Scholarly Article

A Multidimensional Practice-Based Framework of Interactive Value Formation

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Abstract

This study seeks to deconstruct the multidimensionality of the Interactive Value Formation (IVF) process within complex and prolonged Technology-Based Self-Services (TBSSs). Building on practice theory and Service Dominant logic, this framework sheds light on the complexity of practice-based resource integration processes within the IVF process. The findings demonstrate firstly, how IVF can result in both value co-creation and co-destruction and secondly, how these outcomes are influenced by the enactment of practices within the service experience. Finally, this study demonstrates the mediating role of consumer intensity as a function of consumer effort and time during this enactment. The suggested framework emphasizes the role of engagement, as intersecting between resource-based practices and outcomes, and the nested nature of the IVF process. In doing so, the relationship between the multiple outcomes of engagement and variations in loyalty are revealed. The study has implications for service managers responsible for user experience of complex and prolonged TBSSs. Directions for future research can focus on further deconstructing the multi-dimensionality of the IVF process.

Keywords

Consumers play an active, collaborative, and endogenous role during value co-creation (Vargo and Lusch 2008). During such interactive value formation ([IVF]; Echeverri and Skålén 2011), the consumer's role is heightened within complex and prolonged services such as weight management, education, and personal finance management (Guo et al. 2013). A challenge for such consumers is the additional range of resources required to fulfill multiple and contextualized behaviors over an extended period of time (Spanjol et al. 2015) and across multiple service encounters (Bolton and Lemon 1999). In complex and prolonged services, the development of customer performance is crucial (Arnould and Price 1993), and yet this is also complicated by multiple stakeholder interactions in such services (McColl-Kennedy et al. 2012). Consequently, service providers face a substantial challenge in ensuring customers engage in value co-creation and concomitantly avoid the "downside of value formation" (Echeverri and Skålén 2011, p. 354) or value co-destruction (Plé and Cáceres 2010).

When complex and prolonged services are embedded with technology usage, as in technology-based self-services ([TBSSs]; Meuter et al. 2005), additional layers of complexity can also arise (Bagozzi 2007). The shift in TBSSs, from direct employee contact to indirect technological interactions, places demands on service providers to manage consumer affect-based dimensions (Bagozzi 2007). Therefore, user ambiguity can arise, since consumers may enjoy the convenience benefits of TBSSs but also exert more effort and time to fulfill their roles (Johnson, Fleura, and Dunn 2008; van Beuningen et al.

2008). Haumann et al. (2015) refer to this duality of effort and time as consumer intensity. As a result, paradoxical consumer experiences are more common (Johnson, Fleura, and Dunn 2008) and can predispose consumers to value co-destruction, through avoidance-based behaviors that minimize interaction with TBSSs (Baron, Patterson, and Harris 2006). A failure to recognize this paradoxical and ambivalent nature of TBSS experiences can "impair the effectiveness of marketing strategies designed to increase customer loyalty" (Johnson, Fleura, and Dunn 2008, p. 417), thereby posing a considerable challenge for service managers.

Complex and prolonged TBSSs, therefore, provide an ideal context to study IVF (Echeverri and Skålén 2011). Given the paucity of studies investigating IVF, we examine its multidimensionality, or the different pathways in which IVF takes place, in complex and prolonged TBSS experiences, thus better demonstrating its role in leveraging loyalty. This approach extends the traditional view of IVF as based solely on consumer co-creation activities (Vargo and Lusch 2008) to also

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consider value co-destruction (Plé and Cáceres 2010) and any intersections in between (Makkonen and Olkkonen 2017). We hope our study adds to an understanding of the multidimensional nature of IVF, as inclusive of different value forming processes, especially within the context of complex and prolonged TBSSs.

One emergent approach to uncovering the relational and interactive dynamics within value co-creation, co-destruction, or both is practice theory. A practice-based approach allows for the dynamic unfolding of the "linked and implicit ways of understanding, saying, and doing things" (Schau, Muñiz, and Arnould 2009, p. 31). It encapsulates value as derived from both the "shared meanings" that are embedded in practices, as well as from an individual's experienced "normative, telic and affective dimensions" (Kelleher et al. 2019, p. 124), thus revealing the dynamic unfolding of how value is embedded in the practices of the consumer (Schatzki 1996; Schau, Muñiz, and Arnould 2009). Central to this understanding is the notion that value underlies all practices, but since practices have a trajectory (Warde 2005), value accumulates with greatest intensity during the engagement phase of practices (Schatzki 1996; Schau, Muñiz, and Arnould 2009; Warde 2005). Therefore, given the importance of value determination during customer engagement and its ability to operate multidirectionally (Higgins 2006), deconstructing engagement within IVF is warranted. This will extend our understanding of how multidimensional IVF operates in practice and subsequently how it intersects with loyalty.

Our study responds to a key service research priority of understanding the dynamics of value formation (Ostrom et al. 2015). By extending existing notions of IVF (e.g., Echeverri and Skålén 2011; Makkonen and Olkkonen 2017), we conceptualize IVF as inclusive of multiple value forming processes, demonstrating that value co-creation, co-destruction, and variants in between can operate simultaneously as a transitional, iterative, and nonlinear process. In doing so, we make the following contributions. First, research has highlighted the importance of consumer intensity in complex and prolonged TBSSs (Johnson, Fleura, and Dunn 2008; van Beuningen et al. 2008). We extend this foundation to validate consumer intensity's role as an explanatory mechanism for understanding fluctuations in engagement, providing a better understanding of how multidimensional IVF operates in practice. For instance, Sweeney, Danaher, and McColl-Kennedy (2015, p. 330), propose that "thresholds of effort" may diminish value co-creation, suggesting the possibility of investigating the role of intensity across a range of value formation processes. By addressing this proposition, we demonstrate how variations in intensity can account for variations in value co-creation and co-destruction. Second, we are among the first to examine the nexus between IVF multidimensionality and variations in loyalty-based outcomes. Therefore, we add to existing knowledge on a relationship, described by Zeithaml et al. (2020, p. 18) as "more complex than originally assumed." In doing so, we offer insights for managers on how to leverage variations in IVF to enhance loyalty in complex and prolonged TBSSs. Third, an emergent finding from our study suggests that resource integration practices (RIPs) transform within and between value forming processes. We therefore extend Spanjol et al.'s (2015) work on the nested nature of coproduction activities and Helkkula, Kelleher, and Pihlström's (2012) notion on the nonlinearity of value co-creation, but across both sides of value formation processes. We therefore illustrate the complexity of how multidimensional IVF operates in practice. As such, we address Keeling et al.'s (2021, p. 255) recent call to address how different "value forming pathways" are "disrupted and/or cross over."

The remainder of our study is structured as follows. In the subsequent section, we review and justify IVF's exploration using a practice-based approach. Next, we review our selected methodology and contextualize our context of wellness apps as prototypical examples of complex and prolonged TBSSs. Finally, we discuss our findings, revisit our contribution to theory, provide managerial implications, and suggest some tentative areas for further research.

Conceptual Background

The IVF Concept

Two major perspectives characterize our understanding of how value is formed. The exchange or non-IVF view holds that customers are exogenous to firms and passive recipients of the product/service (Prahalad and Ramaswamy 2004). In contrast, the interaction view holds that value is co-created during interactions and activities between customers and the product/service (Prahalad and Ramaswamy 2004; Vargo and Lusch 2004). Customers are therefore active participants and endogenous to the value creation process, which can also extend beyond the firm to other social actors in the service ecosystem (McColl-Kennedy et al. 2012). Since value is not created until the product or service is experienced (Woodruff and Flint 2006), value formation largely depends on the extent that operant resources (e.g., knowledge and skills) are integrated by the customer (Vargo and Lusch 2008). Accordingly, operant resources are considered central in the resource integration process, as constituents of value co-creation (Jaakkola and Alexander 2014).

As Table 1 demonstrates, although the majority of studies on value formation focus on value co-creation, a growing body of studies also recognize that interaction within service systems can also lead to value co-destruction (Plé and Cáceres 2010). Critically, Echeverri and Skålén (2011, p. 352) conceptualized IVF as inclusive of "both the upside and the downside" of value determination. An emerging body of studies has also found variations such as value no-creation (Makkonen and Olkkonen 2017) and unsuccessful value co-creation (Skålén, Pace, and Cova 2015). Indeed, Plé and Cácere's (2010) formulation of value co-destruction rests on the assumption that both types of value can emerge and therefore while not explicitly referring to IVF pioneered the possibility of positive and negative value emanating from the same service ecosystem.

Table 1. Extant Literature on Value Forming Process(es).

