Heterogeneity and Perception Congruence of Project Outcomes

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Abstract

This study examines the impact of project manager and practitioner heterogeneity on congruent perceptions of the outcome of service operations projects. More specifically, the study focuses on congruence in the formation and subsequently revision of project outcome perceptions of service operations. Data was obtained from one thousand four hundred and thirteen project management practitioners and subsequently analysed using multi-layered and combined statistical methods. The results suggest that perception congruence, that is relationships or agreements between different stakeholders, may be impacted by age and role heterogeneity of project managers and practitioners, but not gender.

Keywords: Project Management, Project outcome, Perceptions.

1. Introduction

Today, numerous service operations are undertaken in the form of projects which represent the core technique for planning and controlling service operations. These projects are undertaken

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by teams of skilled managers and practitioners from different units of the same organisation, or from different organisations; all focused on delivering a common project objective. Apart from firm-level differences, high-skilled managers and practitioners working on projects also exhibit individual differences. These include national culture (Chipulu *et al*. 2014), religion (de Bony 2010), demography (Ojiako *et al*. 2014) and interpersonal- intrapersonal team diversity (Huckman *et al*. 2009; Huckman and Staats 2011). Such differences all render service operations projects more susceptible to risks arising with idiosyncratic managerial behaviours (Wu *et al*. 2014). These risks include, for example, poor communication, understanding and coordination within project teams (Ollus *et al*. 2011).

Individual differences may also play positive roles where they align well to produce overall goal congruence (Yan and Dooley 2013). However, before such differences can be harnessed and used to improve project performance, they must first be perceived appropriately by the managers concerned. According to some (Magnusson and Ekehammar 1978; Kristof-Brown and Stevens 2001; Dilts and Pence 2006), perception congruence denotes perceived relationships or agreements, such as divisions of labour or risk ownership, between different 'stakeholders' yet what they say also works on interpersonal managerial levels. For example, although project teams are tasked with specific objectives, individual managers and practitioners may choose to focus their efforts on different specific aspects of these objectives or may even develop unique individualised project objectives. Differences in goal orientation may have a negative impact on project outcomes (see Kristof-Brown and Stevens 2001; Vangen and Huxham 2012; Unger-Aviram *et al*. 2013; Yan and Dooley 2013) and so it is important to consider whether they are perceived as such, or as contributing positively to overall project congruence. Thus, given the interrelatedness of team congruence, project team job satisfaction, and project outcomes (see Kristof-Brown and Stevens 2001), an understanding of managerial heterogeneity and related patterns of perception congruence is of significant and practical value to service operations scholars and practitioners alike.

This study therefore aims to examine the question of heterogeneity and perception congruence in the outcomes of service operations projects. In contrast to earlier studies (see Kristof-Brown and Stevens 2001; Dilts and Pence 2006; Jiang *et al*. 2009; Faust *et al*. 2013; Davis 2014), whose scope has been limited, either by statistical impact (Kristof-Brown and Stevens study is based on data from 324 project team members), or by reliance purely on literature (such as the case of Davis 2014), this study is based on extensive empirical data.

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Studies suggest that individuals who are more perceptually aware of their colleagues' work-related attitudes are more likely to work harmoniously (Polzer *et al*. 2002; Huckman *et al*. 2009; Huckman and Staats 2011; Staats 2012). Thus, when such relationships and congruence exists, project stakeholders are less likely to suffer ambiguity and misunderstandings of each other's actions and likely decision judgements. Dijksterhuis *et al*. (1998), points to a direct relationship between perceptions and behaviour; in effect, what people see or think they have seen partly determines what they do. Thus, an appreciation of the impact of individual heterogeneity on perception congruence in projects is of particular relevance to scholars and practitioners interested in mitigating against ambiguity in decision making (Hagen and Park, 2013), and in predicting how managers and practitioners arrive at managerial decisions. To facilitate this understanding, the rest of the paper is structured as follows. In the next section (section 2), an overview of the key concepts underlying the study is articulated. This is followed by a review of the relevant literature. Section 3 details the research methodology which utilises SPSS Version 16 and SAS Version 9.2. Section 4 reports the results of the data analysis. This is followed by a discussion of implications from the findings in section 5 and finally section 6 concludes.

