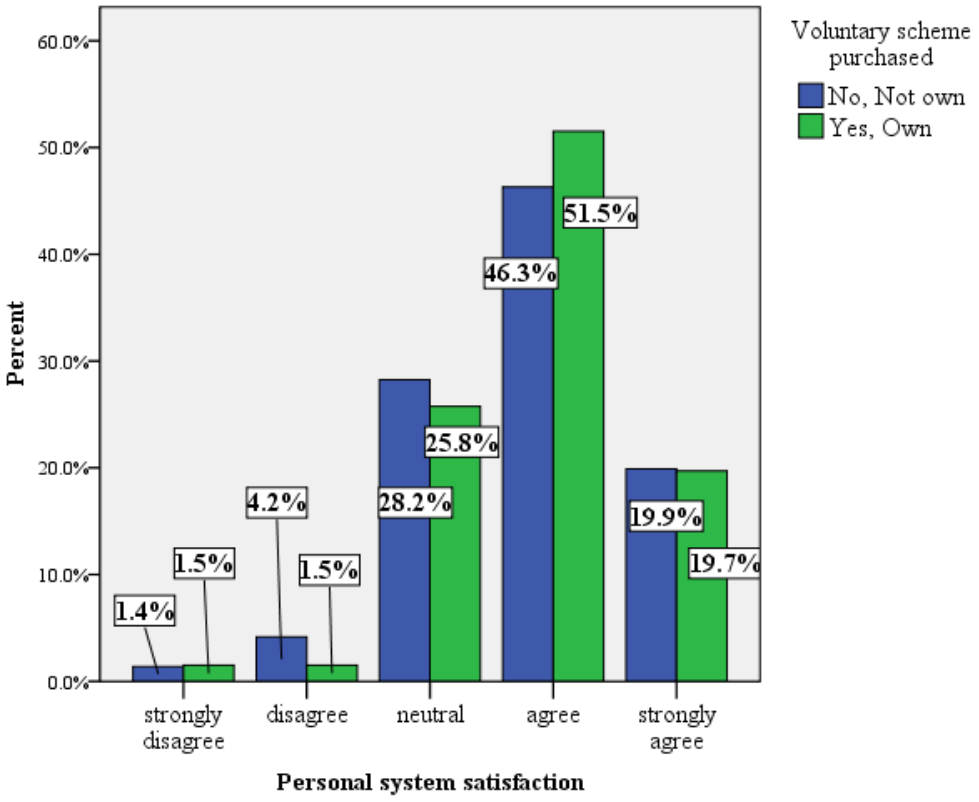
The "Surrounding Systems Satisfaction" is illustrated by **Figure 10.5**. Results revealed that the majority of respondents are satisfied with the general retirement systems available to them. In a glance, it seems similar to the results from compulsory schemes. Yet, a slightly-higher percentage of satisfaction was found from the OWN (62.2 percent) group compared to NOT-OWN (60.2 percent) by totalling scores of agree (scale 4) and strongly agree (scale 5). There were no conflicting results between the two schemes and there was a small difference in percentages between people who OWN (11.3 percent), and those who do NOT-OWN (10.7 percent) with respect to dissatisfaction. The figures are derived by adding scores from the disagree and strongly disagree responses.

Figure 10.5: Surround Systems Satisfaction



A noticeable similarity for the "Personal systems satisfaction" variable is detected in **Figure 10.6**. Overall, respondents from both groups are satisfied with the personal systems. 71.2 percent of respondents who OWN voluntary schemes admitted being satisfied with it. On the other hand, 66.2 percent of respondents under the NOT-OWN group are also content without it. This might suggest that those NOT-OWN groups are satisfied despite their total dependency solely on compulsory schemes. Also, there was slight dissatisfaction with personal systems; a mere 3.0 percent and 5.6 percent between OWN and NOT-OWN groups respectively.

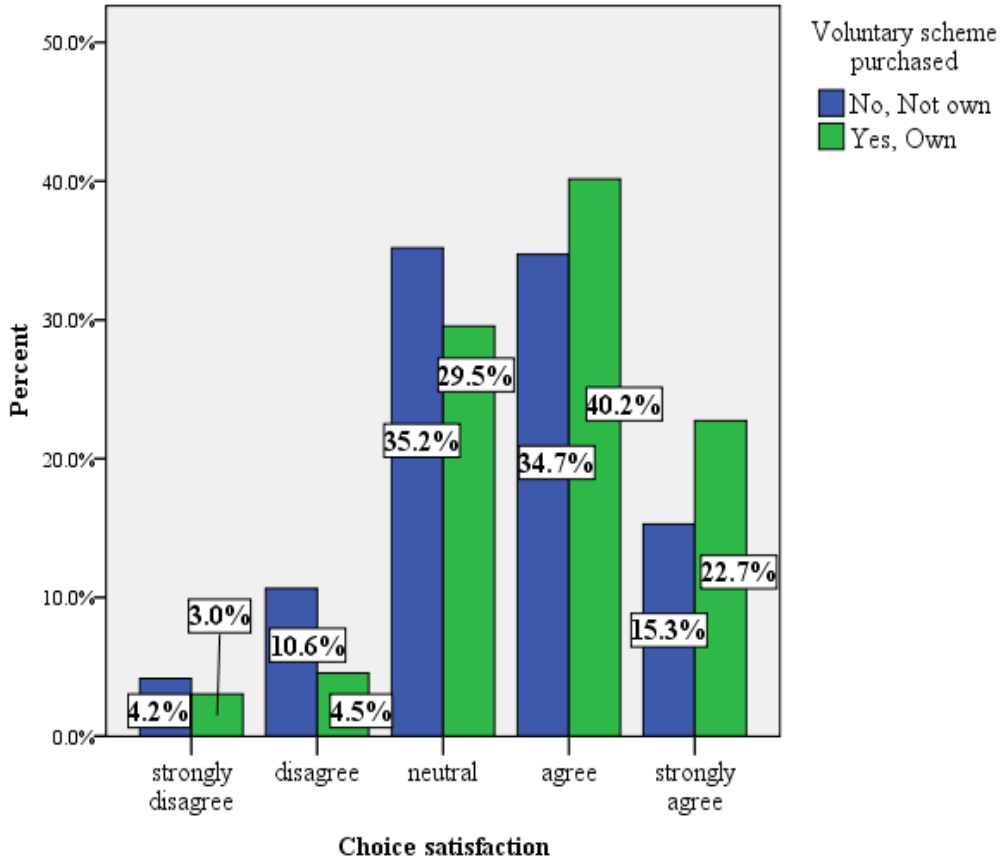
Figure 10.6: Personal System Satisfaction



Outcomes for the third variable; "Choice satisfaction" are reflected in **Figure 10.7**. Again, a similar trend is present, showing a tendency to exceed the neutral point; about 62.9 percent of the OWN group are satisfied with their choice, while half of the NOT-OWN group also implied satisfaction their choice. The NOT-OWN group seems satisfied with their choice on compulsory scheme, thus eliminating any need to choose additional voluntary excess. Another interesting point was that this variable also reported the highest dissatisfaction outcome, nearly 15 percent among the NOT-OWN

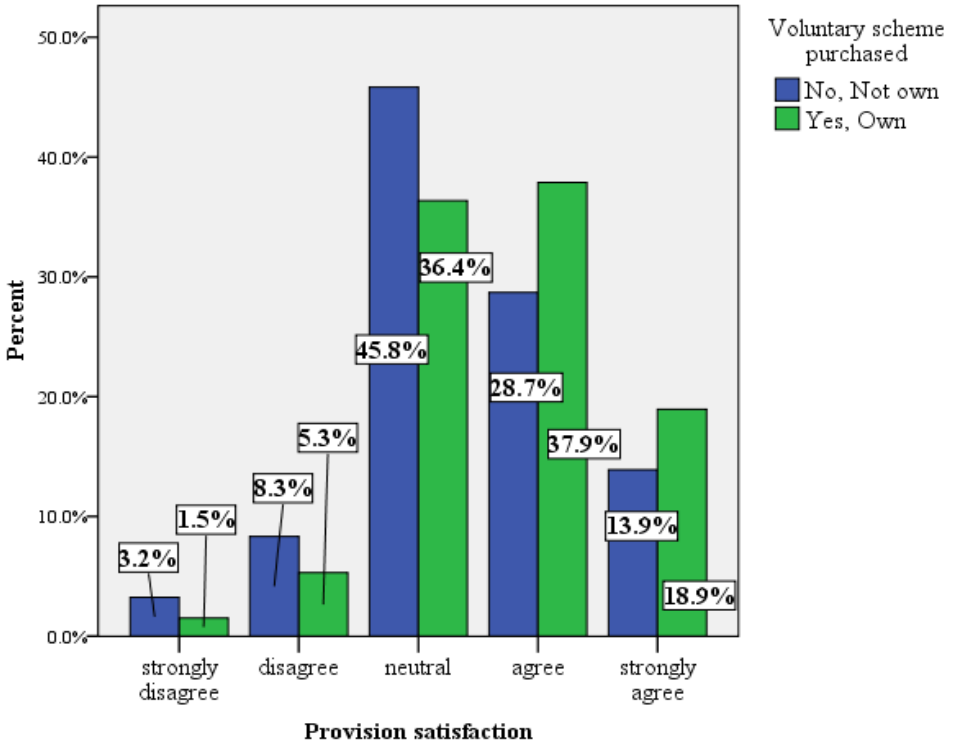
group as compared to just 7.5 percent for the OWN group, which might be an indication of their regret of not choosing to buy any voluntary scheme.

Figure 10.7: Choice Satisfaction



Finally, **Figure 10.8** depicts results for "Provision satisfaction". The results were based on question D2 which asks "Overall, I am satisfied with the current provision (act) of the retirement system for Malaysian civil servants". Higher percentages of satisfaction were found with the graph skewed to the right. There are 56.8 percent respondents from OWN and 42.6 percent respondents without any scheme who are satisfied with the current provision of the retirement systems in Malaysia. Only 6.8 percent and 11.5 percent (OWN versus NOT-OWN) perceived dissatisfaction on the current provision. Yet, most respondents chose to be indifferent (with the scale equal 3).

Figure 10.8: Provision Satisfaction



Overall, all figures tend to show a relatively high level of satisfaction with voluntary scheme ownership. However, there are a few important points to highlight. First, on analysing mean values; the findings imply that people who own voluntary schemes are more satisfied than the others. The detailed reason is yet to be explored. It might be due to more preparation for additional retirement planning, or a higher sense of financial security attained by buying commercial retirement plans.

Second, there is a higher percentage of people who are dissatisfied in *Choice satisfaction* as compared to other variables. This may indicate some issues regarding satisfaction in their choice of **compulsory** retirement scheme and hence the buying of the voluntary schemes. This situation could be explained by people who are not happy with their compulsory retirement scheme decision (EPF versus PENSION) feeling the need to buy an additional voluntary excess.

Out of 348 respondents, only 37.9 percent claimed to OWN a voluntary retirement scheme. This is another important insight; commercial retirement schemes are not common practice in Malaysia. Traditionally, workers rely on government or employer-provided schemes, believing that the schemes are sufficient to provide for their retirement.

10.4 MANN WHITNEY-U Test Results

The next analysis inspects the differences among the groups analysed - compulsory and voluntary retirement scheme choices. **Table 10.7** shows that all median values exceeded 3.00, indicating relatively high levels of satisfaction perceived by respondents. In all cases, the median values were either equal to or higher than 3.00.

Table 10.7: Satisfaction: Medians for Compulsory and Voluntary Schemes

Variables	MEDIAN				
	COMPULSORY SCHEME		VOLUNTARY SCHEME		TOTAL
	PENSION	EPF	NOT-OWN	OWN	
N	**277**	**71**	**216**	**132**	**348**
Items					
S2B1	4	4	4	4	4
S2B2	4	3	4	4	4
S2B3	4	3	4	4	4
S2B4	4	3	3	3	3
S2B5	4	3	4	4	4
S2B6	4	3	4	4	4
S2B7	4	3	4	3	3.5
S2B8	3	3	3	3	3
S2B9	4	3	4	4	4
S2B10	4	4	4	4	4
S2B11	4	3	4	4	4
S2B12	4	3	4	4	4
S4D1	4	3	3.5	4	4
S4D2	3	3	3	4	3
Factors					
Satis_SYSTEMS_1	4	3	4	4	4
Satis_SYSTEMS_2	4	4	4	4	4
Satis_CHOICE_1	4	3	3.5	4	4
Satis_CHOICE_2	3	3	3	4	3

10.4.1 Compulsory Scheme Satisfaction: Mann-Whitney U Test

The task of comparing means (using medians) between PENSION and EPF has been undertaken. The Mann-Whitney results for compulsory retirement schemes are shown in **Table 10.8**. The effect of size has also been accounted for by calculating the value of *r* using the formula — as suggested by Field (2005, p. 535). The *r*-value is interpreted as 0.1= small effect, 0.3= medium effect and 0.5= large effect (Cohen, 1988). The *r* values are all negative as shown in **Table 10.8**. This means that the low score in

the ranking of medians in PENSION scheme tend to be associated with high scores on EPF scheme and vice versa.