Author(s)	Conceptualization or Contribution	Interaction (Dyadic vs. Multiple)	Value Forming Process(es)	Theoretical Foundation	Value Forming Process(es) and Outcomes	Context
Prahalad and Ramaswamy (2004)	Market as a forum for value co-creation	Dyadic	Value co-creation	Co-creation	Not applicable	Market as forum
Echeverri and Skålén (2011)	Interactive value formation (IVF) can include both value co-creation and co-destruction	Dyadic	Value co-creation and co-destruction	Practice-based lens	Not applicable	A one-time or short-term service
Smith (2013)	Value co-destruction involves a process where a range of resource losses can be directly related to negative well-being	Dyadic	Value co-destruction	Conservation of resources theory	Not applicable	One-time or short-term service/ programs
Guo et al. (2013)	Socialized co-production behavior can increase well-being and satisfaction with organization	Dyadic	Co-production	Employee socialization	Co-production and financial well-being and customer satisfaction	Complex and prolonged service
Haumann et.al. (2015)	Increased intensity in co-production can harm satisfaction in the process, suggesting communication strategies that can mitigate against this.	Dyadic	Co-production	Equity theory	Co-production and customer satisfaction	One-time or short-term service/ programs
Ranjan and Read (2016)	Conceptualization of value co-creation and development of measurement instrument	Dyadic	Value co-creation	S-D logic	Value co-creation and consumer satisfaction	Not applicable
Vafeas, Hughes, and Hilton (2016)	Value co-destruction, through resources deficiencies, formalized organizational structure, poor coordination and communication	Dyadic	Value co-creation and co-destruction	S-D logic	Not applicable	Complex and prolonged service
Vargo and Lusch (2004)	Customers are active participants in relational exchanges and co-production	Multiple	Co-production	S-D logic	Not applicable	Not applicable
Vargo and Lusch (2008)	Value is always uniquely and phenomenologically determined by the beneficiary, while the customer is always a co-creator of value	Multiple	Value co-creation	S-D logic	Not applicable	Not applicable
Schau et al. (2009)	Building more complex practices in brand communities enhances co-creation through collaborative brand engagement	Multiple	Collaborative value creation	Practice-based lens	Not applicable	Multiple
Plé and Cáceres (2010)	Value co-destruction through interactions between different systems through either accidental or intentional misuse	Multiple	Value co-destruction	S-D logic	Not applicable	Not applicable
McColl-Kennedy et al. (2012)	Value co-creation as benefit realized from integration of resources through activities and interactions	Multiple	Value co-creation	Practice-based lens	Value co-creation and quality of life	Complex and prolonged service
Grönroos and Voima (2013)	Co-creation as the joint process between firms and customers (or customers with other actors)	Multiple	Value co-creation	Service logic and S-D logic	Not applicable	Not applicable

Table 1. (continued)

Author(s)	Conceptualization or Contribution	Interaction (Dyadic vs. Multiple)	Value Forming Process(es)	Theoretical Foundation	Value Forming Process(es) and Outcomes	Context
Roberts Hughes, and Kertbo (2014)	Consumer value co-creation as collaborative work between a consumer and a firm in an innovation process	Multiple	Value co-creation	Extrinsic and intrinsic motivation, tension-reducing, self-efficacy, and expectancy theories	Not applicable	Prolonged service
Skålén et al. (2015)	Co-creation between firms and brand communities when collaborative practices align	Multiple	Successful and unsuccessful value co-creation	Practice-based lens	Not applicable	One-time or short-term service/ programs
Makkonen and Olkkonen (2017)	IVF as interplay between resource integration and a multilevel service system, introducing concept of value no-creation	Dyadic	Value co-creation, co-destruction, and no-creation	Habitus	Not applicable	Complex and prolonged service
Quach and Thaichon (2017)	Social resources can create and destroy value furthering understanding of S-D logic in an online environment	Multiple	Value co-creation and co-destruction	S-D logic and social resource theory	Not applicable	Luxury branding
Ramaswamy and Ozcan (2018)	Co-creation as enactment of interactional creation across interactive system-environments	Multiple	Value co-creation	The interplay of agency and structure	Not applicable	Not applicable
Current study	IVF as a systemic interplay between resource integrationbased interactional processes driven by consumer intensity, which can encapsulate multiple value forming processes simultaneously, leading to the co-determination of value.	Multiple	Multidimensionality of IVF	Practice-based lens	IVF multidimensionality and customer loyalty	Complex and prolonged and TBSSs

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Echeverri and Skålén's (2011) notion of IVF however goes further, proposing that both value co-creation and co-destruction can operate simultaneously or in tandem. However, to understand the complexity of this interaction, a systemic approach rooted in practice theory is needed to capture the interplay between both sides of value formation processes. IVF therefore can be understood as a systemic approach to resource-based interactional processes, but which encapsulates multiple value forming processes. Our study extends Echeverri and Skålén's (2011) notion of IVF yet further by conceptualizing it as multidimensional in nature or inclusive of multiple value forming processes from value co-creation to co-destruction. This proposition offers a more holistic perspective in encapsulating the full spectrum of interaction and accumulation of interactional resource integrating practices underpinning value formation. Therefore, we emphasize that multidimensional IVF is fully inclusive of any value forming processes, including any underlying associated dimensions.

Knowledge of IVF as inclusive of multiple value forming processes remains limited since extant frameworks tend to focus on value co-creation (e.g., McColl-Kennedy et al. 2012; Schau, Muñiz, and Arnould 2009; Sweeney, Danaher, and McColl-Kennedy 2015) or co-destruction (Cabiddu, Moreno, and Sebastiano 2019). Compounding this shortcoming further, studies within complex and prolonged services (see Table 2) also tend to be situated within value co-creation (McColl-Kennedy et al. 2012; Sweeney, Danaher, and McColl-Kennedy 2015). Where both value co-creation and co-destruction have been investigated simultaneously in consumer practices, several limitations exist. While Echeverri and Skålén's (2011) study is limited by its focus on the service provider's perspective, Skålén, Pace, and Cova (2015, p. 617) omit Schau, Muñiz, and Arnould's (2009) notion of how "practices form meaningful blocks of practices." However, viewing practices as organized nexuses developing along a trajectory (Schau, Muñiz, and Arnould 2009; Warde 2005) is integral to understanding the dynamic unfolding of how "engagement in practices is an act of value creation" (Schau, Muñiz, and Arnould 2009, p. 40).

Therefore, factoring the spatiotemporal movement of value, as inherently adjustable in multiple directions (Higgin 2006; Schatzki 1996), enables the investigation of the full spectrum of value forming processes. As such, a practice-based approach takes advantage of what Schatzki (1996) refers to as "oppositionality" or as Bourdieu (1977, p. 124) elaborated the "union of contraries . . . at once antagonism and complimentary . . . ." Practice theory is therefore inherently conducive to recognizing that value formation can operate in multiple directions, so is ideal in capturing the multidimensionality of IVF.

Practice–Resource Integration–Based Approach

Practice theory stipulates that interactions take the form of embodied but routinized types of behavior, which are broadranging and can include bodily and mental activities, knowhow, and even states of emotion, which become interconnected in a systemic whole or the practice (Reckwitz 2002). By extending the unit of analysis to the practice, rather than the individual, it becomes possible to reveal value as a dynamic reality, rooted in social constructionism. Therefore, it is constructed by actors "as they engage with the world they are interpreting" (Zeithaml et al. 2020, p. 3). Therefore, the systemic nature of embodied practices takes into consideration both the intersubjective and relational as well as the representational and co-determined dynamics of value formation (Kelleher et al. 2019; McColl-Kennedy et al. 2012).

Based on Schatzki's (1996) trajectory of practices, as comprising of actions, rules, understandings, and teleoaffective structures, Schau, Muñiz, and Arnould (2009) proposed a common anatomy or elements of practices. These elements comprise procedures, understandings, and engagements to link behaviors, performances, and representations. Critically, individual elements interact with one another, as an organized nexus, to formulate overall value (Schau, Muñiz, and Arnould 2009). However, IVF can also operate cumulatively through alignment (leading to value co-creation) or misalignment (leading to value co-destruction) within individual elements (Echeverri and Skålén 2011; Skålén, Pace and Cova 2015). A consensus has since emerged that success or failure in IVF ultimately depends on the degree of resource integration within and between each of the individual elements (e.g. Caridà, Edvardsson, and Colurcio 2018; Kelleher et al. 2019). Resource integrating practices therefore underpin both IVF (Echeverri and Skålén 2011) and practices, as their "omnipresent medium" (Schatzki 1996, p. 147).