2. Background

2.1 The context of the study

A large number of service operations projects are generally known to be complex (Ollus *et al*. 2011; Pleger and Villringer 2013; Ramasesh and Browning 2014). Generally, decisions within service operations, such as termination decisions or decisions on whether service operations activities and project outcomes are successful or not, are highly dependent on managers, practitioners and other stakeholders (Dilts and Pence 2006; McComb *et al*. 2008; Gattiker and Carter 2010; Moritz *et al*. 2014). Furthermore because service encounters often represent 'critical moments' (see Smith and Bolton 2002; Ojiako *et al*. 2013), they are often highly emotional and perception driven, which renders them dependent on demographic variables (i.e. age, gender, and roles (Bae and Lee 2011; Wei *et al*. 2013). For this reason, there is a need to understand what, how, when and by whom decisions are made, how project requirements are prioritized, and of course who defines project outcomes. There is also a need to understand complex factors shaping outcomes of service operations projects, including those arising with the demographic heterogeneity of project team members. Such appreciation is crucial to facilitating both intra

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and inter organisational and personal commitment, which is important when undertaking complex projects (Sohal *et al*. 2001; Gattiker and Carter 2010).

In service operations scholarship, research on the relationship between team diversity and project performance continues to attract considerable interest among scholars of team performance (see Huckman *et al*. 2009; Huckman and Staats 2011; Staats 2012). Individual team members of project teams differ in functional expertise, project role, and also demographically such as by age, gender, etc.. Thus, a project team's diversity can be construed by all such heterogeneity. This being the case, while some scholars (Jansen *et al*. 2012; *Richard et al*. 2013) have drawn upon value-in-diversity theories to suggest that heterogeneity can lead to positive project team performance, others such as Keller (2001) suggest such diversity may create bias that reduces project team performance. This occurs when project team members resort to adopting potentially harmful divisive categorizations which over-accentuate demographic differences at the expense of inclusivity and shared project goals. This can lead to conflict within the project team, thus undermining team and project performance. Scholars such as Polzer *et al*. (2002) and Volberda *et al*. (2012) suggest that to heighten perceived group similarity and facilitate harmony within project teams, managers can enhance salience of organizational boundaries rather than demographic categories. There is however a dilemma associated with misperception of group similarity within heterogeneous service operations teams. Based on the premise that demographic heterogeneity is related to distinctive insights and experiences of individual team members (see Fry and Smith 1987), there are opportunity costs associated with failing to harness these strengths.

2.2 Perception congruence and assessments of service operations outcomes
Very few project decisions are addressed by service operations managers and practitioners in a systematic and analytical manner. Instead studies (Froehle and Roth 2004; Benlian 2014) suggest that decisions are influenced by the perceptions individuals hold on specific service events, phenomena or encounters. These in turn are influenced by schemas, defined by Ellis and Hunt (1993) as large sets of information encompassing concepts, events and knowledge domains. In effect, schemas form part of an individual's perceptual set or mental predispositions which influence their categorisations of events, assessments of consequences, and consideration of appropriate actions (Ireland *et al*. 1987). Perceptions may also be influenced by interactions with other team members and stakeholders. Generally, perceptions represent how individual stakeholders understand and make sense of both personal and socially constructed experiences

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within service operations. Thus, the initiation and subsequent implementation of a project may be viewed as a process whereby service operation managers make sense of reconfigured visions. Such arguments, initially articulated in theories of perception by Allport (1955), have served as a primary driver for a number of studies (see Kleijnen *et al*. 2005; Grougiou and Pettigrew 2011), that sought to examine how two or more individuals possibly share similar perceptions of service events. Studies (Grougiou and Pettigrew 2011; Ojiako *et al*. 2013; Benlian 2014), also show that individual factors have a considerable impact upon perceptions, shaping the cognitive frames through which service experiences are interpreted. The reality is that although service operations literature has largely examined how individual perception congruence impacts upon service behaviour, the notion of perception congruence within and between key service delivery stakeholders has to the best of the authors knowledge received very little attention to date.