Table 10.8: Mann-Whitney U: Compulsory Scheme Satisfaction

Variables	MEAN RANK **PENSION**	MEAN RANK **EPF**	Sig.	Mann Whitney U	r
ITEMS					
S2B1	177.30	163.57	no	9057.5	-0.06
S2B2	**184.45**	**135.68**	**yes**	**7077.0*****	-0.21
S2B3	**186.10**	**129.25**	**yes**	**6621.0*****	-0.24
S2B4	**182.17**	**144.57**	**yes**	**7708.5****	-0.16
S2B5	**181.98**	**145.33**	**yes**	**7762.5****	-0.16
S2B6	**183.02**	**141.25**	**yes**	**7473.0****	-0.18
S2B7	**186.37**	**128.18**	**yes**	**6544.5*****	-0.25
S2B8	**183.54**	**139.23**	**yes**	**7329.0****	-0.19
S2B9	**181.44**	**147.43**	**yes**	**7911.5****	-0.14
S2B10	**179.79**	**153.85**	**yes**	**8367.0****	-0.11
S2B11	**182.99**	**141.38**	**yes**	**7482.0****	-0.17
S2B12	**182.25**	**144.26**	**yes**	**7686.5****	-0.16
S4D1	**180.30**	**151.87**	**yes**	**8227.5****	-0.12
S4D2	**180.51**	**151.04**	**yes**	**8168.0****	-0.13
FACTORS					
Satis_SYSTEMS_1	**182.20**	**144.45**	**yes**	**7700.0****	-0.16
Satis_SYSTEMS_2	**183.66**	**138.75**	**yes**	**7295.5*****	-0.19
Satis_CHOICE_1	**180.30**	**151.87**	**yes**	**8227.0****	-0.12
Satis_CHOICE_2	**180.51**	**151.04**	**yes**	**8168.0****	-0.13

****Significant at the 5 % level, *****sig at 1 % level in the Mann Whitney U test

A negative r score means a variable is a low score to the extent that it falls above the mean score on that variable

.

The outcomes show that all *items* measuring satisfaction were significantly different in the Mann-Whitney U tests. All were found significant, except for the variable S2B1 which measures "*Satisfied with the current power/right to choose the retirement scheme*". Specifically, under the individual *items* segregation, the Z-statistics were negative with mean ranks for PENSION greater than EPF. The *r* values; $-0.25 < r < -0.06$ indicated that the satisfaction data have medium size effect. The overall results indicate that employees' satisfaction under PENSION and EPF groups did seem to differ, except on one item i.e. "the right to make a choice". Employees under PENSION are more significantly satisfied in the other satisfaction variables of: "*time to decide, scheme quality, schemes variety, promised benefits, financial sufficiency, asset (fund) management, flexibility of changing scheme, family support, healthcare systems and current choice and current provision*". As a conclusion, it could be argued that employees who chose PENSION are significantly **more satisfied** with the scheme.

On the contrary, at the end of **Table 10.8**, *factors* from the factor analysis were reported. Under *factors*, the Mann-Whitney U test found that all dimensions under both schemes were significantly different. The Z-statistics reported negative values, with mean ranks for PENSION greater than EPF group. The median also reported higher values for PENSION. The r values, -0.19< r<-0.12, indicated that the data have a medium size effect. The overall results confirmed that employees in the PENSION and EPF schemes could be differentiated in their satisfaction with retirement systems (*Surround* and *personal systems satisfaction)* and choice satisfaction *(choice* and *provision satisfaction*).

As a general conclusion, by looking at the higher mean ranks, it revealed that PENSION employees were significantly more satisfied with their compulsory retirement scheme choice. This demonstrates that Malaysian public universities' employees favour the PENSION schemes rather than the EPF. This could also portray their high appreciation as the PENSION scheme is exclusively available for civil servants.

10.4.2 Voluntary Scheme Satisfaction: Mann-Whitney U Test

The Mann Whitney results for voluntary retirement schemes are shown in **Table 10.9**. Unlike compulsory scheme choice, only a limited number of variables were found significant in the voluntary scheme ownership. Specifically, under individual *items* segregation, the Z-statistics were all negative with the mean ranks for NOT-OWN less than OWN groups. The r values, -0.14 < r < 0.00, indicate that the satisfaction data have a small to medium size effect. The *r* values are all negative as shown in **Table 10.9**. This indicates the low score in median rankings in NOT-OWN group of voluntary retirement scheme, tend to be associated with high scores on the OWN group and vice versa. The overall results indicate that employees in the NOT-OWN and OWN groups differ in only two variables, namely satisfaction with *Current-choice* and *Current-provision*. It reveals that the OWN group are significantly **more satisfied** than the NOT-OWN group.

Table 10.9: Mann-Whitney U: Voluntary Scheme Satisfaction

Variables	MEAN RANK **NOT-OWN**	MEAN RANK **OWN**	Sig	Mann Whitney U	
ITEMS					
S2B1	170.23	181.48	no	13334.0	-0.06
S2B2	169.70	182.35	no	13219.5	-0.06
S2B3	173.08	176.82	no	13949.5	-0.02
S2B4	176.73	170.84	no	13773.5	-0.03
S2B5	169.56	182.58	no	13189.0	-0.07
S2B6	174.51	174.48	no	14253.5	0.00
S2B7	175.76	172.44	no	13984.5	-0.02
S2B8	177.33	169.87	no	13645.0	-0.04
S2B9	176.22	171.69	no	13885.5	-0.02
S2B10	172.22	178.23	no	13763.0	-0.03
S2B11	174.54	174.44	no	14248.0	0.00
S2B12	175.02	173.65	no	14143.5	-0.01
S4D1	**163.80**	**192.01**	**yes**	**11944.5****	-0.14
S4D2	**164.25**	**191.27**	**yes**	**12042.0****	-0.14
FACTORS					
Satis_SYSTEMS_1	176.16	171.79	no	13898.5	-0.02
Satis_SYSTEMS_2	171.59	179.26	no	13628.0	-0.04
Satis_CHOICE_1	**163.80**	**192.01**	**yes**	**11944.5****	-0.14
Satis_CHOICE_2	**164.25**	**191.27**	**yes**	**12042.0****	-0.14

******Significant at the 5 % level, *******sig at 1 % level in the Mann Whitney U test.

At the end of **Table 10.9**, *factors* from the factor analysis were reported where only two variables were found significant. The r values, $-0.14 < r < 0.00$, indicate that the satisfaction data have a small to medium size effect. The overall results confirmed that employees in the NOT OWN and OWN schemes could be differentiated in their choice satisfaction (choice and provision satisfaction). Specifically, by looking at their mean ranks, it is found that the OWN group is significantly more satisfied compared to the NOT-OWN.

Empirically, the OWN group appears to be more satisfied with their retirement scheme choice and with the existing provisions governing the scheme. These might be due to the creation of the additional retirement plan arrangements for employees which lead subsequently to greater satisfaction. This also could suggest why they end up buying the voluntary schemes so as to complement their sources of financial adequacy in the future i.e. to top up the compulsory retirement arrangement. This may also indirectly indicate that employees who OWN voluntary schemes have greater awareness of their financial preparation for retirement compared to those who do not own any. The OWN group seems to seek higher diversification in their retirement income sources as from both the compulsory and voluntary aspects of the retirement schemes arrangements.

10.5 Interview Findings: SATISFACTION

Findings reported that most respondents (managers) assumed that their subordinates are satisfied with their retirement choice. This includes the surrounding matter regarding the retirement systems and its provision. However, higher satisfaction levels were revealed in PENSION compared to EPF scheme.

As one of the respondents said;

> *"In my opinion, most employees should be satisfied with their choice as it is their own decision and not others'. I would say that most of them choose PENSION and not EPF. After all, we work in government agencies, the scheme is exclusively offered to us; why shouldn't we enjoy it? Those opting for EPF should also be satisfied; at least they know that their retirement benefits are secured no matter where they work."*

Another respondent also supported satisfaction similarly, but also reminded about the culture of hiding problems:

> *"Well, I guess they might be satisfied because so far, no complaint received. Yet, this does not imply total satisfaction among them. I have worked in many departments and normally, my subordinates tend to feel inferior, keeping their problems to themselves. They would rather attempt to find solutions on their own instead of seeking assistance. Thus, I am rather clueless about their true satisfaction; if they are really happy with their decision or not."*

However, some findings indicated that many respondents do not want to think about decisions due to the nature of retirement which is not going to happen in the near future. One respondent commented:

> *"There are many important things such as paper work, deadlines, class preparations, etc which urgently need to be attended to, rather than thinking about retirement. After all, we do not know about our life-span; it is beyond our control. So, upon reaching 45, only then we will start thinking about our retirement plan".*

Another respondent, a dean at a faculty, responded:

> *"As the dean, it becomes our responsibility to ensure that employees made their decision, choosing between PENSION and EPF. However, there is no way to verify staff satisfaction with their choice. We have attempted to emphasise the importance of making the right choice but still, it is not easy to decide for something that is not going to happen soon. However, two or three years prior to retirement, they will start to feel the impact of their decision. They might complain, or maybe try to revoke their choice, but at that time, all efforts are futile. Retirement scheme choice is irrevocable."*

All comments show that some employees are not bothered with their choice. Additionally, they might prefer a revocable feature in their retirement schemes. There is also a consensus that employees are satisfied with their choice simply because it is a government retirement scheme. Therefore, it is good to have a proper mechanism that is able to monitor employee satisfaction.

On the contrary, there were also some criticisms of the retirement provision. These include their dissatisfaction with the government's tendency to "constantly-change" the retirement provisions. Consequently, employees claimed that these changes somehow distorted their decision making process. Those who have already enrolled in certain retirement schemes might need to choose different schemes to comply with the current changes in the provision. One respondent commented:

> *"It is so frustrating to learn that the retirement provision changes constantly with new government decisions. For example, yesterday we might choose EPF since the income tax relief was higher but today when they change the rule; we might react differently and choose PENSION instead. I have worked here from 1997 and I could list many changes in the pension acts which had happened. There were changes in the retirement ages, the golden-handshake privilege, the married couple benefits, the EPF pre-withdrawals, different formula of calculating PENSION benefits and the list seems endless. I feel that our decision is valid for a limited time, but who are we to complain"*

The utmost criticism is about their dissatisfaction about with changes in government provision are released from time to time. It has no guarantee of permanency, transparency and is usually difficult to understand.

10.6 Conclusion

Satisfaction is named as one of the dependent variables as the researcher is adopting the BRT in her framework to understand the Malaysian retirement schemes choices. Simon (1997, p. 295) emphasised that a decision maker who is faced with a choice, where it is impossible to optimize, or where the computational cost of doing so seems burdensome, he or she may look for a satisfactory, rather than optimal, alternative. Applying the concept, findings from this study do support his theory. In this study, the decisions made indicate attempts to satisfy within a number of constraints, rather than an action of maximising benefits based on some function. Generally, the Malaysian public universities employees in this study perceived a higher level of satisfaction in their choices of retirement plan and can be interpreted as having adopted the BRT in leading to this decision.

As a conclusion, there were higher levels of satisfaction with choices. The results from this research could be generalised for Malaysian public universities' employees who represent Malaysian public sector employees. It revealed that a majority of employees are highly satisfied with many aspects of the retirement schemes. Employees are highly satisfied in both choices; either in compulsory or voluntary scheme ownership. Additionally, the PENSION (compulsory) and the OWN (voluntary) groups do reveal a generally higher level of satisfaction as compared to the other groups. There is empirical evidence of favouritism towards PENSION schemes. It also indicates higher appreciation of the availability of the scheme, which is exclusively available for the civil servants. The results differ from Danehower and Lust (1995) who found that university employees are neutral in choice of retirement plan and very satisfied with life insurance options or prefer default options (Iyengar, 2003). Findings from this study also suggested that satisfaction can either be different or relevant to retirement decisions as stated in studies by Dulebohn et al., (2000), Childs et al., (2002), Clark et al., (2004), Papke, (2004), Power and Hira, (2004) and Craig and Toolson, (2008). The research also found that Malaysian public universities' employees are generally more satisfied with any retirement schemes offered relative to the private employees. However, employees might be reluctant to express their true dissatisfaction of the compulsory scheme if this could result in a negative impact on the government who is also their employer.

CHAPTER 11: SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter discusses implications of this study and offers recommendations for future research and practices. The purpose of this study is to identify factors that predict the choice of retirement schemes for Malaysian civil servants. As a result of this study, a clear understanding of the influencing factors on faculty decisions is illustrated. Particularly, this study illuminates the factors that are influential in choice decisions of compulsory retirement schemes (EPF versus PENSION) and voluntary retirement schemes (OWN versus NOT-OWN) in the Malaysian public universities.

11.1 Introduction

This thesis has provided an understanding of employees' behaviour in their retirement scheme choices. Specifically, the analysis covers the factors that affect the choices between two major retirement schemes offered to the Malaysian civil servants which are the EPF and the PENSION schemes as well as the choice to own a voluntary retirement scheme. The EPF scheme is a type of a defined contribution plan and the PENSION scheme is a type of a defined benefit plan. Both EPF and PENSION scheme represent the compulsory scheme while the purchase of private insurance annuity represents the voluntary scheme. Further evaluation includes employees' satisfaction with the Malaysian retirement system. The analysis used employees working at Malaysian public universities as a sample. The findings from this study could help in suggesting improvement to current retirement schemes.