McColl-Kennedy et al. (2012) were among the first to uncover the complexity of the value co-creation process by extending the role of resource integrating practices alone to include degrees of interaction within the enactment of practice-based activities. Our study extends this notion by exploring the full spectrum of potential resource integrating practices, but across both sides of value forming processes. Our investigation is further strengthened by Caridà, Edvardsson, and Colurcio's (2018) exposition on resource integration in IVF. This notion views value formation as a trajectory of initially establishing interactions between resources and practices (Gummesson and Mele 2010) to shifting this interaction into collaborative and interactive operant resources (Warde 2005) and finally to determining value from these preceding phases, as engagement (Schau, Muñiz, and Arnould 2009). While we understand the role of intensity in harnessing the strength and direction of engagement and consequently value (Findsrud, Tronvoll, and Edvardsson 2018; Higgins 2006), our knowledge of intensity's role in shaping fluctuations in engagement and therefore in determining the multidimensional nature of IVF remains limited. Therefore, employing intensity to understand how RIPs interact and accumulate to formulate value is integral to adding new insights into how multidimensionality of IVF operates in practice.

Table 2. Empirical Research on Value Forming Process(es) in the Context of Complex and Prolonged Service and/or Technology-Based Self-Services (TBSSs).

Author(s)	Type of Service	Research Setting	Value Forming Process(es)	Focus/Findings	Value Forming Process(es) and Outcomes
Dellande, Gilly, and Graham (2004)	Complex and prolonged service	A weight-loss program	Compliance/ coproduction	Customer role clarity, ability and motivation, compliance, goal attainment, and satisfaction	Compliance and customer satisfaction
Meuter et al. (2005)	Prolonged and TBSSs	Consumers' prescription refill ordering through a mail order	Coproduction	Role clarity, motivation, and ability determine successful TBSS coproduction and the likelihood of trial	Not focus
McColl-Kennedy et al. (2012)	Complex and prolonged service	Ongoing cancer treatment	Value co-creation	Value co-creation practice styles derive from customer roles, activities, and interactions	Value co-creation and quality of life
Guo et al. (2013)	Complex and prolonged service	Debt management programs	Compliance/ coproduction	Role clarity, task mastery, and goal congruence, consumer coproduction behaviors, consumers' well-being, and satisfaction	Coproduction and financial well-being and customer satisfaction
Hilton et al. (2013)	TBSSs	One-time services: self-service, checkouts, or self-service kiosks	Value co-creation and co-destruction	Potential risks and challenges of relying on the operant resources of customers and the need to manage a new employee role	Not focus
Sweeney et al. (2015)	Complex and prolonged service	Cancer, heart disease, and diabetes	Value co-creation	Customer Effort in Value Co-Creation Activities (EVCA) and links between customer EVCA and quality of life, satisfaction	Customer EVCA and quality of life, satisfaction
Spanjol et al. (2015)	Complex and prolonged service	Chronically ill (e.g., diabetes) individuals	Adherence/ coproduction	Coproduction behaviors including consumption behaviors and routines	Not focus
Current study	Complex and prolonged TBSSs	Wellness apps	Multidimensionality of IVF	Multidimensional nature of IVF and a link with levels of loyalty	IVF multidimensionality and customer loyalty

Note. IVF = interactive value formation.

Engagement, IVF Intensity, and Loyalty Conditions

Practice-based definitions of engagement describe it as the space where actors express their normative "hierarchized orders of ends, purposes, projects, actions, beliefs, and emotions…" (Schatzki 1996, p. 100) and similarly as "ends and purposes that are emotionally charged insofar as people are committed to them" (Schau, Muñiz, and Arnould 2009, p. 31). The engagement element of practices therefore reflects the representational accumulation of resource integration (Caridà, Edvardsson, and Colurcio 2018). As Higgins (2006, p. 440) elaborates, "value is a force that has *direction* and *strength*" and is determined by intensity in engagement rather than competences and social aspects (Findsrud, Tronvoll, and Edvardsson 2018). Intensity's role is therefore critical in understanding how RIPs shape variations in engagement (Findsrud, Tronvoll, and Edvardsson 2018) and consequently the direction and strength of overall value (Higgins 2006).

Our study adopts Haumann et al.'s (2015, p. 17) notion of consumer intensity, which specifically refers to the "consumer's subjective perception of time and effort invested." Consumer intensity develops Franke and Schreier's (2010, p. 110) notion of consumer *perceived process effort* or the consumer's subjective evaluation of "time and mental energy." While process effort may already have sunk by the time an activity has been carried out, eliciting negative evaluations of processed effort can shift post activity evaluation from positive bias to negative recall. This renders a more accurate post-effort-based evaluation of consumer engagement when time is factored (Franke and Schreier 2010). Therefore, crucial in assessing consumer intensity is the need to not only assess subjective evaluations of effort but also its change with time.

Studies on the role of intensity, and effort alone, in determining value show mixed findings, from negative effects of consumer intensity (Haumann et al. 2015), positive effects (Franke and Schreier 2010) to both positive and negative effects of effort (Buechel and Janiszewski 2014). In the only study to address the role of consumer effort in a practice-based value context, Sweeney, Danaher, and McColl-Kennedy (2015) found customers engage more with co-creational activities that require less effort and proposed a linear relationship between effort and satisfaction. However, they also proposed the need to explore thresholds of effort, beyond which incremental effects may diminish consumer value. For Sweeney, Danaher, and McColl-Kennedy (2015), the role of customers exhibiting varying degrees of effort-based participation with time remains unexplored, further strengthening our proposition to explore intensity's role in explaining shifts between value forming processes, that is, their transformable nature. This proposition is possible since a rise in consumer intensity can lead to exhaustion, frustration, and avoidance behaviors (Franke and Schreier 2010; Haumann et al. 2015)

Therefore, our study addresses the possibility that variations in consumer intensity can help to explain variations in engagement and subsequently demonstrate multidimensional IVF. This addresses the existing literature's focus on the positive aspects of operant resources (Caridà, Edvardsson, and Colurcio 2018; Sweeney, Danaher, and McColl-Kennedy 2015) when operant resources can also "also destroy value" (Echeverri and Skålén 2011, p. 364). Although a number of studies have investigated the relationship between value co-creation and outcomes such as loyalty (e.g., Guo et al. 2013; McColl-Kennedy et al. 2012; Ranjan and Read 2016), the intersection between the multidimensional nature of IVF with variations in loyalty also remains unexplored. To address this, we investigate the role of consumer intensity in explaining how multidimensional IVF intersects with loyalty-based outcomes, based on Dick and Basu's (1994) seminal typology for loyalty. They present a matrix using relative attitude and repeat patronage to determine three levels of loyalty: low (no loyalty and/or latent/spurious loyalty), medium (latent loyalty or spurious loyalty), and high (true loyalty).

Method

We conducted 21 qualitative in-depth interviews with users of wellness apps such as those encouraging fitness and nutrition. Given earlier studies employing physical health consumption contexts as prototypical examples of complex and prolonged services (e.g., Guo et al. 2013), we utilize wellness apps to encapsulate the extended TBSS element. Wellness apps demonstrate reliance on self-management and self-monitoring from participants and require heightened user effort, competencies, and motivation to attain the intended value outcome (Campbell and Warren 2015), thus fulfilling typical characteristics of complex and prolonged TBSSs (Johnson, Fleura, and Dunn 2008; van Beuningen et al. 2008). We employ Gioia, Corley, and Hamilton's (2012) method of grounded theory to conduct our primary research. Grounded theory offers the advantage of deconstructing meaningful patterns in a given context and can therefore uncover underlying causal links among constructs within a nomological context (Glaser and Strauss 1967; Miles and Huberman 1994). However, the Gioia method advances grounded theory by moving beyond inductive to abductive methods "in that data and theory are now considered in tandem" (Gioia, Corley, and Hamilton 2012, p. 15).

In-Depth Interviews

We employed a phenomenological approach to our interviews (van Manen 2014) to build an understanding of how participants engage in their practices and how this relates to their overall user experience. However, as health-related information is personal and wellness app users can be reluctant to share information with others (Peng et al. 2016), we could not complement our approach with observational methods. Indeed, a pilot study with six participants found an observational approach was viewed by participants as unduly invasive, with several users declining interviews for the same reason. Since in-depth interviews have a rich heritage in uncovering meaning-making processes inherent in experiential

consumption contexts (Seidman 2006), they were deemed appropriate for our investigation.