Several studies explore how decisions and perceptions impact service operations (see for example Maytorena *et al*. 2007; Kwak *et al*. 2012). In this study, we emphasise explicitly expressed perceptions. The main reason for this is that assessing explicit perceptions, which are conscious recollections of clearly referenced events, are best made by assessing related contextual judgments. On the other hand, assessing implicit perceptions (which do not have to be contextualised within ongoing or prior stimulus environments) and do not require subjects to recall specific experiences, generally involve examining *both* unrelated and related judgment decisions (see Castelli *et al*. 2001). Such unrelated decisions were regarded as being outside the remit of this study and would have introduced less controllable variables into the study.

Research contends that perceptions are either implicit or explicit (Reingold 2004; Pritchett *et al*. 2011; Fisk and Haase 2011). An appropriate starting point to commence any discourse on explicit and expressed perceptions is the notion of cognitive simplification, first discussed by Simon (1957, 1976), and later elaborated upon by Walsh (1988). The theory of cognitive simplification suggests that service operations managers will construct simple mental modes in order to deal with complex service problems. More recently, Besold *et al*. (2011) and Cabantous and Gond (2011) added to this discourse by suggesting that mental modes are employed by managers to approximate rationality. The implication is that because it is impossible for managers to conduct an evaluation of all variables and likely decision outcomes prior to making a decision, they engage in selective decision-making. Similar challenges are faced by project management practitioners who are expected to deliver projects of some complexity (Eriksson 2013; Mir and Pinnington 2014).

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To support the assessment of conscious and explicit perceptions in service operations, a reference is made to earlier works of Brown *et al.* (2008) on the theories of expectations disconfirmation. The study suggests that the level of satisfaction experienced by an event is related to the level of a-priori, emergent (and changing) expectations of the event and whether this was perceived as successful (desired) or not. Thus when an individual experiences a service exceeds their expectations, their satisfaction will increase. However, when their experience does not meet their service expectations, satisfaction will be reduced. Since decision making in service operations is team oriented, it is likely that service operations managers and practitioners are often subject to perceptual biases that result from group thinking (Ketokivi and Schroeder 2004). A greater understanding of when perceptions of team members are formed and subsequently revised is thus very important since these perceptions heavily influence decision making at individual operational stages. Such common understandings also help ensure team harmony is maintained as diverse team members can more easily anticipate each other's decisions and other behavioural patterns. Both considerations may have important implications for ensuring successful delivery of service operations projects (Huckman *et al.* 2009; Huckman and Staats 2011; Staats 2012). Since perceptions heavily influence decision making (Nosic and Weber 2010; Pleger and Villringer 2013), it is important that service operations managers and practitioners develop and maintain accurate ones..

Considerable research within general management literature has focused on understanding how demographic heterogeneity impacts decision making and perceptions. More specific studies have sought to understand how specific variables of demographic heterogeneity, which include managerial role and position (status) (Li and Tang 2010; Ben-David *et al.* 2013), age and gender, religion (Barnett and Johnson 2011), and national culture (Nolder and Riley 2014), affect decision making and perceptions. However, few studies have explored the impact of demographic heterogeneity on the perception of project management practitioners, thus, this paper fills the gap.

3. The research methodology

3.1 The research approach

To guide articulation of an appropriate research question(s) and research approach,, that is to examine the impact of project manager heterogeneity on congruent perceptions of service operations, we take our lead from earlier work describing research methods in operations management (see Bertrand and Fransoo 2002; Flynn *et al.* 1990; Forza 2002). As the purpose of

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the study was to validate and refine theory (see Stuart *et al*. 2002: p. 422; Voss *et al*. 2002: p. 198), the research questions focused on (i) "How widely applicable/generalizable are [were] the developed theories?" and (ii) "Where do the theories apply?". This led to the presentation of the first research question;

RQ1: Will project management practitioner's form and subsequently revise their views of the outcomes of service operations projects at its different stages?

Within changing constellations of views among diverse service operations management practitioners over the lifecycle of a service operation, it may be that different types of practitioners are more likely to form views at particular operational stages than others. Thus, this study examines whether there are differences as a result of team diversity, more specifically, gender, age, and project role:

RQ2: What is the impact of demographic diversity factors on perception congruence within service operations project?

Based on literature which calls for more 'real world data' in operations management research (see Flynn *et al*. 1990; Roth 2007) and research methodology alignments (see Stuart *et al*. 2002: p. 422; Voss *et al*. 2002: p. 198), data necessary for the study was obtained from a large-scale population survey of service operations project practitioners.