11.2 Summary

These findings give substantial insight into the factors that affect the choices of the retirement schemes among government employees particularly in Malaysia. Based on univariate analysis, there were significant differences among the employees who chose EPF and PENSION scheme in terms of their Knowledge Level, Demographic Factors, Job Related, Mobility, Extension of Working Years, Health Status, Plan Feature, Soft Constraints and Hard Constraints. The logistic regression further revealed that employees were influenced by the Knowledge Level, Demographic Factors, Retirement

Income, Voluntary Scheme Perception and the Plan Feature in making their choices between the EPF and PENSION scheme.

On the other hand, based on univariate analysis, there were significant differences among the employees who OWN and NOT-OWN of voluntary retirement schemes in terms of their Knowledge Level, Demographic Factors, Retirement Income Sources, Voluntary Saving Perceptions, Job Related, Mobility, Health Status, Plan Feature, and Hard Constraints. The logistic regression further revealed that employees were influenced by the Knowledge Level, Demographic Factors, Retirement Income Sources, Voluntary Saving Perceptions, Job Related, Extension of Working Years, Health Status, Realistic Level and Peer influence, and Risk Considerations.

Interestingly, the knowledge Level variable was found significant in all of the analysis/tests. The interviews revealed that there are eight variables found to be significant in influencing choice of the retirement schemes. They are Knowledge Level, Demographics, Retirement Income Sources, Mobility, Health Status, Plan features preferences, Soft constraints (Peer effect), and Hard Constraints (Risk and benefit perceptions and scheme appraisal) variables. Additionally, two new variables (themes) which were able to influence employees' choice emerged from the interview: Inflation-Adjustments and the Multiple-Objectives. Based on the number of occurrences, the five strongest variables which could determine choice in compulsory and voluntary schemes were: knowledge, peers, plan features, mobility and lastly demographics; listed according to their priority.

This thesis further investigates the level of employees' satisfaction in their choice of retirement scheme. The results show that all respondents are satisfied with their decisions which are - compulsory scheme choice and also with voluntary retirement scheme ownership. This implies satisfaction with the overall retirement provision, surround and personal systems, and also the choice of the scheme itself. Specifically, employees who chose the PENSION scheme recorded a higher satisfaction level than the employees who chose the EPF scheme. Similarly, employees who owned a voluntary retirement scheme had a higher satisfaction level than those who do not owned a voluntary retirement scheme. Results also revealed that a majority of employees are highly satisfied with many aspects of the retirement schemes they chose. Empirically, the OWN group are happier with their choice and with the existing

provisions governing the scheme. These might be due to the creation of additional financial retirement resources which leads to a greater satisfaction. This could also be the motivation for them to purchase voluntary schemes to ensure financial adequacy in the future by adding to the compulsory retirement arrangement. Indirectly, it may also imply that employees who OWN voluntary schemes have greater awareness of their financial retirement planning as compared to those who do not own any. The OWN groups seem to seek higher diversification in retirement income sources, utilizing both compulsory and voluntary retirement schemes arrangements. The small number of people who own voluntary schemes (37.9 percent) is also an indication of the uncommonness of commercial retirement scheme participation in Malaysia.

11.3 Conclusion

11.3.1 Application of BRT

The results from this study supported the application of BRT in choice making among Malaysian public sector employees. This study was able to highlight that perfectly-rational decisions are often not possible in practice due to the limited computational resources available for making them. The theory suggests that individuals employ the use of heuristic (common sense) to make decisions, rather than a strict, rigid rule of optimisation, is more applicable in the retirement scheme choices. For example, in the decision to choose between compulsory and voluntary retirement schemes, the researcher found that individuals tend to make simple heuristics that is able to satisfy their simple preferences rather than apply theoretically-optimal procedures.

Specifically, employees admit the sense of adequacy of their retirement plans are best rewarded by the PENSION compared to the EPF scheme. Thus, the "satisficing" paths are more frequently chosen in making choices. Indications of simplification in their process to reach decisions have also further supported the BRT. Employees preferred to use common sense to make decisions rather than follow a certain rigid rule. They tend to choose the first opportunity that seems satisfactory rather than to seek the best solution.

The results suggest that they possess many utility functions. Individuals tend to adopt a more rational decision process when their own money is involved. This means more variables were considered in the evaluation process to be significant in purchasing voluntary scheme (e.g. own annuities, life insurance, etc.) as opposed to choosing compulsory retirement schemes (EPF or PENSION). Empirically, in the logistic regression, results indicated that more significant predictors were found in the voluntary model LOGIT1b: (33 variables) as compared to the compulsory model LOGIT1a (16 variables). This indicated the use of more variables to be considered (at least double the number of variables available in this study) in making such decisions. Additionally, they also tend to have limits in formulating and solving complex problems and in processing information. All these are the supporting evidence of BRT adoption in decision making.

All the results and discussion in this study seemed to fit well into Simon's BRT. Thus, the researcher made some efforts to compare the results of this study with Simon's arguments (Simon, 1991, 1997), to show that human's rationality is limited. The four discussions below are able to support the application of BRT (discussed earlier in Section 4.2.2) in employees' choice of retirement schemes in Malaysian public universities:

1. Supportive results show that more information (knowledge) reduces the likelihood to choose a compulsory scheme in the logistic model. On the other hand, more information increases the likelihood to own a voluntary scheme. The outcomes of questionnaires and interviews conformed to the argument of lack of information among the sample studied. Interestingly, the information variable was found significant throughout all univariate, multivariate and interview results, indicating its importance to the decision.
2. It shows that the retirement scheme decision is largely affected by more than one variable supporting idea that problems are complex. The surrounding matter such as demographic and job related aspects play a key role in determining employees' choices. The voluntary retirement scheme choice decision, where more variables were found significant in order for employees to reach their decisions, is even more complex than the compulsory choice.
3. Employees' behaviour in their choice supporting ideas of limited human information-processing capability. One example could be detected from the

LOGIT1a results, revealing inconsistent results for information-related variables. Irrationally, the two different variables measuring information - schemes features knowledge and general information level - reported more likelihood and less likelihood impacts on the choice at the same time.

4. Unlike other countries, Malaysian compulsory retirement scheme choices normally need to be finalised in the first 3 years of employment, subsequent to confirmation status granted to employees. As retirement is a future event, the validity of the decision is limited. Upon retirement, priorities might change, leading to different views that might affect decisions. In some circumstances, these future views might lead to regret and dissatisfaction.
5. There were some patterns depicting the conflicting preferences throughout the results. Results strongly supported the heuristic argument i.e. they choose the first opportunity that seems satisfactory rather than to seek for the best solution. Simon's BRT suggests that individuals employ the use of heuristic (common sense) to make decisions rather than a strict, rigid rule of optimisation, an argument which has been applied in this study.

11.3.2 Originality of the Models

The originality of the model lies in the comprehensive variables employed as predictors for choice making. Variables adopted were providing holistic and real factors which support the broader perspectives of individual decision making. The adoption of the BRT theory also gives additional value to the study, which reflects the application of rationality in choice made. The interviews conducted enabled the researcher to obtain a qualitative view to support the quantitative results. Views gathered by these multiple methods gave holistic explanations of the predictors' attributes and strengthen the overall findings.

This study differs from previous work in the retirement field since it taps into the individual aspect of choice (as opposed to the employer/government side). Secondly, it focuses on the choice of a retirement plan (enrolment) instead of choice of investment alternatives. There is an extensive list of studies on investment choices as compared to the choices on the retirement plans. In addition, there is a lack of published data on public service retirement plans in Malaysia. Specifically, there is very limited

information and an inadequate number of studies on the Malaysian public universities focusing on compulsory and voluntary retirement schemes. Furthermore, there is lack of discussions concerning PENSION scheme due to the limited number of government servants compared to the total number of Malaysian workforce. This makes the EPF scheme a more popular subject to study than the PENSION. Therefore, these research outputs are valuable in filling up the existing gap.

This study is distinguished from previous works by the "originality" of the questionnaire. The measurements used were developed by the researcher, aimed to understand individuals' choice in a more comprehensive and holistic manner, a practice absent in Malaysia prior to this study.

11.3.3 Contributions to the Retirement Field

Various parties could benefit from this study including policy makers, individual employees, insurance companies and academia. The study enables respective policy makers and employers in the Malaysian retirement systems to have a better understanding of employees' choices and the reasons behind their decision. Although retirement planning is very important for the workers, proper attention on the predictors of choices and their level of satisfaction are previously undisclosed. History has shown that retirement benefit is always a popular issue which leads to many disputes and disagreements between the government and the workers union in Malaysia (CEUPACS, 2010). Therefore, this research can offer suggestions to responsible parties in their efforts to evaluate and improve the retirement systems. Employees could use the study as a guide in helping them to make informed and better decisions, ensuring future satisfaction from their retirement choices. Subsequently, there are many insurance companies in Malaysia (LIAM, 2010), leading to fierce competition in the insurance industry to offer retirement schemes. Thus, strategic information on the factors that influence consumer choice in voluntary retirement plan is needed. Accordingly, insurance companies might design new and attractive retirement products to better meet the needs/demands of customers. Last but not least, the findings of the study will add value to the existing knowledge on the retirement system in Malaysia.

11.3.4 Limitations

This study has successfully achieved its objectives and generated important and interesting findings. However, there are inevitable limitations to the research approach employed. The study is constrained by time, particularly with the distribution of questionnaires. The three weeks allocated for the process was considered adequate but many respondents expressed their hesitation to participate due to the many urgent tasks at the start of a new term/semester. In addition, there were more than 100 questions (total of 183 questions) to be answered, which were extremely time-consuming. However, a cash award incentive had indeed encouraged many to participate in the survey.

In terms of generalisation, particularly when adopting this study outside the Malaysian context, the results derived from these 348 university employees should be used cautiously. This is due to the different nature of the public retirement systems as compared to the private ones. The researcher agrees that the findings may not be appropriate to be generalised to the whole population of Malaysia or to the population of public servants due to the limited sample size. Nevertheless, this research can serve as a valuable basis in suggesting for future research in retirement systems.

11.4 Recommendations

The research has produced many important findings in detecting factors that predict employees' tendency to enrol in certain types of retirement plans. These findings, despite the limitations previously mentioned, can be very useful for policy makers, both in the broad and specific sense, in improving retirement systems in Malaysia to suit the needs and demands of the Malaysian workforce as well as the employers and other relevant parties. Specifically, the recommendations are:

11.4.1 Recommendations for Malaysian Retirement Provision

It was found that employees perceived higher levels of satisfaction with many aspects of the retirement schemes. However, employees who chose a PENSION scheme had a higher level of satisfaction compared to the employees who chose EPF. The high level

of satisfaction in PENSION scheme may indicates that employees prefer a retirement scheme with a DB plan. As such, introducing a new type of retirement scheme (like FPB), would be less accepted by the civil servants. In this instance, EPF and FPB are very similar; it is a defined contribution plan which requires a certain fixed contribution to be deducted from employees' salaries. Thus, if the FPB is going to be implemented, it is wise to offer it to the newly hired employees rather than to the existing ones. Some suggestions on the current retirement provision are:

1. The results from this study suggested that higher levels of satisfaction with the compulsory retirement schemes to the Malaysian public universities employees. The civil servants' salaries are commonly known to be lower than private sector workers; a de-motivating factor for highly-qualified/educated personnel to join the government sector, especially in universities and hospitals institutions. Thus, the government could use this finding to attract people to join the public university workforce via this attractive retirement schemes package. CEUPACS, which is the patron body of Malaysian civil servants, has been trying for so long to propose and affect salary increments, with many discussions available in their website: http://www.cuepacs.org.my (CEUPACS, 2010). Sundali et al. (2008) advised that human skills are valuable and rare. Skilled workers generally own a higher degree of organisation, specificity, imperfectly imitable and are a value-adding source for the organisation. Hence, a good retirement scheme might attract more esteemed workers to join the civil service.
2. The knowledge level and understanding of the specific features of the retirement plans are very important aspect in leading the individual to his/her decision. It has to be ensured that each employee at least has the proper knowledge and information needed up-front, enabling them to choose the retirement schemes or in a decision to buy a voluntary plan. This could be realised by organising more seminars and setting up "ready-made" information mechanism or centres. Educating employees and dissemination of information should be prioritised to ensure that any new provisions introduced by the government are fully understood. Any changes to the retirement scheme provision need to be announced to all level of employees to ensure that they understand thus it will greatly assist employees in making up their mind.

3. The retirement age in Malaysian is still very low. It is suggested that the government increase the compulsory retirement age to at least similar to neighbouring countries such as Singapore[32]. This trend to increase the retirement age is also suggested by Subrahmanya (2002) who claimed that if the workers retire early when their longevity is high, then they will draw PENSION for a much longer period. It is also suggested that employees are given opportunities to choose the age freely beyond the current mandatory retirement age. It has been discussed that retirement age is a subjective decision and if the government provides a wider range of retirement ages, employees might be keen to extend their employment. One of the finding suggested that EPF holders intend to have a few different options on matters regarding the retirement age and extension of working years. The government has offered a one-time option for employees to change the mandatory retirement age at either 55 (or 56) up to 58 years old. This was made known to the public in a circular numbered: "JPA/PEN/228/25/1/Jld.4" and effective from 1st July 2008 (Public Service Department, 2009). The circular is available at the Malaysian public servants' website: http://www.jpapencen.gov.my/pp62008.pdf.
4. The outcome from this study has indicated that there are higher dependency and trust from the future retiree for national health care, either from the very "good" or very "bad" health category. This means that in the future, the Malaysian National Health Care Systems or National Welfare Systems for the elderly will be in high demand. Thus, sustainability of the health care system should be ensured to meet these demands. The government may even need to prepare for larger fund allocation to prepare the health services for the ageing retirees.