Sampling

Participants were recruited using a probability sampling strategy initiated by a newsletter, and an accompanying advertisement sent by email, to over 2,000 members of staff and 4,000 students, at a university in the United Kingdom. We also used judgmental sampling during the first stage and this was augmented by snowball sampling, resulting in the solicitation of an additional nine participants. After the emergence of preliminary categories, the second stage of interviews adopted a theoretical sampling approach, seeking additional data deemed important by prior interviewees (Gioia, Corley, and Hamilton 2012). During our theoretical sampling, data collection, critically reviewing theory and analysis proceeded iteratively, enabling us to seek the most relevant and salient themes to explore further, and thus refining any emergent concepts and inter-related properties until theoretical saturation was attained (Charmaz 2014). Consequently, this iterative data collection process led to an evolving interview guide which helped to broaden our analytical framework (Charmaz 2014; Corley and Gioia 2004; Epp and Otnes 2021). All participants were assured of their personal anonymity and provided their informed consent, based on our university's ethical protocol. Interviews were conducted over a period of 7 months with 21 participants aged between 18 and 50 and comprising 13 female and eight male participants (Web Appendix A). While the majority of the sample was comprised of students (seven) and staff (11), three participants were not affiliated with the university. This sample structure is broadly in line with other studies on wellness apps (e.g., Carroll et al. 2017). The interview venue was based on where participants felt most comfortable and this typically was a prebooked room in the university's library or in the campus cafe. The average length of interviews was 50 minutes and participants were provided with a £10 incentive. The average length of participant app usage was 3.53 years, but our sample also comprised of a wide range of experience usage, ranging from 2 months to over 10 years, allowing us to uncover the accumulated complexity in user experience.

Data Collection

All interviews were digitally audio-recorded and subsequently transcribed, resulting in 241 single spaced pages of text. During the interviews, a semistructured guide was followed to allow participants to lead an open-ended discussion based on their expressed preferred topics. These topics ranged from general discussions on lifestyle, app awareness, adoption, motivation to adopt, and the choice criteria of app selection. Probing questions were employed to deconstruct particular issues in more depth (Lincoln and Guba 1985). In doing so, participants found it easier to recall and relate their retrospective experiences with their engagement. This approach also facilitated rapport building and allowed the interviewer to build an overall picture of the participants' experiences. Additional probing revealed details in relation to their views on the various stages of engagement, their experiences of integrating resources, and benefits and difficulties arising from their activities and social interactions. Our interview protocol was based on a general set of questions such as "How do you use wellness apps in a normal day?" "Does your usage change over time?" "What are the main benefits of using your app?" "How difficult is it to use your app?" "What has been the cost in terms of both effort and time in using your app?" and "Do you involve other people in your usage?" However, the full set of interview questions was guided by the participant's voice. Consistent with a phenomenological approach, emergent participant narratives helped reveal participants to "iteratively construct and reconstruct past, present and anticipated future experiences" (Helkkula, Kelleher, and Pihlström 2012, p. 63), adding to our knowledge of the temporal nature of effort in enacting practices, that is, unlocking the role of consumer intensity. Immediately after each interview, field notes were incorporated into memos that helped the researchers to explore, check, and develop ideas, with sufficient analytical momentum, to conceptualize emerging themes (Charmaz 2014).

Data Analysis

The data were broken down to identify concepts, their properties, and dimensions in the open coding phase, while the focus was subsequently shifted to uncovering interrelationships between emergent categories and subcategories in axial coding. These two stages are consistent with Gioia, Corley, and Hamilton's (2012) notions of first-order analysis or reporting the participant's voice in relation to their experiences and second-order analysis or exploring the first order in more conceptual depth. The emergence of 12 recurring RIPs (see Table 3) exemplifies the first-order analysis. These emergent themes were integrated into more abstract dimensions in the second-order analysis. This subsequently uncovered the nested, or interdependent and transformational nature of types of practice engagement, stimulating a process of further integrating and refining our theoretical framework (Figure 1). NVivo 12 software was also used to facilitate data analysis in organizing textual data, searching, comparing data segments for similarities and differences, summarizing, and presenting codes and categories in the construction of any conceptualization. In order to secure trustworthiness of the data, we employed theory triangulation (Denzin 1989) using existing theory to guide data collection, development of interview protocols, and the coding system for analysis. Investigator triangulation (Denzin 1989) enabled all three authors to abductively judge the data in a constant comparison approach (Charmaz 2014; Gioia, Corley, and Hamilton 2012), initially independently and then collaboratively, beginning immediately after the first interview (Glaser and Strauss 1967). We employed Krefting's (1991) read-reread and code-recode procedure. We coded and analyzed emergent themes independently, referred back to the

Table 3. Resource Integration Practices (RIPs).

RIPs	Description	Illustrative Quotation(s)	
		Value Co-Creation	Value Co-Destruction or Variants Such As Value No-Creation
Inputting data	Data from performing the expected activities (e.g., eating, exercising) are manually or automatically inputted into the app	What I really like is when I add food, you can search them and then also you can do like a barcode scanner so that's so great, that's so easy to add things. (Sophia)	Just a bit boring, it does get a bit tedious and it'll be a lot easier if you just take a picture of food and it did it for you then rather than having to type it in and find the right food. (Lucas)
Analyzing	After inputting data, the app provides the output to analyze for progress and awareness	A lot of time you eat food and you don't understand what you're eating. With this one it does tell you what you're eating . . . It's just helpful. (Lucas)	I found I've got a bit too obsessed that's why I stopped using it. (Samuel)
Adhering	Compliance with the app's instruction or reminder or the goal/plan	Myfitnesspal just tells you the calories restricted, you can see that, if you eat in too many, the topic goes red like a you know you're eating too much, kind of like your mum telling you like you're eating too much. (Madison)	I really want to hit 3000 miles last year. I sort push myself . . . I got that, well I was really pleased I've done it, but you know, it was a horrible ride, I did not enjoy that. (Samuel)
Connecting devices	Devices and apps are connected and work together to get desired outcomes	I like use them together because Myfitnesspal track your stuff so I chose how many calories I've just burned and then on the Aflete one it shows you like average amount of calories spend for each exercise. (Sophia)	They need Bluetooth, always need Bluetooth phone. So Bluetooth drains my battery on my phone so it's annoying because when I was in the gym, I want to be all connected. (Charlotte)
Planning	An app facilitates its user to set a specific goal/schedule in a period of time (a day, a week, etc.)	Setting the goal and just the fact again on a daily basis you can regulate what you're supposed to eat without have to think about the bigger picture too much, so you can break it down. (Jonathan)	I just set the goal because I have to, the app gives me no choice. When you want to start using cycling, you have to set the goal before you start so it doesn't really matter. (David)
Learning	The user learns behaviors based on information or knowledge (visual or text content) provided by the app	By watching the videos, I know what to do and I can do it properly rather just watching other people and doing it. It helps in that way if you learn doing exercise as well and not just guess it and guess it wrong. (David)	That's the Nike training, that'll take into there and tell me the different workouts to do, but there are lots of other workouts on there but I never bother with them. (Lily)
Adapting	Personalized experience: The app's function can be customized based on user's information, for example, customized workouts; users contextually adapt to provided instructions/features from the apps	The other good thing about a training plan is it looks at what you've done in the previous week and it adapts the plan so if you missed a few runs, it would adapt the plan to suit you. (Lily)	Do a lot of update, I have to synchronise a lot so it has to put in the computer a lot, the battery lasts two or three days which is quite annoying. (Thomas)
Earning internal rewards	Getting (non)financial rewards (film tickets and positive messages) for self-accomplishments from the app without presence of other stakeholders	If I do certain amount of activities each week with the Vitality I get a free cinema ticket every week and free Starbucks every week. So incentives are a way to keep doing exercising as you get rewards from Vitality. (Benjamin)	I used to get 20 or 30 sweat coins per month, but I stopped it because I found it easier to buy protein shakes from the union. (David)
Earning external rewards	Getting (non)financial rewards (film tickets, badges, and positive messages) for accomplishments with presence of other stakeholders	I do personal challenges . . . you need to walk 10,000 steps or something like that, and when you've done that it will give you a badge then all your friends can see your badge. And know you've done that as well. (Charlotte)	I don't think that they motivate me because probably you don't get anything for it, apart from maybe a notification or Strava say well-done. I don't need that. (Mia)

(continued)

Table 3. (continued)

| | | Illustrative Quotation(s) | |
RIPs	Description	Value Co-Creation	Value Co-Destruction or Variants Such As Value No-Creation
Connecting other users	Making like-minded friends, sharing data and comments, receiving feedback from the app, and so on	I like being able to interact with other people on Strava when you see what exercise they've done. (Benjamin)	I'm quite private so I'm not really interested in sharing my data. (Emily)
Comparing and challenging	Challenging other users; directly or indirectly comparing data with other users	I competed with my son because he was using it as well to see who get more steps in a day. That was good a competition. (11)	It started to get things down, if you like, that constant comparing yourself to other people so I just thought like no more. (Isabella)
Giving or receiving support	Giving or receiving support from other customers or personal trainers	I can show them exactly everything that they eating, I can show them how many calories and everything. (Thomas)	I try to send it to him and I can't figure out how to do it, just doesn't make sense. (Jonathan)

existing literature, then came together to confer and check for inconsistencies, thus strengthening the overall credibility of the findings (Lincoln and Guba 1985). No major disagreements emerged and where minor disagreements occurred, we compared notes to further discuss the issue to reach agreement (Holloway and Beatty 2003). In summary, an abductive logic was observed wherein the authors independently and collectively navigated between the data, emerging analysis, the literature, and analytical framework to uncover explanatory dimensions (Dubois and Gadde 2002). Throughout this process, respondent validation (Fielding and Fielding 1986) was also initiated. In total, 11 of the 19 participants responded to follow-up interviews, and this additional interpreter triangulation (Lincoln and Guba 1985) further helped develop and validate memos, as well as guide the subsequent development of the interview protocol.