3.2 Data Collection

Most necessary data was originally gathered in 2011 by Ojiako *et al*. (2012). The structured questionnaire survey of service operations project practitioners had been administered by direct distribution through professional technology-based networks (specifically ARE World and PICMET) and electronically via websites of the Association for Project Management (APM) and the Project Management Institute (PMI).

3.2 An overview of the responses

In total, 1413 individual responses from 29 countries were obtained, however only 1255 responses were usable for data analysis; the remainder being rejected either because they were incomplete or entries were illegible. Most (84%) were obtained from residents in Brazil (219),

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China (211), Nigeria (224), Thailand (135), the United Arab Emirates (141), the United Kingdom (144), and the United States (125). About one in five respondents were not resident in their country of birth. A wide range of ages (18 to 74) was observed, with the mean being 36 years (M= 36 (SD). What appears to be the relatively young age of the respondents reflects studies (see El-Sabba, 2001; p. 6), which suggests that with an average age of 35.5 years, project managers are generally younger that their counterpart functional managers (42.25 years). Male respondents to our survey outnumbered women by about two to one (803 were male, while 452 were female). The distribution of the respondents and their roles across the project life cycle is shown in Table 1 (below).

Table 1 below shows the distribution of the respondents and their roles in project life cycle.

Table 1: Distribution of Roles

	Project Support or Project Group Board Member	Project Director or Project Consultant	Project End User, Sponsor or Client	Little or no PM experience or Role was not Specified	Project Manager	Total
Total	204	290	217	182	362	1255
% Total	16.25	23.11	17.29	14.5	28.84	100

3.3 Questionnaire description

The data used comprises demographic information of individual respondents[1], including gender, age and operational roles in service operations projects. Data was also collected on practitioners' likelihood to form a decision on the outcome of a project at each of the following stages of a service operations project (i) planning, (ii) implementation, (iii) project completion, (iv) when the project is handed over, (v) when the project is operational and (vi) when the project is decommissioned. This question was then repeated, but this time it was asked how likely practitioners were to subsequently *revise* prior views of outcomes at the six stages in the service operations lifecycle. On both questions, practitioners could respond by selecting from '4' ='Very likely'; '3' ='Likely'; '2' = 'Unlikely'; '1' = 'Very unlikely' and '0' ='Not applicable'.

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[1]Being outside the interest of this particular study, nationality is not reported upon in this paper.

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4. Data Analysis and Results

4.1 Perception congruence of outcomes at the different stages of the service operations project

In order to address research question one (RQ1), data analysis commenced with two-way cross-tabulation of how likely respondents were to form and, subsequently, to revise their views of outputs at each individual stage of the lifecycle of a service operations project. For brevity, at each project life cycle stage, all 'not applicable' responses were excluded. In effect, they were regarded as missing values. In Table 2 below shows the Chi-square values obtained from two-way cross-tabulations in SPSS of the likelihood of project practitioners forming views as well as the revising their views of a project against each of the six stages of a project.

Table 2: Matrices of Two-way Chi-square Values

Formation of Views						
	Planning	Implementation	Project Completion	Handover	Operational	Decommissioning
Planning		56.67**	1.53	14.14**	6.23*	0.15
Implementation			11.87**	51.45**	13.21**	0.02
Project completion				187.14**	248.62**	189.03**
Handover					121.47**	51.55**
Operational						169.07**
* X² Statistic, with 1 degrees of freedom significant at 0.05 p-value level						
** X² Statistic, with 1 degrees of freedom significant at 0.01 p-value level						
Revision of Views						
	Planning	Implementation	Project Completion	Handover	Operational	Decommissioning
Planning		205.15**	4.14*	64.07**	0.08	0.04
Implementation			70.89**	158.21**	4.66*	0.18
Project completion				197.68**	174.6**	193.74**
Handover					41.46**	24.83**
Operational						432.28**
* X² Statistic, with 1 degrees of freedom significant at 0.05 p-value level						
** X² Statistic, with 1 degrees of freedom significant at 0.01 p-value level						

4.2 The impact of demographic diversity factors on perception congruence

In order to address the second research question (RQ2), SAS Version 9.2 was utilised for Log-linear modelling. Agresti (2002) suggests Log-linear modelling is suitable for categorical data

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analysis. The primary focus of the study was to examine how the likelihood of individual project practitioners will forming and subsequently revising their views of a project at different stages of the project is impacted by age, gender and the individual roles practitioners performed on service operations projects. To include age in the model, the authors recoded values into 'younger' and 'older', with 32 years as the cut-off point. The age of 32 years was chosen as it represented the median of the entire sample. In Table 3 shows the interaction of age, role and gender with the likelihood to form views and to revise them.