11.4.2 Recommendations for the Compulsory Schemes (EPF versus PENSION)

Listed below are a few recommendations for the compulsory retirement scheme:

1. The government has suggested introducing a DC plan for civil servants. A DC plan may be less attractive to government employees as the findings indicate that

[32] The Singaporean statutory minimum age of retirement is 62, but based on the National employment Act, employers are allowed to retain employees beyond age 62 (Wu & Chan, 2011, p.517-518).

employees who were better informed about the retirement plans features were less likely to choose an EPF scheme which is a type of a DC plan. The idea to introduce a DC plan to the civil servants may not be a wise decision as it may be difficult to attract and retain good employees at the government services. However, the EPF scheme should be improved to be more attractive to extract new entrants as the scheme has indicated a lower satisfaction level than PENSION. It is also suggested that EPF organisations make necessary adjustments such as to improve the retirement benefits promised, to set a realistic policy and provide quality services for their clients according to the related results presented earlier.

2. The results have shown that the group more probable to choose EPF are individuals who have higher knowledge of the overall retirement schemes features. The results also indicated that employees who had sufficient knowledge on the retirement schemes were less likely to choose the EPF scheme. The contradictory findings may reflect the fact sufficient knowledge without understanding them are less valuable to the employees. This is further evidence by the fact that employees who knew about the PENSION plan features tended to choose PENSION scheme and employees who knew about the EPF plan features tended to choose EPF. As such, employers need not only disseminate the relevant information but must take actions ensure that the employees understood the information that they received. Understanding the retirement schemes features will allow employees to make comparison and then make choices that suit their needs. Efforts such as having a designated officer to handle the management of the retirement plan including attending to employees' queries and organizing workshop or seminars on the retirement plan will give added value to the employees. The analysis has also shown differences between women and men in preparing for old age, depending on their compulsory schemes. The male employees were more likely to choose an EPF scheme. This matter should be taken into account and might give different implications for retirement related matters based on gender effects.
3. The interviews did indicate that employees perceive their health and well being as secure under the PENSION scheme, from which they could still enjoy government hospital treatments post-retirement. Therefore, it is not advisable for insurance companies to promote their health insurance products to the group of civil servants who opted for PENSION scheme. Health insurance products are better promoted to the EPF members who are deprived of such privileges and need to take care of their own health issues after their retirement.

11.4.3 Recommendations for the Voluntary Schemes (OWN versus NOT-OWN)

The findings from this analysis provide significant input to the policy makers and the industry as the Central Bank of Malaysia has recently announced that it will promote a private retirement scheme. The effort is to allow for sharing of risk and responsibility in the provision of the retirement benefits among the individuals, government and the private sector. These are several recommendations for the voluntary retirement scheme:

1. The findings provide valuable information on the attributes of those who are more likely to own a private retirement plan. This could be beneficial for insurance companies or other bodies in order to create reliable marketing strategies. The persons most likely to purchase commercial schemes are individuals with gross household monthly income of more than RM9000 and have a higher perception on trusting commercial schemes. Other worthy market targets are individuals who: have been working for more than 3 years; is an academic; work at a business faculty; work at a large faculty; have household monthly income between RM1001-RM7000; will retire at the mandatory age of 55; have a higher information level; have arrangements for basic and supplementary retirement income sources; have more debt obligations; and have more risk consideration than others. Thus, approaching individuals with the above attributes may increase the chances for participation in voluntary schemes.
2. Results have shown that they are individuals who: are working at a well-established university in the northern part of Malaysia; have a permanent job; have a higher realistic level; have a higher peer influence effect; own other individual voluntary savings (bank account savings/real estates/ investments); are in very good health or very bad health; are willing to extend work; have high job satisfaction and believe that young workers have more advantage than the elderly in their work. Thus, this group should be best avoided in their promotion activities in order to minimise the cost of rejection. Alternatively, insurance companies might want to design and introduce new types of retirement products accordingly.
3. Results have indicated that employees either with very bad health or are very healthy are less likely to own any voluntary scheme and depend more on government provided health services. Thus, the other groups between these two extremes might be more willing to have special arrangements for their health and

well being. Uncertainties about future well being make them the most appropriate group for insurance companies to promote health insurance coverage, which could be included in their annuities or life insurance policies.

11.5 Recommendations for Future Research

There are a number of recommendations for further research as listed below:

1. In examining the "knowledge" variable, the researcher found that one of its items, "the level of information", to be constantly significant throughout all the LOGIT's models, indicating its importance. Thus, it is suggested that further study should employ knowledge as moderating variables which could increase the likelihood of choosing a certain type of retirement plan. The significance of this variable indicated that respondents have recognised the importance of gathering and processing information in making their decisions. In further research, it might be possible to use the knowledge (or level of information) variable as the third variable either as a moderating variable or even as a mediating variable.
2. In the future, interesting results can be obtained if studies include a wider scope of projects that could facilitate more comparative evaluations. For example, further study could be conducted to:
    a. Identify other groups at different stages of employment such as between pensioners and non-pensioners.
    b. Use samples from private universities versus public universities employees to seek out factors that affect their retirement schemes choices. As employees at the private universities can only choose the EPF scheme, a direct comparison can be made between the public and the private sector workers. The findings may assist in further improving the EPF scheme.
3. Further studies may focus on the employer's (providers) point of view since the measures used in this study were mainly derived from an individual's perspective. This could help to explain if there is any conflict of interest among stakeholders in the Malaysian retirement system. For example, employers might prefer DC plan while employees tend to prefer DB plan. Even though this study incorporated interviews with the management level it only focused on their perceptions of the employees, instead of reflecting the interests of the employer itself.

4. This study explored the factors that influence employees' choices of the retirement plan in Malaysian public universities. Thus, there are several related issues that need to be researched in the future, for instance:
    a. Is the future retirement income stream for employees adequate to cater for their retirement needs, taking into consideration the impact of inflation? In addition, evaluation on the adequacy of the retirement income received from the PENSION plan can be compared with the EPF scheme.
    b. What are the obstacles in disseminating retirement information to employees?
5. Further studies can also employ in-depth interviews or other qualitative techniques to gain better understanding and to explore new factors that could influence employee choice. These include employing many types of "open-ended" questions in the interview. The interview schedule used in this study is based on themes extracted from the questionnaire and not vice versa. Inclusion of more open questions may enable future studies to obtain insightful explanations or hidden issues on the subject matter.

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Appendix A: FORMULAS AND DIAGNOSIS

Appendix A1a: CRONBACH ALPHA

Extracted from Cronbach (1951) and SPSS Version 15.0 Help functions, Tutorial from Title : Cronbach's Alpha

Cronbach's alpha (Cronbach, 1951) is a measure of reliability. More specifically, alpha is a lower bound for the true reliability of the survey. Mathematically, reliability is defined as the proportion of the variability in the responses to the survey that is the result of differences in the respondents. That is, answers to a reliable survey will differ because respondents have different opinions, not because the survey is confusing or has multiple interpretations. The computation of Cronbach's alpha is based on the number of items on the survey (k) and the ratio of the average inter-item covariance to the average item variance. The formula is:

$$\frac{\quad}{\quad}$$

Note that the data can be dichotomous, ordinal, or interval, but the data should be coded numerically. It is also assumedd the observations should be independent, and errors should be uncorrelated between items. Each pair of items should have a bivariate normal distribution. Scales should be additive, so that each item is linearly related to the total score.

Note: The values of α vary between 0 and 1, with the higher number indicating greater reliability and the generally-acceptable alpha values are recommended at 0.70 (Robinson et al.,1991; DeVellis, 2003; Pallant, 2007; Hair et al., 2010; Robinson et al., 1991; Cavana et.al., 2001).

Appendix A1b: BARTLETT'S TEST OF SPHERICITY (BTS)

Jackson (1993, p. 2207) show the formula for the BTS test statistics as:

Where p is the number of variables, k represents a specific component, λ is the eigenvalue, λi is the eigenvalue of component i, and n is the number of observations. Cooley and Lohnes (1971) and Pimentel (1979) suggested that BTS evaluates whether each sequential eigenvalue is significantly different from the remaining eigenvalues. Conceptually, the test attempts to reveal the point where the PCA summarises a spherical distribution of points (Jackson, 1993). If the resultant statistic is multipled by n-k, the product $\chi 2$ is distributed with degree of freedom.

Appendix A1c: LILLIEFORS & KOLMOGOROV-SMIRNOV TEST

The Kolmogorov-Smirnov statistic (K-S) is defined as (Weiss, 1978):

Where F(*x*) is a population distribution function and S_n (*x*) is the sample distribution step-function. For continuous F(*x*), the sampling distribution of KS is known and it is independent of F(*x)*. Liliefors (1967) noted that the Kolmogorov-Smirnov test no longer applies if the hypothesized distribution is not completely specified, which means when certain parameters must be estimated from the sample data. Specifically he presented a table for testing normality using the Kolmogorov-Smirnov statistic when the mean and variance of the population are unknown. According to Abdi and Molin (2007, p.3) the criterion for the Lilliefors' test is denoted by L. It is calculated from the Z-scores, and it is equal to:

L is the absolute value of the biggest split between the probability associated with Zi when Zi is normally distributed, and the frequencies actually observed and the sample of the test is made of N scores.

Appendix A1d: MULTICOLLINEARITY DIAGNOSIS

Table Appendix A1d(a): Multicollinearity-Test: LOGIT1a and LOGIT1b

COLLINEARITY STATISTICS:

LOGIT1a and LOGIT1b: Compulsory & Voluntary Schemes Choices Coefficients (a)

Model: LOGIT1a & LOGIT1b		Tolerance	VIF
1	D1	.777	1.286
2	Recode_D3	.263	3.798
3	D6	.765	1.307
4	D7	.216	4.633
5	Recode_D8	.708	1.412
6	New_D11	.589	1.698
7	New_D13	.288	3.468
8	AcademicC	.184	5.434
9	New_D16	.842	1.188
10	BusMgtCat	.762	1.312
11	JobTenure	.771	1.297
12	New_D19	.723	1.382
13	D20	.157	6.388
14	D21	.304	3.292
15	New_D22	.821	1.218
16	KNOW_1	.420	2.380
17	KNOW_2	.456	2.193
18	INFOR	.405	2.470
19	IDONT_1	.501	1.995
20	IDONT_2	.511	1.958
21	IDONT_3	.408	2.453
22	SOFT_1	.616	1.624

Continue ….		Tolerance	VIF
23	SOFT_2	.799	1.252
24	FEATURE_1	.472	2.120
25	FEATURE_2	.580	1.725
26	FEATURE_3	.553	1.808
27	INCOME_1	.428	2.338
28	INCOME_2	.579	1.726
29	VOLUNTARY_1	.530	1.886
30	VOLUNTARY_2	.782	1.278
31	VOLUNTARY_3	.295	3.393
32	HEALTH_1	.605	1.654
33	HEALTH_2	.767	1.303
34	HEALTH_3	.712	1.405
35	AGE_1	.731	1.367
36	AGE_2	.767	1.303
37	MOBILITY_1	.442	2.262
38	MOBILITY_2	.631	1.585
39	oneHARD_1	.388	2.576
40	oneHARD_2	.473	2.115
41	twoHARD_1	.700	1.428
42	twoHARD_2	.369	2.709
43	JOB_1	.505	1.979
44	JOB_2	.774	1.292

(a)Dependent Variable(1): SelectSch Scheme selection
(a)Dependent Variable(2): VoluntarySch selection
~Note: Tolerance<0.10 and VIF>10, indicate multicollinearity problem.

Table Appendix A1d(bi): Multicollinearity-Test: LOGIT4a

COLLINEARITY STATISTICS:

A: LOGIT4a Compulsory Scheme Choices Coefficients (a)

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Model: LOGIT4a		Tolerance	VIF
1	A1a	.571	1.751
2	A1c	.614	1.629
3	B1a	.688	1.454
4	B4	.650	1.539
5	C8	.881	1.135
6	S2Aa4	.839	1.192
7	S2Ab2	.663	1.507
8	S2Ab5	.626	1.599
9	S3A1	.738	1.354
10	S3C7	.823	1.214
11	S3D12	.854	1.171
12	S4A10	.790	1.266
13	S4C4	.823	1.215
14	S4C9	.869	1.150
15	S4B3	.864	1.158
16	S5A3	.885	1.130
17	S4A7	.763	1.311

(a)Dependent Variable(1): SelectSch Scheme selection
~Note: Tolerance<0.10 and VIF>10, indicate multicollinearity problem.

Table Appendix A1d(bii): Multicollinearity-Test: LOGIT4b

COLLINEARITY STATISTICS:

.