Findings

RIPs

Our analysis revealed 12 recurring RIPs describing the primary set of activities, which provide the necessary space for establishing interactions and engagement to ensue (Caridà, Edvardsson, and Colurcio 2018). Table 3 details the RIPs with descriptions and quotations in relation to accompanying IVF dimensions.

Consistent with Schau, Muñiz, and Arnould's (2009) approach in clustering individual practices, we find three broad types of RIPs: *core*, *internal*, and *external complementary practices*. These types are similar to Skålén, Pace and Cova's (2015) classification of organizing, identity, and interacting-based practices. Core practices organize a basic threshold of interactive activity: internal complementary practices strengthen self-identity projects and external complementary practices involve social interaction with other users. Not unlike existing practice IVF-based studies (Echeverri and Skålén 2011; Skålén, Pace and Cova 2015), we also found RIPs can

co-create or co-destroy value, but in addition, we find evidence of variants in between.

However, given our aim of capturing multidimensional IVF and therefore encapsulating the multiple pathways that may determine value, our classification does not rely on the role of practices alone. We adapt existing approaches (McColl-Kennedy et al. 2012; Spanjol et al 2015) to factor underlying conditions, constituted by the degree of interaction (low vs. high) and frequency of enacting each individual RIP (regular vs. irregular). This was essential to capture the trajectorial nature and therefore accumulation of engagement. Critically, we also took into consideration what role consumer intensity was cited by participants in this degree of engagement. In doing so, we were able to demonstrate the emergence of different permutations or variations of practice engagement, which ultimately form multidimensional IVF. Before we discuss these types or variations in engagement, we review our first-order classification of RIPs.

First, core practices inform, direct, and enable consumers to achieve the main purpose of the intended user experience. They are characterized by low numbers of interactions (mainly between customer and product/service) and comprise *inputting* and *analyzing data*, *adhering* (to instructions and goals), *connecting devices*, and *planning* (of activities). Moreover, two RIPs (*inputting data* and *analyzing*) can also be viewed as an integrated practice or *tracking* (see Peng et al. 2016). This division is essential due to the different roles of each RIP in understanding how IVF intensity differs across IVF dimensions.

Second, internal complementary practices provide opportunities for educating oneself, self-motivation, and acquiring further "know-how" to strengthen enactment of existing levels of core practices. These practices comprise *learning*, *adapting*, *and earning internal rewards* and are characterized by a low number of interactions. Third, external complementary practices consist of *earning external rewards*, *connecting other users*, *comparing and challenging*, and *giving or receiving support*. This category plays a similar role to the previous
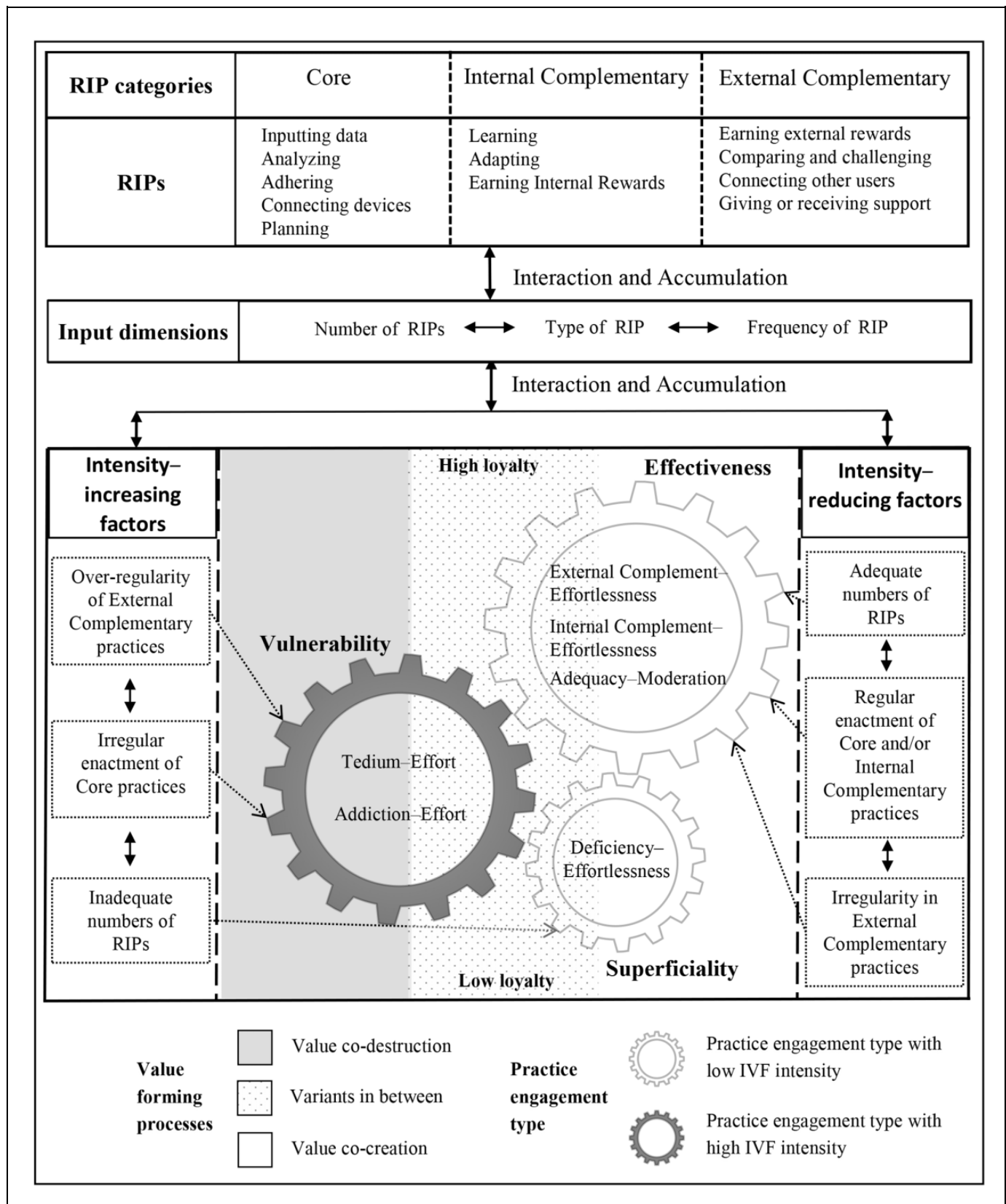
Figure 1. Multidimensional interactive value formation in practice.

Table 4. Practice Engagement and the Mediating Role of Interactive Value Formation (IVF) Intensity.

Practice Engagement Type	Input Dimensions			Mediating Dimension	Output Dimensions		
	Number of RIPs	Type of RIP	RIP Enactment Frequency	IVF Intensity	Value Forming Process(es)	Loyalty Conditions	Level of Loyalty
Deficiency-effortlessness	One to four (low)	Core or internal or external	Irregularity	Low	Low VCC	No loyalty, latent loyalty	Low
Tedium-effort	Five to six (medium)	Core and internal	Irregularity	High	Medium VCC + low VCD	Latent loyalty	Medium
Adequacy-moderation	Six to seven (medium)	Core and internal	Regularity	Medium	VCC	True loyalty	High
Internal complementary-effortlessness	Seven to eight (high)	Core and internal	Regularity	Low	VCC	True loyalty	High
External complementary-effortlessness	Nine to 10 (high)	Core, internal, and external	Regularity	Low	VCC	True loyalty	High
Addiction-effort	Seven to eight (high)	Core, internal, and external	Overregularity	High	VCC + VCD	No loyalty, latent loyalty	Low

Note. core = core practices; internal = internal complementary practices; external = external complementary practices; VCC = value co-creation; VCD = value co-destruction.

category, especially in stimulating users to enhance existing core practices, but is externally focused toward consumer-to-consumer interactions and characterized by a higher number of interactions.

Types of Practice Engagement

We identify six nested practice engagement types, namely, tedium-effort, addiction-effort, deficiency-effortlessness, adequacy-moderation, internal complement-effortlessness, and external complement-effortlessness. The composition of these practice engagement types is constituted by (1) inputs: the number of RIPs enacted (low, medium, and high), type of RIP (core, internal and external complementary practices), and RIP enactment frequency (irregular vs. regular); (2) the mediating role of IVF intensity (low, medium, and high); and (3) outputs related to variations in IVF and loyalty (see Table 4). Combined, these constituent patterns represent the diversity of permutations that constitute multidimensionality of IVF.