Table 3- Formation of Initial Views and Revision of Previous Views

Source	DF	Chi-Square	Pr > ChiSq	Source	DF	Chi-Square	Pr > ChiSq
		Formation of Initial Views				Revision of Previous Views	
Planning By Role**	4	15.31	0.0041	Planning By Role	4	5.24	0.2638
Implementation By Age**	1	17.97	0.00001	Implementation By Role	4	2.99	0.5591
Implementation By Role**	4	50.34	0.00001	Implementation By Age	1	1.81	0.178
Project completion By Gender	1	0.04	0.8377	Project completion By Gender*	1	5.7	0.017
Handover By Age*	1	4.26	0.0391	Handover By Age	1	2.91	0.0882
Operational By Age	1	0.45	0.5033	Operational By Age**	1	13.11	0.0003
Operational By Role	4	3.41	0.4911	Operational By Role**	4	45.51	0.00001
Decommissioned By Role*	4	10.93	0.0273	Decommissioned By Role	4	4.22	0.3771
Gender*	1	5.58	0.0181	Gender**	1	6.7	0.0096
Gender By Role**	4	15.34	0.0041	Gender By Role**	4	17.15	0.0018
Age *	1	5.9	0.0151	Age	1	1.61	0.2052
Age By Role**	4	28.51	0.00001	Age By Role**	4	32.52	0.00001
* X^2 Statistic, with 1 degrees of freedom., significant at 0.05 p-value level ** X^2 Statistic, with 1 degrees of freedom.,				* X^2 Statistic, with 1 degrees of freedom., significant at 0.05 p-value level ** X^2 Statistic, with 1 degrees of freedom.,			

		significant at 0.01 p-value level
significant at 0.01 p-value level		

In the final part of the analysis, parameters of the significant effects of age, gender and role were explored. The results are shown in table 4. In Table 4, each parameter value may then be regarded as a multiplier that represents the number of times the observed value in a cell is greater or less than would have been observed had the values in the cells been independent. For example, the main effect of 'Implementation BY Role' of 1.52 (in Table 4) indicates that the number of practitioners (project managers) likely to form a view of the outcomes of the project at the implementation stage was 1.5 times greater than would have been expected.

Table 4- Parameter Estimates: Formation and Revision of Views

Parameter 1	Response_Categories	Exp_Estimate Parameter Estimates: Formation of Initial Views	Exp_Estimate Parameter Estimates: Revision of Views
Planning BY Role	Likely Director Consultant	1.27**	1.2*
Planning BY Role	Likely Support Board Member	0.86*	0.97
Implementation BY Age	Likely Older	0.84**	1.07
Implementation BY Role	Likely Director Consultant	0.69**	1.06
Implementation BY Role	Likely Project Manager	1.52**	1.13
Project completion BY Gender	Likely Female	0.99	0.91*
Handover BY Age	Likely Older	1.13*	1.07
Handover BY Role	Likely Director Consultant	1.2	1.19*
Operational BY Age	Likely Older	1.04	0.86**
Operational BY Role	Likely Director Consultant	0.84	0.63**
Operational BY Role	Likely Project Manager	1.02	1.36**
Operational BY Role	Likely Support Board	0.96	1.23*

	Member		
Decommissioned BY Role	Likely Director Consultant	1.2*	1.19
Decommissioned BY Role	Likely End User Sponsor	0.91	0.93
Decommissioned BY Role	Likely Little PM Experience Unspecified Role	1.14	1
Decommissioned BY Role	Likely Project Manager	0.91	0.97
Decommissioned BY Role	Likely Support Board Member	0.88	0.94
Gender	Female	0.88*	0.89**
Gender BY Role	Female Project Manager	0.79**	0.79**
Age	Older	0.86*	0.94
Age BY Role	Older Director Consultant	1.31**	1.31**
Age BY Role	Older Little PM Experience Unspecified Role	0.75**	0.71**
* X^2 Statistic of parameter estimate significant at 0.05 p-value level			
** X^2 Statistic of parameter estimates significant at 0.01 p-value level			