LOGIT4b Voluntary Scheme Choices Coefficients (b)

Model: LOGIT4b		Tolerance	VIF
1	A1a	.368	2.715
2	A1b	.390	2.563
3	B1b	.677	1.477
4	B2	.458	2.185
5	B4	.349	2.869
6	C1	.528	1.893
7	C2	.502	1.991
8	Idont_Aa2	.511	1.956
9	Idont_Aa4	.419	2.386
10	Idont_Aa5	.464	2.153
11	Idont_Ab3	.578	1.731
12	Idont_Ac4	.360	2.779
13	Idont_Ac5	.391	2.559
14	S2Aa4	.620	1.612
15	S2Ab5	.639	1.565
16	S3A2	.556	1.799
17	S3A3	.667	1.500
18	S3B1	.540	1.854
19	S3C4	.651	1.537
20	S3D4	.629	1.589
21	S3D7	.611	1.637
22	S3D8	.749	1.336

Continue ….		Tolerance	VIF
23	S3D10	.658	1.519
24	S3D11	.658	1.521
25	S3D12	.571	1.750
26	S4A1	.575	1.738
27	S4A3	.826	1.211
28	S4A12	.784	1.275
29	S4A14	.590	1.694
30	RcodeS4B1	.734	1.363
31	S4B2	.556	1.797
32	S4B3	.755	1.324
33	S4B5	.536	1.867
34	S4C1	.675	1.480
35	S4C3	.550	1.818
36	S4C5	.688	1.454
37	S4C9	.750	1.334
38	S4C9b	.729	1.371
39	S5B3	.422	2.369
40	S5B5	.476	2.103
41	S5B9	.367	2.726
42	S5B10	.458	2.186
43	S5B12	.613	1.631

(b)Dependent Variable(2): VoluntarySch selection
~Note: Tolerance<0.10 and VIF>10, indicate multicollinearity problem.

Appendix A1e(a): FACTOR ANALYSIS: DELETED ITEMS

Independent Variables:

1. Knowledge Levels

   There are 3 main variables measuring knowledge level:

   i. As for the **knowledge** construct, the instrument originally consisted of n=10, which then reduced to *n*=7 since 3 items are deleted; questions A7, A1d and A1c. Question A7 is deleted due to high cross loading. Question A1d is deleted due to low communality extraction. Question A1c is also deleted to increase the *Total Variance Explained* .

   ii. As for **information** levels, the original n of 8 was reduced to *n*=4, which means 4 items are deleted; questions B1b, B1a, B1c and B1d. Question B1b and B1d are deleted due to low communality extraction, while questions B1a and B1c are deleted due to high cross loading.

   iii. **I Don't_ Know Features** (no knowledge on specific schemes features) is an extra (generated) variable from the others. The construct originally has *n*=16, which is reduced to *n*=15. Only one item is deleted due two reasons: on high cross loading; and on low communality extraction. The item is question Idont_A1c6 asks if the respondents have "knowledge on the *Golden- Hand-Shake cash award* feature".

2. Demographics

   In this study, all variables that used factor analysis were from the category of "viewpoint type" of questions. Here the researcher is trying to measure things that cannot directly be measured which are called by Field (2005) as latent variables. Thus, only variables which were based on scales measurement (stated as in 5point Likerts scales) such as attitudes or perceptions in this study could use factor analysis. On the other hand, the demographic variables are directly observed and have legitimate or absolute values. For example, items `gender' can only be grouped to two categories of female or males only; thus factor analysis is unreasonable to this kind of items. Therefore, due to its unsuitable nature, demographic variables are excluded from factor analysis.

3. Plan Features Preference

   In this construct, there are three dominant factor-loadings: *PENSION preference, EPF Preference* and *Negative Schemes Preference*. The original instrument consisted of *n*=16 which is reduced to *n*=13, with 3 items are deleted: questions S2Ac5, S2Ac6 and S2Aa1. The first two items are deleted to low communalities after extraction while the last item is deleted to improve the *Total Variance Explained*.

4. Retirement Income Sources

   The original construct which contained a total of *n*=10 is reduced to *n*=6 when 4 items are deleted. Questions S3A3, S3A1, S3A2 are deleted due to low communality extraction. Question S3A6 is also deleted to increase the *Total Variance Explained*.

5. Voluntary Saving Perceptions

   In this construct, it contains a total of 13 which is then reduced to *n*=7. There are 6 items deleted: questions A1c, S2B4, S3A2, S3B7, S3B8, and S3B1. All these questions are deleted due to the low communalities reason.

6. Health Related Perceptions

   As for the health related perceptions construct, the original instrument contains 12 questions and is reduced to *n*=8. Four items are deleted: questions S3C4, S3C5, S3C6 and S3C7. All are deleted due to the low values of communalities after extraction.

7. Extension of working years Perceptions

   In this construct, the original instrument contains a total of 13 questions which is then reduced to only 5, 8 items are deleted. Questions S3D7, S3D8, S3D10, S3D11, S3D12, S3D13, and Recode S3D9 are deleted due to low communalities after extraction values. On the other hand, only one question - S3D3 is deleted based on high cross loading.

8. Mobility

   As for Mobility construct, the original *n*=8 is reduced to *n*=5 which means 3 items deleted: questions S4A3, S4A10 and S4A11. All are deleted due to values of communalities after extraction.

9. Soft Constraints Perceptions

   The construct for the nature of decision behaviour attributes is called *Soft Constraints Perceptions*. The original instrument contains a total of *n*=10 which is reduced to *n*=4. Six items are deleted: questions C3, C4, C5, C8, C9, and C10. All are deleted due to the low values of communalities after extraction.

10. Hard Constraints 1 (Risk and Benefits considerations)

    The **Attitudes and Perceptions** construct is measured via *Preference, Comfort and Confidence* attributes. The variable is divided into two; first, Preference, Comfort and Confidence are labelled as Hard Constraints 1 and second, Schemes Appraisal is labelled as Hard Constraints 2. Hard Constraints 1 construct is measured originally by 14 items, which is reduced to *n*=9 after deleting 5 items namely questions S4A4, S4A9, RecodeS4B1, S4B2, and S4B3. All are deleted due to their low values of communalities after extraction. In addition, item S4B3 also contains a percentage of missing cases. Question S4B3 could also be ignored if the respondent has not made his or her decision yet.

11. Hard Constraints 2 (Schemes appraisal)

    This construct measured the Schemes Appraisal. The **force-method** is also used for this construct in performing the factor analysis. The original instrument contains a total of *n*=12 which is reduced to half, a significant 6 items are deleted: questions S4C4, S4C5, S4C6, S4C7, S4C8 and S4C9. All items were deleted due to their low values of communalities after extraction. In addition, item S4C5 also holds high cross-loading between items.

12. Job Related Aspects (job nature and job satisfaction)

    The original construct contains a total of *n*=17 which is then reduced to *n*=10 when 7 items are deleted namely S5A1, S5A2, S5A4, S5B6, S5B11, S5B12 and S5B13. Except for question S5B13, which has high cross loading, others are deleted based on the low communalities reasons.

Dependent Variables:

1. CHOICE

   This is the main dependent variable. It is measured by the dichotomous output of 0 and 1. There are two choices: the *Compulsory Scheme Choice* and the *Voluntary Retirement Schemes Ownership*. Thus, the factor analysis is not applicable here.

2. SATISFACTION

   This variable is measured by *Retirement Systems Satisfaction* items (all questions in section 2B) and *Overall Choice Satisfaction* (all questions in Section 4D). The factor analysis was only executed on items in section 2B. This is because section 4D consists of only 2 items. Thorough discussions on the satisfaction variable can be found in Chapter 10. As for the construct of *Retirement Systems Satisfaction*, the original instrument contains a total of n=12, then is reduced to n=7 after deleting 5 items. They are questions S2B4, S2B5, S2B6, S2B7, and S2B8. Items S2B5 and S2B6 are deleted due to the high cross loading, while the rest are deleted based on the low values of communalities after extraction.

Appendix A1e(b): FACTOR ANALYSIS: REMAINING ITEMS

Independent Variables:

1. Knowledge Levels

   There are 3 main variables in measuring knowledge as below:

   Knowledge

   The strongest loadings generated in this construct are 2 factors (components); named *Basic knowledge* and *Advanced Knowledge*. Their communalities after extraction are good, ranging from a minimum of 0.543 up to 0.830. The details of retained items are:

   i. *Basic knowledge* labelled as KNOW_1 consists of 4 questions (items):
      1. A1a-know about EPF
      2. A1b-know about pensions
      3. A2-know pros/cons EPF
      4. A3-know pros/cons pensions

   ii. *Advanced Knowledge* labelled as KNOW_2 consists of 3 questions:
      1. A4-know retirement benefits received
      2. A5-know implication of government housing loan
      3. A6-know effect of inflation

   Information

   The strongest loading in this construct is only 1 factor named *Information Level*. Its communalities after extraction are good, ranging from 0.709 up to 0.853. The details of retained items are:

   The *Information Level* labelled as INFOR consists of 4 questions:

      1. B2-info sufficient from university
      2. B3-info sufficient about retirement scheme
      3. B4-info accurate
      4. B5-info simple and easy

I Don't_ Know Features

"I Don't_ Know Features**"** (no knowledge on specific schemes features) is an extra (generated) variables from the variable called "plan feature preferences". Here, the strongest components are determined to be 3 factors named *No knowledge overall features? No knowledge EPF?* and *No knowledge PENSION?* Their communalities after extraction are good, ranging from 0.544 up to 0.796. The details of retained items are:

i. *No knowledge overall features?* labelled as IDONT_1 consists of 5 questions:
   1. Idont_Ac1 - ALL contributions?
   2. Idont_Ac2 - ALL security funds?
   3. Idont_Ac3 - ALL uncertainties benefits?
   4. Idont_Ac4 - ALL timing?
   5. Idont_Ac5 - ALL majority choice?

ii. *No knowledge EPF?* labelled as IDONT_2 consists of 5 questions:
   1 Idont_Aa1 - EPF lump-sum?
   2 Idont_Aa2 - EPF pre-withdrawals?
   3 Idont_Aa3 - EPF job-mobility?
   4 Idont_Aa4 - EPF Tax relief?
   5 Idont_Aa5 - EPF investment choice?

iii. *No knowledge PENSION?* labelled as IDONT_3 consists of 5 questions:
   1. Idont_Ab1 - PENSION monthly pension?
   2. Idont_Ab2 - PENSION gratuity?
   3. Idont_Ab3 - PENSION disability?
   4. Idont_Ab4 - PENSION dependents?
   5. Idont_Ab5 - PENSION medical?

2. Traditional and Extended Demographics

   This variable is excluded from factor analysis due to its unsuitable nature as explained in Section 7.1.5.

3. Plan Features Preference

There are 3 dominant factors generated for this construct. They are *PENSION preference*, *EPF Preference* and *Negative Schemes Preference*. Their communalities after extraction are good, ranging from 0.646 to 0.865. The positive and negative signs below denote the advantage and disadvantage of each the plan features. The details of retained items are:

i. *PENSION Preference* labelled as FEATURE_1 consists of 5 questions:
   1. S2Ab1-P fixed life-long monthly pension +
   2. S2Ab2-P gratuity +
   3. S2Ab3-P disability/misfortune pension +
   4. S2Ab4-P beneficiaries/dependants pensions +
   5. S2Ab5-P free medical treatments +

ii. *EPF Preference* labelled as FEATURE_2 consists of 4 questions:
   1. S2Aa2-EPF pre-retirement withdrawals +
   2. S2Aa3-EPF mobility +
   3. S2Aa4-EPF tax relief +
   4. S2Aa5-EPF investment choice +

iii. *Negative Schemes Preference* labelled as FEATURE_3 consists of 4 questions:
   1. S2Ac1-EPF contribution rates -
   2. S2Ac2-E&P security of funds + -
   3. S2Ac3-E&P uncertainties of benefits + -
   4. S2Ac4-E&P time to receive + -

4. Retirement Income Sources

There are two factors generated as the strongest loadings in this construct. They are named as *Basic Income Sources* and *Supplementary Income Sources*. The *Basic Income Sources* is more focused on the individual basis of the retirement income sources, while the *Supplementary Income Sources* is more focused towards the family sources. Their communalities after extraction are good, ranging from 0.631 up to 0.816. The details of retained items are:

i. *Basic sources of retirement income* labelled as INCOME_1 consists of 4 questions:
   1. S3A7-income-savings account
   2. S3A8-income-stocks/bonds/mutual/trust

3. S3A9-income-business investment
4. S3A10-income-real estate

ii. *Supplementary sources of retirement income* labelled as INCOME_2 consists of 2 questions:
1. S3A4-income-spouse
2. S3A5-income-children/family members

5. Voluntary Saving Perceptions

The strongest loadings are named as *Voluntary Savings*, *Debt Obligations*, and *Commercial Schemes Trust*. Their communalities after extraction are good, ranging from 0.660 up to 0.747. The details of retained items are:

i. *Voluntary Savings* labelled as VOLUNTARY_1 consists of 3 questions:
1. S3B2-Voluntary savings in banks
2. S3B3-Voluntary house/real estate
3. S3B4-Voluntary other investment

ii. *Debt Obligations* labelled as VOLUNTARY_2 consists of 2 questions:
1. RcodeS3B5-Recode Voluntary Many short term obligations
2. RcodeS3B6-Recode Voluntary Many long term obligations

iii. Commercial Schemes Trust labelled as VOLUNTARY_3 consists of 2 questions:
1. S4B6-confident in commercial retirement scheme
2. S4C3-excellent quality of commercial scheme