The six practice engagement types can be further categorized into three aggregates based on combinations of input, mediating, and output constituents, namely, superficial, effective, and vulnerable. Superficiality is exemplified by deficiency-effortlessness and relates to an inadequate engagement in RIPs. It is characterized by a low number of RIP enactment and irregular use, leading to low IVF intensity, low value co-creation, and thus low levels of loyalty. Effectiveness describes constructive RIP engagement and comprises of adequacy-moderation, internal, and external complement-effortlessness. These are characterized by regular medium/high number of RIP enactment and consequently low/medium IVF intensity, value co-creation, and thus high levels of loyalty. Vulnerability comprises of tedium-effort and addiction-effort and is characterized by a medium/high number of RIPs but with high IVF intensity. This is due to an irregular enactment of

RIPs in core practices or overregularity in enactment of external complementary practices (especially comparing and challenging). This predisposes users to value co-destruction and thus low/medium levels of loyalty. Superficiality in practice engagement therefore is more closely aligned to low value co-creation, vulnerability to value co-destruction, and effectiveness to value co-creation. Figure 1 depicts our theoretical framework and demonstrates the interactions and accumulations between RIPs, practice engagement types, and outcomes.

It is important to note that the process of RIP development and its accumulation into practice engagement types is nested, since it is ongoing and in flux. Our participants revealed a constant process of adjustment or transformability within and between practice engagement types. Therefore, practice engagement types are not stable entities but fluid in nature and this interdependency characterizes the dynamic and contextualized nature of IVF's multidimensionality. Essentially, our framework reflects a nested practice-based IVF model, and consistent with Schatzki (1996) and Schau, Muñiz, and Arnould (2009), the interdependencies and transformation of different types of value occur at the level of engagement. We subsequently provide an overview of individual practice engagement types to demonstrate the role of intensity in facilitating transformation between different engagement types and therefore demonstrate IVF as multidimensional in nature.

Deficiency-Effortlessness

Deficiency-effortlessness is characterized by a low number of RIPs enacted, specifically one or two RIPs and predominantly within core practices. This enactment is accompanied by low IVF intensity, low value co-creation, and low loyalty. The concept of effortlessness parallels low IVF intensity since it typically relates to experiences which become seamless in terms of effort (Findsrud, Tronvoll, and Edvardsson 2018) and

occurs when perceived challenges are aligned with a person's operand resources (Csikszentmihalyi and LeFevre 1989). Effortlessness was often viewed as sustaining participants in their current usage behaviors. However, when effortlessness arises out of enacting low or minimal numbers of RIPs, relatively low value co-creation and low levels of loyalty ensue. Jackson, for instance, in demonstrating low IVF intensity and irregularity, explained:

> it tells you what to do, it shows you so it is easier . . . it's visual so you just copy and you've done it properly . . . I'll just copy, I'll just watch and then I do it . . . [but] not every time.

Despite low IVF intensity, all participants within this practice engagement type reported low value co-creation, given their superficial level of enactment with practices. Thomas, for instance, recounted:

> I didn't need to use it as much because I trained the way I was approaching what I eat, so I've got to the point where I know what I need to be doing [without the app], I use it just for double checking now and again.

Alongside the low value co-creation, participants also report low levels of loyalty, as either no loyalty or latent loyalty. Emma, for instance, demonstrates latent loyalty:

> My son stopped using it so we did not have the competition anymore so I stopped using it too, but I would like to get it back on.

Tedium-Effort

Tedium-effort represents a transformation from *deficiency-effortlessness*, since it is characterized by an increase in enacting core practices, but is also facilitated by experimentation in internal complementary practices. Although enacting these RIPs remains irregular overall, the greater number of RIPs initiated, especially from internal complimentary practices (i.e., learning and adapting), can serve to strengthen the enactment of a wider set of core practices, thus enabling users to learn how to customize experiences better. This notion is consistent with the view that managing adaptive learning goals improves customer effectiveness in resource integration activities (Hibbert, Winklhofer, and Temerek 2012) and increasing levels of customization facilitates value co-creation (Troye and Supphellen 2012). While low to medium value co-creation is possible, we classify tedium-effort as vulnerable since respondents reported substantial ambiguity and paradoxical user experience from the additional work required to enact more challenging core practices such as data inputting, often described in terms related to tediousness.

Indeed, perceptions of effortlessness were reported for one-time and short-time experiences, but transformed into experiences characterized as "a lot of work" (Jonathan), or "tedious" (Lucas) when probed over an extended period of time. Therefore, the negative tedium effect derived from such

accumulation, and especially when making sacrifices to maintain app usage, can result in high IVF intensity, causing low value co-destruction. For instance:

> if you're hungry, you think to [eat] more food but then you look at it [a nutrition app], you go actually I eat what I'm supposed to eat but sometimes I eat quite a lot . . . I just can't keep myself hungry . . . diets are annoying . . . . I don't like it . . . . (Jonathan)

These findings can be explained by goal-directed psychology which suggests that consumers can become uncertain of enacting their consumption goals if alternative and competing goals are also motivating (Huang et al. 2015), leading to tension and ambivalence (Johnson, Fleura, and Dunn 2008). This is especially the case when pursuing complex and prolonged value (e.g., for weight loss) which necessitates repeated engagement in goal-consistent behaviors (e.g., regular exercise) and minimizing goal-inconsistent behaviors (e.g., eating unhealthy food; Campbell and Warren 2015). Instrumentalizing the planning RIP with learning was however found to offset this tension in several participants. Planning translates an abstract goal (e.g., weight loss) into specific goals (e.g., 10,000 steps per day) for a set of actions. This closed-ended goal gives direction and more accessibility to self-monitor, thereby shaping motivation for pursuing the abstract goal (e.g., healthy eating) over time. As Lucas explained:

> it [a nutrition app] sets you how many calories you should have during the day so that's 2500 calories . . . it tells you when you're coming up close to that limit too . . . it can help me to physically get better so the next time I work out my recovery will be good and then I'll train better next time.

This type of internal complementary planning practice can also be related to customers creating "value as value-in-use independently of the provider" (Grönroos and Voima 2013, p. 138), such that consumers end up co-creating value based on their own preferences. As Jonathan noted: "It's personal, you do it yourself, you have to set goals yourself." Therefore, when successful enactment of planning and learning practices occur, value co-creation is also possible. Notwithstanding the low repeat patronage/irregular usage demonstrated within this practice engagement type, participants have high relative attitude, hence latent loyalty (medium level of loyalty). For instance:

> using Myfitnesspal again because I'm kind of using that for many years on and off . . . I will probably try it for about three or four weeks and if I don't see any improvement in my weight, I'll just stop using it again but probably get back to it at some point again. (Madison)

The latent loyalty exhibited within tedium-effort also points to its nested and interdependent nature since to offset the accumulation of IVF intensity, participants can decrease their level of RIP enactment, effectively falling back to the comfort of deficiency-effortlessness. They can, for instance, drop a

number of enacted RIPs such as inputting data, analysis, and goal setting, or even transform to enacting only one RIP (giving or receiving support). Thomas, for instance, says:

> I used it every day for 2 or 3 months and then stop using as often . . . [now] I don't use it for goals, I don't need to scan everything every day, I can roughly know what I eat . . . it's quite time-consuming every day . . . so I won't use it more often.

Adequacy-Moderation

A transformation from tedium-effort to another practice engagement type can also occur when increased enactment of core and internal complementary practices become increasingly regular. We label this as adequacy-moderation to reflect an adequacy reached in the enactment of RIPs. This enactment generates effectiveness in value co-creation and therefore true loyalty, but while retaining a moderate level of IVF intensity. Adequacy-moderation is the first of a set of practice engagement types which we describe as effective in nature.

A differentiating factor from tedium-effort appears to be the additional enactment of connecting devices. This is a core practice, during which users are more confident in their ability to increase engagement across multiple service providers, thus facilitating additional learning as Sophia observed:

> I like [to] use them together because the Myfitnesspal tracks your stuff . . . and then on the Aflete, it shows you the average amount of calories spent for each exercise, so it works well together.

Although this additional practice enactment is accompanied by greater frequency of usage, it does not lead to tediousness, as the cumulative benefits exceed costs of usage and therefore IVF intensity remains moderate. Scarlett for instance noted:

> I won't say it necessarily makes me happier, but it makes me healthier . . . so I don't want to get to rely on it, but it's helpful.

Olivia observed:

> sometimes I genuinely do forget to log progress and fall out of the habit . . . however . . . ease of monitoring calorie intake is the main use for me . . . when I want to be healthy, this app really helps me to do so.