5. Discussion of Results

5.1 Perception congruence of outcomes at the different stages of the service operations project

Results suggest a significant likelihood that practitioners who form and subsequently revise their views of a project at the end of a project, will also do so at its operational stage. The result at the same time (on occasions where it is observed that number of chi-square values is insignificant), suggests also minimum congruence with some project stages. For instance there was no observed association between a service operations management practitioner revising their view of the project at the planning stage and at project completion stage. The findings therefore suggest that project management practitioners form different views of outcomes at different stages of a service operations project. The findings also suggest minimum congruence between initial views formed at a project stage and the subsequent revision of such views. No conclusive evidence suggested that individual stages might impact upon whether a service operations management practitioner will subsequently revise a view of a project taken at a particular project stage.

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5.2 The impact of demographic diversity factors on perception congruence

The results suggested that age significantly influenced perception congruence of project outcomes in service operations projects. The findings were as expected as they were in line with extant literature which suggests that age impacts upon the way within which individuals analyse information, perceive specific events, phenomena and service encounters (see for example, Grougiou and Pettigrew 2011; Foster and Resnick 2013). Ryan *et al*. (1992), had also found that age impacted upon an individual's reflection of prior performance. Such reflection may lead to a reversal of earlier assessments of such performance. In the study, older practitioners were found to be more likely to reverse their views of the project during project implementation and handover stages. One possible explanation for this finding is that older project management practitioners who arguably are more experienced than younger practitioners may see the assessment of project outcomes at these two project stages, as more critical to customers/clients. As stated earlier, due to the ambiguous nature of most projects, decisions made during project management are complex. Research (Cronley *et al*. 2005; Amit and Sagiv 2013), suggests that over a period of time, managers, especially those at a lower level may become less comfortable with their decisions due to (i) emergence and awareness of newer information, (ii) substantial pressure to achieve company objectives, (iii) influence coming from more senior managers. For this reason, lower level managers tend to be more critical of their decisions and also more willing to change their expectations about events than more senior managers (Barnett and Karson 1989). Thus, noting the often highly emotionally charged nature of service operations encounters (Ojiako *et al*. 2013), outcomes of complex decision processes in service operations projects may be moderated by the motivation to reflect over a longer period on initial decisions.

Another possible reason underlying the findings of the study can be drawn from cognitive studies which discuss the relationship between age and cognition. Reference to socio-emotional selectivity theory which suggest that time is a major regulator of human behaviour (see Carstensen *et al*. 1999; p. 108) suggest that age drives human-beings' "desire to derive meaning and satisfaction from life". As such, age may significantly influence the revision of views by project practitioners because with age, individuals become "more sensitive" (Settersten and Mayer 1997, p. 239). Thus both biological and physiological aging, may change how individuals allocate value to different information, how they analyse that information and also the associated behaviour they enact over a lifetime (McKay-Nesbitt *et al*. 2011; Wei *et al*. 2013).

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In terms of role, although the study found project managers more likely to form congruent perceptions at the planning, implementation and decommissioning stages of service operations project than more senior executives (Project directors), role heterogeneity was not found to play a *significant* role in the revision of such perceptions of project outcomes. Several conclusions appear warranted. First, the findings suggest that perceptual congruence is related to project role; however based on limited significance of role in revision of perceptions, the strength of such a relationship is clearly questionable. Literature on management-level research (see for example Ireland *et al*. 1987; Nutt 1990; Shore *et al*. 2003; Kumar and Lim 2008; Muchiri *et al*. 2011), suggests that (i) perceptions vary across management levels and (ii) individuals within similar managerial roles (and levels) share similar perceptions. In addition, on occasions where differences in perceptions do exist, this is only likely to arise with differences emanating from discipline/profession. Such congruence generally exists because schemas influencing how such individuals categorise events are dependent largely on similar experiences as they are likely to perform different tasks even across different organisations within each managerial level (see Ireland *et al*. 1987). So what explains perceptual differences across project stages? Dilts and Pence (2006) suggest that how project-related information is utilised across the managerial spectrum may have a role to play. At the more senior level, project directors are more concerned with setting project objectives of the (in conjunction with the customer/client) and developing strategic intentions (see Joshi *et al*. 2003). Thus, they operate mainly in service operations environments that are ambiguous and characterised by very little operational structure. Such conditions may inhibit formations of senior manager judgements of projects until strategic intentions of customers/clients are well understood. This may not necessarily happen until well after the project has been decommissioned. However, project managers (and practitioners) at operational levels need technical information which is more detailed and oriented to daily operational requirements (Raes *et al*. 2011; Unger-Aviram *et al*. 2013).