6. Mobility

There are two strongest loading factors for this construct, the *Public Sector Attractiveness* and *Moving Consideration*. Their communalities after extraction are good, ranging from 0.556 to 0.880. The details of retained items are:

i. *Public Sector Attractiveness* labelled as MOBILITY_1 consists of 2 questions:
1. S4A1 -P secure as civil servant
2. S4A2 -P pension as privilege to civil servant

ii. *Private Sector Attractiveness* labelled as MOBILITY _2 consists of 3 questions:
1. S4A12-consider other job with better pay/etc
2. S4A13-Prefer mobile retirement scheme
3. S4A14-consider retirement scheme when change job

7. Extension of working years Perceptions

   The strongest loadings are 2 factors, named as *Extension of working years* and *Ordinary retirement*. Their communalities after extraction are good, ranging from a minimum of 0.619 up to 0.770. The details of retained items are:

   i. *Extension of working years* labelled as AGE_1 consists of 3 questions:
      1. S3D4-retirement age should be increased
      2. S3D5-willing to extend retirement age
      3. S3D6-work part-time after retirement

   ii. *Ordinary Retirement* labelled as AGE _2 consists of 2 questions:
      1. S3D1-retirement at retirement age
      2. S3D2-retirement when not employed

8. Health Related Perceptions

   The strongest loadings generate 3 factors; named as *Healthcare provider satisfaction, Good Health* and *Bad Health*. Their communalities after extraction are good, ranging from 0.678 to 0.903. The details of retained items are:

   i. *Healthcare Provider Satisfaction* labelled as HEALTH_1 consists of 3 questions:
      1. S2B10-satisfied-family support
      2. S2B11-satisfied-health care system
      3. S2B12-satisfied-elderly care system

   ii. *Good Health* labelled as HEALTH_2 consists of 3 questions:
      1. S3C1-H good health status
      2. S3C2-H expect good health at retirement
      3. S3C3-H maintained healthy diet

   iii. *Bad Health* labelled as HEALTH_3 consists of 2 questions:
      1. RcodeS3C8-H have Serious health condition
      2. RcodeS3C9-H have Chronic health condition

9. Soft Constraints Perceptions

As for the construct of **Nature of Decision Behaviour** attributes known as "Soft Constraints Perceptions", the strongest loadings are determined to be 2 factors. They are named *Realistic level* and *Peer influence level*. Their communalities after extraction are good, ranging from 0.769 to 0.797. The details of retained items are:

i. *Realistic Level* labelled as SOFT_1 consists of 2 questions:
   1. C1-decision behaviour will be based primarily upon information and knowledge of employee
   2. C2- employee is the realistic decision maker

ii. *Peer Influence Level* labelled as SOFT_2 consists of 2 questions:
   1. C6- Spouse and family have a huge influence on employees retirement scheme decision
   2. C7-Peers have a huge influence on employees retirement scheme decision

10. Hard Constraints 1 (Risk and Benefits considerations)

Variables of **Attitudes and Perceptions** are measured by *Preference, Comfort and Confidence* attributes. The variables are divided into two; Preference, Comfort and Confidence are labelled as Hard Constraints1 and Schemes Appraisal is labelled as Hard Constraints2. There are 2 strongest loading factors measuring the Hard Constraints1. They are named as *Benefit Confidence* and *Risk Consideration*. Their communalities after extraction are good, ranging from 0.537 to 0.784. The details of retained items are:

i. *Benefit Confidence* labelled as oneHARD_1 consists of 5 questions:
   1. S4B4 -C enough income when retire
   2. S4B5-C appropriate scheme chosen
   3. S4B6 -Confident in commercial retirement scheme
   4. S4B7 -Post-retirement living standard is higher
   5. S4B8-Future retirement benefits better than existing

ii. *Risk Considerations* labelled as oneHARD_2 consists of 4 questions:
   1. S4A5- guaranteed security as top priority
   2. S4A6- guaranteed retirement benefits as top priority
   3. S4A7- pension provide more money
   4. S4A8- income tax relief appreciated

11. Hard Constraints 2 (Schemes appraisal)

The second construct, Hard Constraints2 that measures *Schemes Appraisal* generated the strongest loading of 2 factors. They are named as *Favour New/Proposed Scheme (FPB)* and *Favour Existing Schemes*. Their communalities after extraction are good, reporting a minimum of 0.547 up to 0.869. The details of the retained items are:

i. *Favour New Scheme (FPB)* labelled as twoHARD_1 consists of 3 questions:

1. S4C9a- FPB better than old pension scheme
2. S4C9b- FPB better than EPF
3. S4C9c- willing to enrol in FPB

ii. *Favour Existing Schemes* labelled as twoHARD_2 consists of 3 questions:

1. S4C1- excellent quality of EPF
2. S4C2- excellent quality of pension
3. S4C3- excellent quality of commercial scheme

12. Job Related Aspects (Job Nature and Job Satisfaction)

As for this construct, there are 2 factors generated as dominant, namely *Job Satisfaction* and *Young Age Advantage*. Their communalities after extraction are good, ranging from 0.517 up to 0.925. The details of retained items are:

i. *Job Satisfaction* labelled as JOB_1 consists of 9 questions:

1. S5B1 Satisfied job-job/profession
2. S5B2 Satisfied job-salary
3. S5B3 Satisfied job-retirement benefits
4. S5B4 Satisfied job-other incomes
5. S5B5 Satisfied job-other benefits
6. S5B7 Satisfied job- leisure
7. S5B8 Satisfied job-self-fulfilment
8. S5B9 Satisfied job-job security
9. S5B10 Satisfied job-career development

ii. *Young Age Advantage* labelled as JOB_2 consists of only 1 question:

1. S5A3- Promotion, favour young employee

Dependent Variables:

1. CHOICE

   This is the main dependent variable and dichotomous. Thus, factor analysis is not applicable.

2. SATISFACTION

   This variable is measured by "*Retirement Systems Satisfaction*" items (all questions in section 2B) and "*Overall Choice Satisfaction*" (all questions in Section 4D) in the questionnaire. The factor analysis is conducted on items in section 2B because section 4D only consists of 2 items. A thorough discussion on the satisfaction variable can be found in chapter 10.

   Two factors are generated as strongest loadings for the construct of *Retirement Systems Satisfaction*. They are named *Surround Systems Satisfaction* and *Personal Systems Satisfaction*. Their communalities after extraction are good, ranging from a minimum of 0.698 up to 0.848. The details of retained items are:

   i. *Surround Systems Satisfaction* labelled as Satis_SYSTEMS_1 consists of 4 questions:
      1. S2B9 satisfied-government effort to improve scheme
      2. S2B10 satisfied-family support
      3. S2B11 satisfied-health care system
      4. S2B12 satisfied-elderly care system

   ii. *Personal Systems Satisfaction* labelled as Satis_SYSTEMS_2 consists of 3 questions:
      1. S2B1 satisfied-power to choose
      2. S2B2 satisfied-time available to decide
      3. S2B3 satisfied-quality of chosen scheme

Appendix A2: CONFERENCES THEMES

Table Appendix A2: Recent Conferences on Ageing

	Conference Names and Place	Year
1	The Year 2000 International Research Conference on Social Security, `*Social Security in the Global Village*'. Helsinki.	2000
2	ILO Conference of the Minister of Labour of G8 Countries, `*Encouraging the Employment of older People*'. Turin.	2000
3	International Symposium on *Pension Reforms in Asian Countries*, Tokyo.	2002
4	*Second World Assembly on Ageing,* Madrid, Spain.	2002
5	4th International Research Conference on Social Security `*Social Security in a Long Life Society*'. Antwerp.	2003
6	Pension Reform in Europe *`Shared problems, Sharing Solution'.* London.	2003
7	World Bank Second Public Pension Fund Management Conference. Washington.	2003
8	World Bank Third Public Pension Fund management Conference, Washington.	2004
9	The Population Ageing in the Developing World Conference *`Bridging Research, Policy and Practice'*. Subang Jaya, Malaysia.	2004
10	CEBR/CESifo '*Conference on Pension Reform'*. Copenhagen.	2005
11	OECD IOPS Conference on Private Pension in Asia `*Regulating Private Pension Scheme, Trends and Challenges*'. Bangkok	2005
12	Conference on '*Urban Poverty and Social Safety Net in East Asia'*, Beijing	2005
13	2nd Asian Conference on Pension and Retirement Planning `*The Challenge of Increasing Pensions Coverage'*, Hong Kong	2005
14	APRIA Tokyo Conference `*The New Challenge: Sustainable Solvency in the Asia-Pacific Insurance Industry'*, Tokyo	2006
15	18th ASSA Board meeting Seminar 'Implication on Ageing population' Penang, Malaysia	2006
16	4th Asian Conference on Pension and Retirement Planning `*Reinventing retirement strategies in the New World of Risks'*, Kuala Lumpur, Malaysia	2007

Appendix A3: DETERMINATION OF SAMPLE SIZE

Table Appendix A3: Krejcie & Morgan Determination of Sample Size

Population Size	Sample Size	Population Size	Sample Size	Population Size	Sample Size
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Source: Krejcie & Morgan (1970)

Appendix B: QUESTIONNAIRE

ENGLISH VERSION

THE UNIVERSITY OF HULL

UNIVERSITI UTARA MALAYSIA

CHOICE OF RETIREMENT SCHEMES: A STUDY ON MALAYSIAN PUBLIC UNIVERSITIES

Dear valued respondent,

You have been randomly selected to be a respondent in this research. This questionnaire seeks to identify the factors that may influence the decision of employees in the Malaysian public universities in choosing their retirement schemes (plans). The choice of retirement scheme has not been widely researched and it is important to fill in the gaps that exist, especially in Malaysia. The findings of this research will be useful in assisting the parties involved in developing policies of the Malaysian retirement systems. You may also gain from the improved system. For that reason, your views are vital to help provide a clear picture of how people choose their retirement plans and whether there is room for improvement in the systems.

Regards

Habibah Tolos
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HOW TO FILL IN THE QUESTIONNAIRE

1. Most of the questions require you to tick [√] or circle (**O**) the best option that represent your opinion. In some instances, you are required to write your answers in the appropriate response space.
2. There are no right or wrong answers. Thus, we would appreciate your frank and complete response to help us understand people's views better. In some of the questions you may find it difficult to decide a response. If this happens, choose an option that suits you the best. Do not spend too much time on any one question.
3. The questionnaire is divided into six (6) sections. You are asked to fill in all the sections. It will take approximately 30-40 minutes to complete.
4. Please return the completed questionnaire in the envelope provided.
5. If you need assistance on how to fill in the questionnaire or interested for the final results of this study, please contact me via the above address or to my representative: Azlina Yahaman (azlyna@uum.edu.my, 0194026755/ 049283018) in Malaysia.

LUCKY DRAW

A completed questionnaire, will be entitle to enter for a lucky draw of winning 5 x RM100 in cash as an appreciation for taking the time to complete the questionnaire. Please state your email address in the space provided or alternatively attach your business card together with your completed questionnaire if you want to participate in the draw.

Email for Lucky draw:

_____

INTRODUCTION

Assurance of Confidentiality:
Your responses to every part in this questionnaire are strictly confidential. They will be used only in statistical summary and will not be disclosed to your organisation or to any individual or group.

Definition:

- The "choice" here refers to the decision on the option given: to select the pension (Public Service Pension) or EPF schemes.
- The "retirement system" refers to the broader system or method to prepare for the retirement planning purposes.
- The "scheme" or "retirement scheme" here is refers to the type of compulsory retirement plans such as Ordinary Public Service Pension (pension) and Employee Provident Fund (EPF) which is offered by the employer. Elsewhere, the commercial/personal/ voluntary retirement scheme refers to private annuities and life insurance policy offers by insurance companies.
- The "FPB" = New Proposed Plan for Civil Servants = New Pension Trust Fund (Skim Faedah Pencen Bercarum).
- The "Benefit" = reimbursement = retirement payments promised to be paid.

Code: _____

[The purpose for this code is to avoid sending another questionnaire to the same person]

Thank you very much for your valued time, kind attention and cooperation.