The moderate levels of IVF intensity and additional cumulative value created offset any costs in continued enactment of practices. Therefore, these participants all displayed overall regularity in use, high relative attitude, and hence true loyalty. Moreover, evidence of transformation from adequacy-moderation to yet a stronger type of practice engagement was also found. Some participants report actively moderating their levels of IVF intensity and/or facilitating value co-creation further. Olivia, for instance, reported confidence in implementing additional internal complementary practices to accrue further value co-creation, thereby transforming into internal complement-effortlessness. Earlier, we reported Olivia reducing her practice enactment, thus suggesting nesting between engagement types can operate in both directions.

> I have recently synced up Myfitnespal to my Fitbit [app] which is very useful too as this [automatically] tracks my calorie output which I can then compare with intake [from Myfitnesspal]. Mainly, it has made me aware as to how many calories are in certain foods and when I started using it I soon realized I had been grossly under or over estimating the number of calories in foods

Internal Complement-Effortlessness

This practice engagement type is characterized by yet a greater number of enacted RIPs and regularity relative to adequacy-moderation and especially with additional adoption of internal complementary practices. Given the increase in the number of internal complementary practices, motivation for enactment is enhanced, but its costs are reduced due to a heightened effortlessness experienced from, for instance, greater adaptive learning benefits. Therefore, IVF intensity tends to be lower, whereas value co-creation and true loyalty is higher. Specifically, all participants in internal complement-effortlessness automatically enact the inputting data RIP, thus contributing to reduced IVF intensity. This contrasts with the participants in the previous two practice engagement types who inputted data manually. Participants, within this practice engagement type, also report regularity in core practices, such as goal setting, fostering value co-creation yet further. Lily claimed:

> it's a good way of tracking in a quite passive way so you need it, don't need to do much, just aware of it, shows you what to do you don't have to write anything down. . . . I set 13,000 steps every day . . . . I like the goal, it gives you a good idea, it does make you do things and stops you being lazy.

Enactment of goal setting, in combination with engagement in earning internal rewards (internal complimentary practices), also leads to additional value co-creation. As Emily noted:

> It's congratulating me if I achieve my goal . . . . That's a nice message to get

Therefore, participants in this practice engagement type frequently use language expressing a strong relative attitude and reliance on usage, hence true loyalty.

Our sample also demonstrated a transformation from this practice engagement type toward another type of engagement, but this time by integrating external complementary practices. Despite this increased RIP enactment, IVF intensity remains low, further increasing comfort and hedonic experience, thereby generating additional value co-creation. Charlotte exemplifies this:

> Now I just upgraded. It's still the same app, but you can do different things. On this one I've got challenges against people which

makes it fun . . . . I can look on here look who doing challenges and challenge them, that's really cool . . . . I can record myself doing it with my Fitbit [app] on so people can see what I am doing because I have Instagram

External Complement-Effortlessness

External complement-effortlessness is characterized by the highest number of regularly enacted RIPs. This practice engagement type also exhibits low IVF intensity since it would appear users have reached a zone of comfort in their practice enactment which allows for a yet more seamless engagement experience, with optimal internal and external rewards motivating commitment. Moreover, while the majority of participants in the previous practice engagement types reported their engagement as something "private" to them, users within external complementary practices enact interaction with other users for hedonic purposes, as Benjamin explained:

You are willing to share it, it's not personal stuff, it's like Facebook for people that exercise so I do an exercise it goes on, everyone else should follow me on Strava can say I've done it and I can like it or write comments about it so I use that every day

The motivation of users within this practice engagement type transforms from internal to external reinforcement, representing the socially driven enactment of external complementary practices (i.e., earning external rewards and comparing and challenging). While Benjamin exhibited hedonic motives, utilitarian engagement was also evident. As Mia commented:

It's nice that all other people can see that I've done something . . . you can [also] enter challenges and for example win tickets to running festivals [with others]. Sometimes it helps to get out and it's nice to win things.

Participants within this practice engagement type demonstrate the highest level of value co-creation and true loyalty. As Mia elaborated:

I think I'll be silly to get a different type [of wellness app] which I just know isn't going to be this good.

Despite the adaptive nature of external complementary-effortlessness, not all participants are able to sustain low levels of IVF intensity required to maintain this type of practice engagement and value co-creation. In several cases, we witnessed a maladaptive route developing from extreme enactment of challenging and comparing practices. We describe this paradoxical transformation as an independent practice engagement type below.

Addiction-Effort

Addiction-effort is characterized by overregular enactment or addiction of external complementary practices, especially comparing and challenging. These users also display regular enactment of a high number of RIPs but an accumulation of IVF intensity in the absence of additional value from external rewards leads to value co-destruction. As Isabella explained:

I see what somebody else has done. I think ohh and it started to get me down . . . constantly comparing yourself to other people . . . trying hard but thinking I'm not doing enough, I'm not working hard enough. That's why I stopped using those apps. Too much competition.

Consequently, addiction-effort displays low levels of loyalty. Samuel, for instance, switched to a different app to limit involvement with other users, but still retained a positive attitude, hence latent loyalty:

It's been three months since I've stopped. I wouldn't say I'll never use it again. I do still go on the website to see what riders, people are doing . . . What I'm using now, it's a step counter . . . what I like about the app is it gives me enough information, but not too much . . . and does not link to any of my friends.

Similarly, Isabella also dropped engaging in external complementary practices and returned to the comfort zone of internal complementary practices, transforming from addiction-effort to internal complementary-effortlessness and therefore from value co-destruction to co-creation. Indeed, she switched and subsequently declared loyalty toward another app:

Then I got my straightforward [health] watch . . . It is probably the best app. I would say that because it's just about me it's not about anybody else. I keep that for myself I don't share results now . . . I like that.

In summary, we demonstrate that IVF's multidimensionality can be formed through the type, frequency, and interaction of enactment of RIPs, with the direction of interaction and accumulation moderated by consumer intensity. Low IVF intensity only generates value co-creation and subsequently true loyalty when enactment of practice engagement reaches adequacy (medium to high numbers of RIPs enacted). However, when IVF intensity is low, but enactment of practice engagement is inadequate, loyalty-based outcomes may not ensue. In contrast, high IVF intensity results in value co-destruction and low/medium levels of loyalty. Therefore, the effects of IVF intensity vary dimensionally from low to high producing both negative and positive effects on IVF and consequently leading to different levels of loyalty. Our findings demonstrate a malleability of IVF intensity, in facilitating the transformation or nested nature of IVF. That is, low numbers of RIPs, irregular enactment of core practices, and overregularity of external complementary practices can all co-constitute intensity increasing effects, thus contributing to a downward flow in IVF toward value co-destruction. Conversely, regularity in core and augmented by internal and external complimentary practices co-constitute intensity-reducing effects and therefore contributing an upward flow toward value co-creation.

As Figure 1 demonstrates, it is not merely the first layer or RIP categories, but critically how these accumulate through interplay among their characteristics. We articulate the diversity of such accumulation and interaction as reflecting the variability in different conditions which ultimately accounts for IVF's multidimensionality. Indeed, the interplay of number, type, and frequency of RIPs influences the perception of effort over time. This, in turn, is essential to understand the strength and direction of practice engagement types and consequently the multidimensionality of IVF. Multidimensional IVF is therefore a reflection of the nexus or pattern of practice engagement types which precede overall value. Our findings offer in effect one method to understand how different interactional practice-based conditions can create variations in engagement and thus value outcomes. It is important to note however that these different conditions are not static but adjustable and operate iteratively. Consequently, the trajectory of IVF's multidimensionality is nonlinear in nature. Hence, the double arrow heads and dashed lines in Figure 1 were adopted to stress the nonlinear and nested nature of multidimensional IVF.

Discussion

Our study adds to Ostrom et al.'s (2015) key service research priority of understanding value formation by investigating multidimensional IVF within complex and prolonged TBSS contexts. We thus extend Echeverri and Skålén's (2011) original conceptualization of IVF as inclusive of variations between both value co-creation and co-destruction by factoring in the myriad permutations possible which may lead to concomitant outcome variations. Our study contributes to nascent studies which propose IVF as an inclusive space wherein value co-creation and co-destruction can operate simultaneously (e.g., Cabiddu, Moreno, and Sebastiano 2019; Makkonen and Olkkonen 2017), but we provide an expanded space for the full spectrum of possibilities of value forming processes. We therefore offer additional insights into how the different value-forming pathways and associated conditions determine overall value. We differentiate our work from previous studies relying on social aspects and competences alone by investigating consumer intensity as integral to resource integration accumulation in IVF (Findsrud, Tronvoll, and Edvardsson 2018; Higgin 2006). In so doing, we found the multidimensional nature of IVF should factor not only types, interaction, and frequency of RIPs enacted but also the moderating role of motivation, or its manifestation of intensity, in formulating engagement in practices. Based on this, we summarize three contributions of our study for theory development.