Finally, gender was not found to significantly influence formation of congruent perceptions at any project stage, although it appeared to influence the reversing of such perceptions at the project completion stage. Research argues that perceived experiences and resultant decision making depend on gender (Bakewell and Mitchell, 2006; Richard *et al*. 2010); that female decisions are generally more consistent (resistant to reversal) than those of males (Brooks 1996). Over time, literature has also highlighted gender disparities in project management; often noting the project management profession being male dominated (Henderson *et al*. 2013). To explain these findings, reference can be made to self-selection (see

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Bem 1981) and gender-role theories (see Kulik 2000, 2005), which suggest that over time, attitudes and perceptions within relationships often move towards resonance. Contextualised within the male dominated project environment (Buckle and Thomas 2003; Lindgren and Packendorff 2006; Legault and Chasserio 2012), it may therefore be argued that over time, where men and women work together, there will be an increase in gender based perception congruence of project outcomes. In effect, gender differences in perceptions expected to exist (Garbarino and Strahilevitz 2004; Bae and Lee 2011) will diminish..

6. Managerial implications and conclusion

Influences of heterogeneity on perception congruence should matter to service and operations managers, especially those involved in projects implemented within technology-dominated operational environments. Such projects are noted for their size and complexity, especially as they relate to interoperability and technology. Hence service outcomes are likely to depend upon many different and possibly opposing project factors that offer considerable scope for human misunderstanding. Hence we can usefully conceive of such projects as remarkably different from 'standard' project environments in that their delivery and implementation may provide learning opportunities that can inspire the creation of new service operations configurations. Drawing upon literature (see Azumah *et al*. 2005; Koh *et al*. 2005). To counter the impact of complex and fluid service operations environments, managers can manage their own project perceptions more effectively by focusing attention on capturing appropriate customer-driven cues that can facilitate customer-congruent judgments of projects. The principle argument being put forward here is that thorough examination of customer fit may be needed to support higher order congruence in managerial perceptions.

This study investigated how demographic heterogeneity defined from the perspective of age, gender and project role, impacted upon perception congruence of the outcomes of service operations projects. Literature suggests that not only a large number of projects involve stakeholders that are heterogeneous in terms of demography (age, gender, and project role), but that perceptions of service operations events, phenomena or encounters may be impacted by differences in age, gender and project role. This being the case, because of the need to facilitate shared visions of projects by project teams who traditionally interact for relatively short periods of time, management scholars and practitioners need to understand how demographic heterogeneity may impact upon decision making in projects. Overall, results from our study suggest that age and project role but not gender impacted upon project manager and

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practitioner heterogeneity on congruent perceptions of the outcome of service operations projects.

The study also has implications related to the output of service operations and technologies underpinning it. Output from service operations is generally abstract and intangible making it difficult for stakeholders to maintain service articulation and requirements reference points that are unambiguous. It also implies that practitioners involved in service operations project delivery cannot successfully rely on prior experience or processes as they are more often likely to be faced with novel challenges demanding bespoke delivery methodologies. Trust and group harmony amongst heterogeneous management teams deserves particular consideration within such projects. It can be inferred from this study that in service operations environments group harmony was more likely to be maintained within project teams comprising practitioners of similar age. Group harmony was likely to be challenged in service operations teams more diverse in project roles and gender. While the study does not advocate homogeneity, both due to ethical concerns and due to the likelihood of such homogeneity being suboptimal for larger and more complex projects in particular, it emphasises that service operations managers must be fully aware of management challenges associated with fully harnessing strengths arising with diversity. Such diversity, if not brought to the forefront of management attention, could seriously harm the performance of service operations teams due to the existence of differences in perceptions among team members remaining unaddressed and unresolved. This may create scenarios where managers with similar roles begin to push agendas and priorities which may benefit their role, but which are incongruent overall. The implications of the study as relates to the role of technology in service operations focuses upon its role in articulating knowledge that supports our understanding of how, for example, stakeholders interact during service delivery. Service operations requires intense interaction and commitment between stakeholders mainly because of the endemic and intensive nature of the client interaction (see Maguire *et al*. 2012). Again, not acknowledging possible impacts of demographic diversity factors on perception congruence is likely to be detrimental to this exchange. The challenge however goes beyond this to also include ensuring clarity during the exchange process. In service operations, every stakeholder interaction is likely to represent a decision point. Recognising the existence or possibly non-existence of congruence in perceptions helps ensure multiple parties to information exchange are more sensitive to each other's' needs and concerns.