SECTION 1: KNOWLEDGE, INFORMATION AND DECISION BEHAVIOUR

Please indicate the extent to which you agree with each of the following statements regarding:

A. Knowledge	**Strongly Disagree**				**Strongly Agree**
1. I am very knowledgeable in the following:					
a. Employee Provident Fund (EPF/KWSP)	1	2	3	4	5
b. Pension (civil servant pension)	1	2	3	4	5
c. Annuities and insurance policies	1	2	3	4	5
d. Retirement planning	1	2	3	4	5
2. I understand well about the pros and cons of EPF scheme.	1	2	3	4	5
3. I understand well about the pros and cons of pension scheme.	1	2	3	4	5
4. I know how to derive/calculate the amount of retirement benefits that I will receive during my retirement period.	1	2	3	4	5
5. I understand that there are different implications on my `government housing loan' payments if I choose EPF against pension scheme.	1	2	3	4	5
6. I know the effect of inflation on retirement schemes.	1	2	3	4	5
7. I know that contributions to EPF and insurance premiums are tax-deductible from my income.	1	2	3	4	5

B. Information	**Strongly Disagree**				**Strongly Agree**
1. I can find information about Malaysian retirement system from:					
a. Management (university) / Public Service Department (JPA)	1	2	3	4	5
b. Peers at work/ Friends outside this university	1	2	3	4	5
c. Financial advisors/ professionals	1	2	3	4	5
d. Internet/Circulars/Articles, books and newspapers/ Television or Radio shows	1	2	3	4	5
e. Others (Specify :) _____	1	2	3	4	5
2. I have received sufficient information or advice from the university before choosing my retirement scheme (EPF versus pension).	1	2	3	4	5
3. I have acquired sufficient information on the retirement scheme that I have chosen (I am considering).	1	2	3	4	5
4. I have accurate information on the future implications of my choice.	1	2	3	4	5
5. Generally, it is always simple and easy to understand information on retirement schemes benefits.	1	2	3	4	5

Notes:

- Life Insurance is a type of insurance which pays out a lump sum to your beneficiaries /dependents if you die.
- Annuity is a life insurance/Takaful product that pays periodic income benefits for a specific period of time or over the course of the annuitant's lifetime.
- Retirement benefits are types of retirement reimbursements or payments promised to be paid.
- There is a combined tax relief of up to RM6,000 for life insurance/Takaful/annuity premiums and contribution to the EPF (Budget 2005).
- Public sector employees exercising their optional retirement age at 40, have to pay the increased interest rate of 7 % (from 4 %) for their government housing loan.

C. Decision Behaviour	**Strongly Disagree**				**Strongly Agree**
1. My decision will be based primarily upon information and knowledge I have.	1	2	3	4	5
2. I am a very `realistic decision maker' who makes the best retirement scheme choice.	1	2	3	4	5
3. It takes time for me to make up my mind in choosing a scheme.	1	2	3	4	5
4. I don't need to think about my decision on the retirement scheme choice at this time.	1	2	3	4	5
5. I feel relief if someone else makes the scheme choice for me.	1	2	3	4	5
6. My spouse or family have a huge influence on my scheme choice.	1	2	3	4	5
7. My peers (inside this faculty/department) have a huge influence on my scheme choice.	1	2	3	4	5
8. A majority of my peers choose the same (tentative) retirement scheme as mine.	1	2	3	4	5
9. On average, my peers have better knowledge in the retirement systems than me.	1	2	3	4	5
10. In terms of planning and saving for retirement, I am really ahead of schedule.	1	2	3	4	5

SECTION 2: RETIREMENT PROVISION

Please indicate the extent to which you agree with each of the following statements regarding:
[Note: The column *`I Don't Know'* is to be ticked if you are not aware of it]

***A.* Retirement Scheme feature preferences**	**Strongly Disagree**				**Strongly Agree**	***I Don't Know***
I would prefer EPF scheme because of:						
1. Lump-sum payment.	1	2	3	4	5	
2. Pre-retirement withdrawals/loans privilege. *Example: to purchase/build house, redeem housing loan, children education and health withdrawal.*	1	2	3	4	5	
3. Securing retirement fund with the job change (mobility).	1	2	3	4	5	
4. Tax relief. *Example: Up to RM6,000 on taxable income*	1	2	3	4	5	
5. Investment choice of fund (EPF-Investment-Scheme). *Example: Option to accumulate with the EPF or to withdraw for investment in mutual funds*	1	2	3	4	5	
I would prefer Pension scheme because of:						
1. Fixed life-long monthly pension payments (Pencen Perkhidmatan).	1	2	3	4	5	
2. Lump-sum Gratuity service payment (Ganjaran perkhidmatan).	1	2	3	4	5	
3. Pension for disability/misfortune.	1	2	3	4	5	
4. Pension for beneficiaries/dependents.	1	2	3	4	5	
5. Life-long free medical treatments at the government hospitals.	1	2	3	4	5	
Overall, I would also consider:						
1. Contributions rate (payments to the scheme from your salary). *Example: 11 percent salary cutting to EPF*	1	2	3	4	5	
2. Security of funds in the schemes.	1	2	3	4	5	
3. Uncertainties of benefits.	1	2	3	4	5	
4. Time of receiving benefits.	1	2	3	4	5	
5. Majority of the chosen scheme by peers.	1	2	3	4	5	
6. Golden Hand-Shake" cash award (Gantian cuti rehat).	1	2	3	4	5	

Please indicate the extent to which you agree with each of the following statements regarding:

***B.* Retirement System satisfaction**	**Strongly Disagree**				**Strongly Agree**
Generally, I feel satisfied with the :					
1. Right (power) I have to make choice.	1	2	3	4	5
2. Length of time available for making choice.	1	2	3	4	5
3. Quality of the chosen (tentative) scheme.	1	2	3	4	5
4. Variety of retirement systems available in Malaysia.	1	2	3	4	5
5. Promised benefits from the retirement system.	1	2	3	4	5
6. Financial sufficiency for my future retirement needs.	1	2	3	4	5
7. Asset management of my retirement scheme.	1	2	3	4	5
8. Flexibility to change my retirement scheme in the future.	1	2	3	4	5
9. Government efforts to improve the retirement scheme.	1	2	3	4	5
10. Availability of family support when I'm old.	1	2	3	4	5
11. Prospects of Malaysian health care system.	1	2	3	4	5
12. Prospects of Malaysian elderly care system.	1	2	3	4	5

Note:

- Retirement system here includes all of the Malaysian retirement schemes and other methods for retirement savings. Examples: EPF, pension, personal retirement plans, etc.

SECTION 3: RETIREMENT INCOME, VOLUNTARY SCHEMES, HEALTH STATUS, RETIREMENT AGE AND EXTENDING WORK

Please indicate the extent to which you agree with each of the following statements regarding:

A. Retirement Income	**Strongly Disagree**				**Strongly Agree**
I expect to receive my retirement income from:					
1. EPF or pension schemes	1	2	3	4	5
2. Annuity or life insurance policies	1	2	3	4	5
3. Post-retirement employment	1	2	3	4	5
4. Spouse (wife/husband)	1	2	3	4	5
5. Children/Family members (excluding spouse)	1	2	3	4	5
6. Inheritance money/assets	1	2	3	4	5
7. Savings accounts	1	2	3	4	5
8. Stocks, bonds, mutual funds/unit trusts	1	2	3	4	5
9. Business investment	1	2	3	4	5
10. Real estate (such as house, land or other real property)	1	2	3	4	5
11. Others (Specify :) _____	1	2	3	4	5

B. Voluntary Saving Perceptions	**Strongly Disagree**				**Strongly Agree**
1. I own (will buy) an annuity or life insurance policy as my additional/voluntary retirement scheme.	1	2	3	4	5
2. I do (will) set aside a certain amount of money each month/year for retirement purposes in bank accounts or similar savings.	1	2	3	4	5
3. I do (will) own a house or other real estate intended for retirement purposes.	1	2	3	4	5
4. I do (will) own other types of investments intended for retirement purposes.	1	2	3	4	5
5. I have many short term debt obligations. *Examples: credit cards, loans less than 5 years*	1	2	3	4	5
6. I have many long term debt obligations. *Examples: mortgage, loans more than 5 years*	1	2	3	4	5
7. I am willing to make an extra contribution (voluntarily) to EPF even if I have already enroled in the pension scheme.	1	2	3	4	5
8. The purchase of voluntary commercial retirement scheme is highly needed.	1	2	3	4	5

C. Health Status	Strongly Disagree				Strongly Agree
1. I have a very good health status.	1	2	3	4	5
2. I expect to have a very good state of health at my retirement age.	1	2	3	4	5
3. I have maintained a healthy diet.	1	2	3	4	5
4. I own (will own) a health insurance policy.	1	2	3	4	5
5. I prefer going to the government hospital for medical treatment.	1	2	3	4	5
6. My employer/insurance company normally settles my medical bills.	1	2	3	4	5
7. Free medical treatment in the government hospital should also be given to the pensioners who opt for the EPF scheme.	1	2	3	4	5
8. I have a serious health condition (e.g: cancer, diabetes, heart failure, hypertension, stroke).	1	2	3	4	5
9. I have a chronic health condition (e.g: arthritis, asthma, bone fracture, cataracts, gout, psoriasis, ulcers)	1	2	3	4	5

D. Retirement Age and Extending Work	Strongly Disagree				Strongly Agree
1. I believe that retirement begins when a person reaches the retirement age.	1	2	3	4	5
2. I believe that retirement begins when a person stop to be employed.	1	2	3	4	5
3. I did have a choice in choosing my retirement age.	1	2	3	4	5
4. The retirement age in Malaysia should be increased. *Examples: to age of 60 or 65*	1	2	3	4	5
5. I am willing to extend my retirement age if I have the chance regardless of monetary payments.	1	2	3	4	5
6. I intend to work in part time job after the retirement age.	1	2	3	4	5
7. I intend to work in full time job after the retirement age.	1	2	3	4	5
8. I will start to do business when I retire.	1	2	3	4	5
9. I might consider the option for early retirement ("Persaraan pilihan").	1	2	3	4	5
10. I prefer having more chances (more than one time) in choosing my retirement age.	1	2	3	4	5
11. The date (time) to choose the retirement age should be made later. *Example: At the age of 50*	1	2	3	4	5
12. I would have a good chance to work after my retirement age with my level of skills and knowledge.	1	2	3	4	5
13. I believe that older workers will suffer "*old age discrimination"* in the labour market.	1	2	3	4	5

Notes:

- Early retirement is at age of 40 (minimum)
- Compulsory retirement is at 56 years old

SECTION 4: ATTITUDES AND PERCEPTIONS

Please indicate your views on the following issues the extent to which you agree with each of the following statements regarding:

A. Preference	**Strongly Disagree**				**Strongly Agree**
1. It is more secure to work as a civil servant.	1	2	3	4	5
2. The pension scheme is the privilege for civil servants.	1	2	3	4	5
3. The private sector can offer better career opportunities as compared to the public sector.	1	2	3	4	5
4. I prefer low risk schemes.	1	2	3	4	5
5. Guaranteed security is my top priority in choosing a scheme.	1	2	3	4	5
6. Guaranteed retirement benefits are my top priority in choosing a scheme.	1	2	3	4	5
7. I believe that the pension scheme provides more monetary compensation than EPF.	1	2	3	4	5
8. I appreciate the income tax relief on my payment to EPF and life insurance premiums.	1	2	3	4	5
9. I appreciate higher salary compared with retirement benefits.	1	2	3	4	5
10. I intend to work in the public sector until reaching my retirement age.	1	2	3	4	5
11. I have a desire to remain affiliated with this university until my retirement.	1	2	3	4	5
12. I would consider accepting another job for the reasons of higher level of salary /promotion/position.	1	2	3	4	5
13. I prefer a retirement scheme which can follow me wherever I go, even if I change my workplace/career.	1	2	3	4	5
14. I seriously consider the company retirement scheme when changing jobs.	1	2	3	4	5

B. Comfort and Confidence	**Strongly Disagree**				**Strongly Agree**
1. I am indifferent in choosing EPF or pension schemes.	1	2	3	4	5
2. My choice provides (will provide) greater satisfaction than the other option.	1	2	3	4	5
3. If I could do it all over again, I prefer choosing the other option for retirement scheme (EPF versus pension). *[Please ignore this question if you have not made your decision yet]*	1	2	3	4	5
4. I am confident that I will have enough income when I retire.	1	2	3	4	5
5. I am confident that I have (will have) the most appropriate retirement scheme for me.	1	2	3	4	5
6. I am confident in the future of any commercial retirement schemes (e.g. annuity, life insurance policies) in Malaysia.	1	2	3	4	5
7. I expect my standard of living after I retire will be much higher than today.	1	2	3	4	5
8. When I retire, my future retirement benefits will be much better compared to existing retirees.	1	2	3	4	5

C. Schemes Appraisal	**Strongly Disagree**				**Strongly Agree**
1. The quality of the EPF scheme is excellent.	1	2	3	4	5
2. The quality of the pension scheme is excellent.	1	2	3	4	5
3. The quality of the commercial insurance and annuities are excellent.	1	2	3	4	5
4. I prefer to have more than one FINAL (irrevocable) decision of choosing EPF or pension scheme.	1	2	3	4	5
5. The benefits of the pension scheme will outweigh the EPF scheme.	1	2	3	4	5
6. The monthly deduction on EPF contribution is a burden to me.	1	2	3	4	5
7. Higher tax relief should be given to EPF and insurance premium payments.	1	2	3	4	5
8. The growing numbers of old people is a challenge to the Malaysian retirement system.	1	2	3	4	5
9. I am aware of the new proposed government pension scheme (Skim Faedah Pencen Bercarum (FPB)) for new civil servants. *If your answer is (1) strongly disagree, please ignore questions a, b and c:*	1	2	3	4	5
a. The FPB is better than the old pension scheme.	1	2	3	4	5
b. The FPB is better than the EPF scheme.	1	2	3	4	5
c. If I have the opportunity, I am willing to enrol on the FPB.	1	2	3	4	5

D. Overall Satisfaction	**Strongly Disagree**				**Strongly Agree**
1. Overall, I am satisfied with the current choice of my retirement scheme (EPF versus pension).	1	2	3	4	5
2. Overall, I am satisfied with the current provision (act) of the retirement system for Malaysian civil servants.	1	2	3	4	5

SECTION 5: JOB RELATED CHARACTERISTICS

Please indicate the extent to which you agree with each of the following statements regarding your job aspects:

A. Jobs Nature Perceptions	**Strongly Disagree**				**Strongly Agree**
1. My job requires physical capability.	1	2	3	4	5
2. My job requires intense concentration and attention.	1	2	3	4	5
3. Regarding promotion, my employer gives younger people preference over older people.	1	2	3	4	5
4. The `meaning of work' is more important than payment.	1	2	3	4	5
B. Jobs Satisfaction	**Strongly Disagree**				**Strongly Agree**
I feel satisfied with the:					
1. Types of job/profession.	1	2	3	4	5
2. Salary (including allowances).	1	2	3	4	5
3. Retirement benefits.	1	2	3	4	5
4. Other incomes. *Examples: coaching, supervision, overtime, extra administration, research).*	1	2	3	4	5
5. Other benefits. *Examples: medical/dental, hotel, flexibility (working time), car or house loan, group insurance, unpaid leave and study leave, child care incentive, education, self improvement programme*.	1	2	3	4	5
6. Work load/pressure.	1	2	3	4	5
7. Leisure.	1	2	3	4	5
8. Self-fulfilment.	1	2	3	4	5
9. Job security.	1	2	3	4	5
10. Opportunities for career development/rank.	1	2	3	4	5
11. Effectiveness in the workplace.	1	2	3	4	5
12. Location of work.	1	2	3	4	5
13. My job, overall.	1	2	3	4	5

SECTION 6: SUBJECTIVE VIEW

Please state briefly your opinion regarding:

Q1: What is your **single** most important reason in selecting the retirement scheme?