First, we identified the role of consumer intensity (Haumann et al. 2015) as an underlying mechanism for explaining the multidimensionality of IVF within a complex and prolonged TBSS context. We propose that the strength and direction of engagement in practices is shaped by consumer intensity, and consequently, this process cumulatively determines overall value. By default, how these practice engagement types intersect with variations in loyalty is also co-dependent on variations in consumer intensity. Our approach, therefore, differs in several ways from previous studies. While the role of intensity has been validated outside (e.g., Buechel and Janiszewski 2014; Haumann et al. 2015), and within prolonged and complex services (Sweeney, Danaher, and McColl-Kennedy 2015), these studies draw on cross-sectional contexts. Several of our participants retrospectively relayed accounts over the course of a year or more. Sweeney, Danaher, and McColl-Kennedy (2015) observed that more effort was required in completing more difficult activities and these were preceded by activities that demand less effort. Our study reveals that the same activity or RIP can bring about different perceptions of effort with varying degrees of participation with time. Similarly, our findings complement Haumann et al. (2015, p. 21) who argue that increasing intensity adds to nonmonetary costs and thus "impairs the favourability of their outcome." Our work further differentiates from extant studies by identifying the multidimensional versus unidimensional effects of intensity on IVF. Previous studies (e.g., Buechel and Janiszewski 2014; Haumann et al. 2015) determined the mixed effects of effort or intensity by utilizing unidimensional measures. By utilizing a practice-based approach, we have been able to uncover the malleable nature of intensity across and within different practice engagement types. In doing so, we demonstrate that IVF intensity can vary dimensionally from low to high, producing both negative and positive effects during IVF but as a process in flux and therefore dynamic in nature. Where the varying degrees of effort have been explored, albeit in a value co-creation context (Sweeney, Danaher, and McColl-Kennedy 2015), the multidimensionality of IVF, linking positive and negative conditions over time, has not. Accordingly, we extend intensity's role as intersecting and co-determining the variability created by the resource integration process and consequently demonstrate the multidimensional nature of IVF.

Second, and as a result of intensity's role, we found transformability of practice engagement types as a key characteristic of IVF's multidimensionality. This transformability corroborates Spanjol et al.'s (2015) notion of coproduction behaviors as nested and interdependent but also Helkkula, Kelleher, and Pihlström's (2012) work on value as nonlinear or an ongoing and iterative process. While this is not surprising given the inherent nature of practices as organized nexuses (Schatzki 1996), our findings extend existing frameworks by stressing the role of consumer intensity. Offsetting the accumulation of IVF intensity, or facilitating consumer value co-creation, drives demand for adjusting existing inputs. This enables a transformation, or a constant process of adjustment within and between practice engagement types, thus extending previous studies to suggest an ongoing process of transformability at the level of engagement in IVF. In doing so, we corroborate existing studies (e.g., Helkkula, Kelleher, and Pihlström 2012; Spanjol et al. 2015) that value formation is an iterative process, characterized by interdependence but between and within underlying value-forming conditions.

Third, although previous studies have found mixed findings on the relationship between value and loyalty (Zeithaml et al.

2020), we are unaware of any IVF investigation, practice-based or generic, which demonstrates a nexus between IVF and variations in loyalty. Specifically, we found that value co-destruction leads to no loyalty or latent loyalty while increasing levels of value co-creation lead to greater loyalty. This relationship, however, should not be viewed as stable, since by moderating levels of consumer intensity, users can transition between practice engagement types, and consequently, the value-loyalty nexus is also transitional or nonlinear in nature. We therefore respond to calls to address this nonlinearity (Zeithaml et al. 2020) by emphasizing the critical role played by consumer intensity.

In summary, we extend our knowledge of IVF multidimensionality by demonstrating the complexity of underlying variations possible in the different conditions which constitute the accumulation of engagement. We extend existing studies which tend to focus on the examination and interplay of types of practices alone (Echeverri and Skålén 2011) and critically differentiate our work from studies which rely exclusively on social aspects and competences. We therefore respond to Finstrud et al. (2018) and Higgin's (2006) logic of intensity as shaping the multidirectionality of value. Based on this and Echeverri and Skålén (2011)'s original definition, we reformulate a new definition of IVF as a *systemic interplay between resource integration based interactional processes driven by consumer intensity, which can encapsulate multiple value forming processes simultaneously, leading to the co-determination of value.*

Managerial Implications

Our study suggests that consumers interactively form value as a process in flux, depending on the number, type, frequency, and intensity of resource integration. Consumer intensity, however, can adjust the enactment of RIPS, resulting in transformation among practice engagement types, which is important for service managers to understand. While the practice of social comparisons in wellness apps is common and can ensue true loyalty as in external complement-effortlessness, it could be considered too much of a good thing. For instance, overregularity with challenging and comparison practices can reverse the direction of IVF from value co-creation to co-destruction, thereby reducing levels of loyalty. This process may be offset by emphasizing greater choice of use in core and internal complementary practices. The shifting from external to internal and core practice types may alleviate the degree of IVF intensity and thus redirect individual goals to adaptive outcomes. Given the malleability of IVF intensity, both intensity-increasing and intensity-reducing effects should be managed in the design of services.

A key task for service managers, therefore, is to ensure at least an adequate number of RIPs are enacted. Consequently, a minimum number of core practices and options for augmenting internal and external complementary practices should be offered to offset accumulated IVF intensity within individual practice engagement types. For instance, when consumers engage with socialized practices, such as comparing and challenging, alternative routes to usage can be provided to prevent addiction in such external complementary practices. This is also in line with McColl-Kennedy et al. (2012) who advocate offering a range of co-creating activities. Given the more indirect nature of complex and prolonged TBSSs, we advocate a greater emphasis on service design aspects enabling an optimal level of options. Moreover, monitoring levels of practice engagement may further assist managers to segment users based on outcome dimensions such as value co-creation or co-destruction and variants in between. This usage monitoring should also encapsulate frequency in usage which may help managers to offset early indicators of IVF intensity accumulation. We can summarize managerial implications based on managing utilitarian and hedonic strategy.

A utilitarian strategy would focus on emphasizing the benefits and rewards and at the same time minimizing IVF intensity in attaining these. This can be achieved, for instance, by encouraging the positive effects of internal and external complementary practices (e.g., earning internal/external rewards) and automating core practices to avoid overload in intensity. Augmentation of internal and external complementary practices is vital to offset the accumulation of intensity within either practice type and consequently stimulating accumulation of value co-creation. Complementing a utilitarian approach, a hedonic strategy can also be instrumental in bringing in mitigating the negativity from high IVF intensity, which may arise, for instance, from an overreliance on external complementary practices. This approach can therefore focus on shifting from overregularity or addiction to lower types of engagement practices. Central in both approaches is creating a shift from low value co-creation/co-destruction to value co-creation, either through fostering greater benefits or making the process of transitioning more enjoyable.

Limitations and Future Research Directions

While a number of limitations exist in our study, these also present promising avenues for developing further research. First, the study focuses on wellness apps as an exemplar of a complex and prolonged TBSS. Some generalizability was evident, especially with Skålén, Pace and Cova's (2015) practices, giving credence to the study's application toward other complex and prolonged TBSS contexts and providing an opportunity for further corroboration or adding to our IVF framework. It would be interesting to see, for instance, whether practice engagement types operate as transformative in other contexts and whether the types overlap with our study. Second, while the study employed a qualitative data set and therefore the interrelationships with loyalty could not be empirically validated, this also presents a promising area for empirically validating the interactions demonstrated. This can also include validating the constituent elements of each practice engagement type. Third, while this study utilized a culturally uniform subsample, it is possible that cross-cultural differences may emerge in the manner in which operant resources are utilized.

Fourth, it would be interesting to see how affect-based resources, such as intensity, operate in tandem with social and competency-based resources such as financial and knowledge-based resources. Studies employing larger sample sizes may be able to granularize this intersection between a mix of resource types in understanding the multidimensional nature of IVF further. Finally, while our study has demonstrated the multi-dimensionality of IVF, we feel it still represents an initial foray in relation to the complexity of the variable space between value co-creation and co-destruction. Further applications of IVF which are able to longitudinally evaluate the salience of individual components are likely to add to our knowledge of how consumers formulate value across divergent contexts and applications. We offer in effect one method to reveal different conditions which can create variations in engagement and thus value outcomes. It is these different conditions, which may have a number of potential patterns in other contexts, which promises to make investigating the multidimensionality of IVF an exciting prospect for further research.

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Supplemental Material

Supplemental material for this article is available online.

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