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As expected, this study was not without limitations. Four main limitations are identified. Firstly, ours was not a behavioural study. What respondents say about how and when they form and reverse judgments within projects may serve as a proxy indicator for their real, unscrutinised judgments on particular projects, but we need to remain aware that only behavioural studies can explore the latter. Secondly, by assuming industry level homogeneity in service operations projects, the study did not seek to capture information on the specific industrial sector within which the respondents worked. Hence it could not explore how industry differences impact perceptions of service operations projects. Thirdly, the study did not seek to assess mental models (i.e. thought processes) of respondents, although scholars such as (Church 1997; Amit and Sagiv 2013) suggest that managerial perceptions may be influenced by these, and that they are important if we are to fully understand why demographic heterogeneity matters within projects. Fourthly, the study only made provisions for capturing explicitly expressed perceptions, although some literature (e.g. Fisk and Haase 2011) contends implicit perceptions are important too. These limitations, however, present considerable opportunities for further studies.

Studies by Cooke-Davies and Arzymanow (2003), Grant and Pennypacker (2006) and *Chipulu et al*. (2013), suggest that project management capability requirements differ among industries. Similarly, much classical strategic management literature (Hrebiniak and Snow 1980; Miller 1993; Elenkov 1997) views industry as a critical level of analysis for assessing perceptions. Thus, future studies could focus on a much broader and deeper examination of the impact of industry differences on perceptions within service operations projects. A possible starting point for such a study could be the proposal of a hypothesis whereby perceptions of service operations managers differ by industry type in a manner that is consistent with differential impacts of external factors such as the impact of technology. The third limitation which relates to this study not assessing the respondent's mental models also provides considerable opportunities for future studies. Management functions within service operations still rely substantially on human cognition (Moritz *et al*. 2014) although to date, with the exception of a few studies by scholars such as Froehle and Roth (2004), Gino and Pisano (2008) and Moritz *et al*. (2013, 2014) who found a relationship to exist between cognitive reflection and the improved decision judgements, there remains very little research on individual differences in decision judgements in service operations management. Thus future studies could not only, for example, seek to develop an understanding of cognition (mental modes) and its influence on decisions in service operations projects, but may also call on studies into intuition and its impacts on

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decision judgements (see Kihlstrom 1987; Simon 1987). Such a study could also explore whether the speed with which such decision judgements are made has any impact upon not only the quality of the decision, but also upon the success or failure of projects. In terms of the final limitation of the study which highlighted that only explicitly expressed perceptions of respondents were captured, a possible means of overcoming this limitation may involve experimentation in closed laboratory settings.

An area for future studies which did not necessarily emerge from limitations within the study relates to the frequency of migration amongst project managers. Comparisons undertaken during the research methodology stage of the study suggested that around one in every five respondents resided in countries not of their birth.. Although literature (see Weber and Hsee 1998) suggests that individuals mainly assess decision judgements against similar criteria, studies by Gierlach *et al.* (2010) and Park *et al.* (2004, 2012), suggest decision judgements can be influenced by national cultural imperatives. More specifically, studies by Elfenbein and Ambady (2003) and Tovee *et al.* (2006) suggest an interrelationship between cultural familiarity (that is contact between different cultures) and value judgements. For this reason, a hypothesis may be proposed whereby decision judgements of respondents living in countries not of their birth are likely (as they increasingly become exposed the dominant culture of their country of residence) to move towards conformance with the culture of their host country. Such research may be carried out in the form of a longitudinal study.

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