_____

Q2: What is the **single** most attractive benefit in any retirement scheme?

_____

Q3: What is the **single** most negative aspect in any retirement scheme?

_____

DEMOGRAPHIC CHARACTERISTICS

1. *Gender* □ *Male* □ *Female*

2. Nationality □ Malaysian □ Non-Malaysian

3. Age

- [ ] Younger than 20 years old
- [ ] 21 - 30 years old
- [ ] 31 – 40 years old
- [ ] 41 – 50 years old
- [ ] above 50 years old

4. *Race*

- [ ] Malay
- [ ] Chinese
- [ ] Indian
- [ ] Others

5. Religion

- [ ] Islam
- [ ] Buddha
- [ ] Hindu
- [ ] Christian
- [ ] Others

6. *Residence* □ *Urban* □ *Rural*

7. *Highest education level:*

- [ ] Primary/Secondary school
- [ ] Diploma/Bachelor's Degree
- [ ] Master
- [ ] PhD

8. Marital Status

- [ ] Unmarried (skip the spouse information section)
- [ ] Mar ied
- [ ] Widow/Widower
- [ ] Divorced

9. Number of dependents (Children under 21 years old):_____

10. Year appointed as a civil servant: _____

11. Age appointed as a civil servant: _____ years old

12. Length of service in this University: _____ years.

13. Length of service in the civil services: _____ years.

14. Total number of previous employers (if any):_____

15. Grade code (e.g:DS45 / N17): _____

16. University (UDM, UIAM, UKM, UM, UMK, UMP, UniMAP, UMS, UNIMAS, UMT, UPSI, UPNM, UPM, USIM, USM, UTeM, UTM, UiTM, UTHM, UUM): _____

17. Faculty/Department: _____

18. *Job status (You could choose more than one answer)*

- [ ] Full time
- [ ] Part time
- [ ] Temporary
- [ ] Probation
- [ ] Confirmed
- [ ] Contract

19. Size of faculty (department) you worked for

- [ ] 1 -- 49 employees
- [ ] 50 – 99 employees
- [ ] 100 – 249 employees
- [ ] 250 – 999 employess
- [ ] More than 1,000 employees

20. *What is your estimate gross monthly income?*

- [ ] Less than RM1,000
- [ ] RM1,001 – RM2,000
- [ ] RM2,001 – RM3,000
- [ ] RM3,001 – RM4,000
- [ ] RM4,001 – RM5,000
- [ ] More than RM5,000

21. *What is your household (family) gross monthly income?*

- [ ] Less than RM1,000
- [ ] RM1,001 – RM3,000
- [ ] RM3,001 – RM5,000
- [ ] RM5,001 – RM7,000
- [ ] RM7,001 – RM9,000
- [ ] More than RM9,000

RETIREMENT INFORMATION

22. My mandatory age of retirement is_____ years old.

23. Have you made the selection for your mandatory retirement scheme?

- [ ] Yes, Which is your chosen scheme?
  - [ ] Pension
  - [ ] EPF
  - [ ] Other :_____
- [ ] No, Which tentative scheme you have in mind?
  - [ ] Pension
  - [ ] EPF
  - [ ] Other :_____

24. Have you purchased any voluntary retirement schemes from an insurance company?

- [ ] Yes, What is your chosen scheme?
  - [ ] Annuity from _____
  - [ ] Life insurance from_____
  - [ ] Other :_____
- [ ] No

SPOUSE INFORMATION

25. Is your spouse a full-time housewife/husband?
[ ] Yes [ ] No

26. Is your spouse also a civil servant?
[ ] Yes [ ] No

27. Has your spouse had his/her own company's retirement scheme?
[ ] Yes [ ] No

28. Has your spouse bought his/her own commercial retirement scheme (e.g. Annuity and life insurance policies)
[ ] Yes [ ] No

29. Are you entitled to any benefits from your spouse retirement scheme?
[ ] Yes [ ] No/Unsure

Appendix C: INTERVIEW PROTOCOL

INTERVIEW PROTOCOL

Date & Time : _____
Name : _____
Position : _____
Size of department : _____
University : _____

OPENING

Greetings to: Mr/Mrs/Ms. My name is Habibah Tolos, a full time lecturer of Universiti Utara Malaysia and a PhD student at the University of Hull (United Kingdom). I am conducting a research, under the supervision of Professor Peijie Wang and Professor Mike Tayles, with the aim of examining and identifying the factors that may influence the decision of employees in the Malaysian public universities in choosing their retirement schemes (plans). I am now entering the empirical phase of my research, which requires short interviews with management groups' personnel at the selected Malaysian public universities.

Considering the previous aim of this research, the following objectives will be explored:

1. To identify the factors that may influence the decision of Malaysian public sector employees in choosing their retirement plan and explain how these factors influence the decision on choice.
2. To assess the suitability of the Malaysian retirement system for public sector employees and its sustainability, following a review of the development of the Malaysian retirement system and the state of current provisions.

Given your significant experience in relation to the public universities employees, I will very much appreciate your assistance and co-operation in providing and extending information on the rationale behind the decisions on retirement scheme choices among your staff to represent the Malaysian public sector employees in general.

I assure you that information obtained from this interview will be treated confidentially, and for the purpose of academic research only. A preliminary draft of the findings will be sent to the interviewee (s) for verification upon request.

Interview Framework: The management group (head of department, dean, etc)

START

Section 1

What do you think is (are) the factor (s) that leads your staff to their final choice of selecting their retirement schemes choice.
[The meaning of: Choice = option to choose EPF vs. pension, Retirement Plans = Retirement schemes].

Please ticks and completes the table below:

	Influencing Factors	Examples	Yes	No	Rank Top 3
1	Traditional demographic	*age, sex, income…*			
2	Job related	*job nature, importance & satisfaction.*			
3	Extending work	*retirement age, post retirement work*			
4	Tenure & mobility	*changing job effect*			
5	Health status	*healty vs unhealthy*			
6	Peer/colleagues effect	*majority of chosen scheme*			
7	Decision behaviour	*security vs benefits*			
8	Plan feature preferences	*lump sum payment, gratuity, pre-withdrawal ...*			
9	Retirement income sources	*employer, own savings, family, business..*			
10	Voluntary savings perceptions	*Savings accounts, Debts, annuity …..*			
11	Others:?	_____			

➔ Choose the first 3 then discuss them only (as appear in the next 10 objectives)

Section 2

Objective: To consider whether there is an effect of the moderating factors (level of information and knowledge) on the choice of retirement plans.

1. Does your organisation face any problem in disseminating information regarding the plans?
2. In your perception, do your staff have the necessary information to assist them in making their decision?
3. What are your views about their level of knowledge on the retirement scheme and on the retirement planning in general (including savings)?

Section 3

Objective: To consider whether there is a relationship between influences factors of the retirement plan satisfaction (resulting) from the choice

1. Generally, do you think your staff are happy with their decision?
2. How would you describe the situation?
3. Could you please advise on what should be done to improve the situation (if they are not happy)?

ADDITIONAL COMMENTS

Would you like to add any other comments concerning the issues that have been discussed in this interview?

ENDS

Thank you very much for giving me your valuable time and for your participation in the interview!

ADDITIONAL INFORMATION ON THE DETAILS OF SECTION 1

1. Objective: To consider whether there is a relationship between the traditional demographic factors and the choice of retirement plan

a. How would you describe the relationship between (age, sex, gender, marital status, income) and the choice of retirement plan?
b. What are your views about it?

2. Objective: To consider whether there is a relationship between job related aspects and the choice of retirement plan

a. How would you describe the relationship between job related aspects and the choice of retirement plan?
b. What is your view about it?
c. How would you describe the job nature of your staff (admin, academician)?
d. Are they happy with their job? Could you please explain more?

3. Objective: To consider whether there is a relationship between extending work/ Retirement age and the choice of retirement plan

1. How would you describe the relationship between extending work/ Retirement age and the choice of retirement plan?
2. Is Malaysian compulsory retirement age considered outdated?
3. How would you describe the willingness of the employees to extend their retirement age longer than normal?
4. How would you describe the willingness of the employees to work part time/ full time after retirement?
5. How would you describe the possibility of the employees to venture into business after retirement?

4. Objective: To consider whether there is a relationship between job tenure/mobility and the choice of retirement plan

a. How would you describe the general trend of staff moving to other jobs/career here?
b. Is this creating a problem to your university?
c. Is there a strong association between job mobility to the EPF scheme enrolment?
d. How would you describe the relationship between job tenure/mobility and the choice of retirement plan?

5. Objective: To consider whether there is a relationship between health status perception and the choice of retirement plan

a. How would you describe the relationship between health status perception and the choice of retirement plan?
b. How would you describe the staff's health status now?
c. What is your expectation of the health conditions of your staff when they retire?
d. Ownership of health insurance.....

6. Objective: To consider whether there is a relationship between peer/colleagues effect and the choice of retirement plan

a. How would you describe the majority of the chosen schemes?
b. Are they following their peers' decision?
c. What is the impact on their families, etc from their decision?

7. Objective: To consider whether there is a relationship between decision behaviour and the choice of retirement plan

a. Generally, how would you describe the nature of your staff in making choices? *(Probes: Are they risk averse (focus on security) / risk lovers (focus on benefits) types of people)*
b. Is it a problem to your staff – regarding the time period given (how long) - to make a decision?
c. Is the date given to make decision a problem to your staff? *(Probes: suggest if this might be change to when they reaches certain age, or after certain years of working)*

8. Objective: To consider whether there is a relationship between plan feature preference and the choice of retirement plan

d. Are they choosing the plan/scheme according to the positive aspects of it?
e. How would you describe the impact of the following features to the choice?

Retirement Scheme feature preferences			
prefer EPF because of:		***prefer Pension scheme because of:***	
6. Lump-sum payment.		6. Fixed life-long monthly pension payments (Pencen Perkhidmatan).	
7. Pre-retirement withdrawals/loans privilege. *e.g. to purchase/build house, redeem housing loan, children education & health withdrawal.*		7. Lump-sum Gratuity service payment (Ganjaran perkhidmatan).	
8. Securing retirement fund with the job change (mobility).		8. Pension for disability/misfortune.	
9. Tax relief. *e.g. Up to RM6,000 on taxable income*		9. Pension for beneficiaries/dependents.	
10. Investment choice of fund (EPF-Investment-Scheme). *e.g. Option to accumulate with the EPF or to withdraw for investment in mutual funds*		10. Life-long free medical treatments at the government hospitals.	

Overall consideration:	
7. Contributions rate (payments to the scheme from salary). *Example: 11 percent salary cutting to EPF*	
8. Security of funds in the schemes.	
9. Uncertainties of benefits.	
10. Time of receiving benefits.	
11. Golden Hand-Shake" cash award (Gantian cuti rehat).	
12. Others:_____	

9. Objective: To consider whether there is a relationship between sources of the retirement income and the choice of retirement plan

a. How would you describe on the main sources of retirement income which your staff will get from?
   (Probes: Are they risk depends only on the EPF/pension (compulsory plans)
b. Are their finances enough for their retirement needs?
c. Can they rely on their family to take care of them later?
d. Can they rely on Malaysian elderly care systems to take care of them later?

10. Objective: To consider whether there is a relationship between ownership of voluntary savings perceptions and the choice of retirement plan

a. How would you describe the adequacy of the compulsory retirement schemes (EPF and PENSION schemes) for your staff?
b. How would you describe the purchasing trend of the commercial/personal/ voluntary retirement plans offered by the insurance companies? (Private conventional/ Takaful annuities, life insurance)
c. How would you describe the perceptions on levels of debts, savings (in banks) and others among employees?
d. How would you describe the need for retirement plan for your staff (urgent needs, or just as supplementary)