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Designing an information technology-enabled framework in the retail service ecosystem

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ABSTRACT

Despite the significant importance of service innovation in a value-centered retail environment, less is explored regarding its conceptualization through firms' information technology (IT) based strategic capabilities to promote the value formation process in a retail service ecosystem. To address this gap, this study aims to develop an integrated framework based on the concepts of service-dominant logic and resource advantage theory. By conducting 24 in-depth interviews (12 with employees and 12 with customers) across various non-fuel retail stores commonly referred to as tuck shops, this study highlights the significant role of firms' strategic IT-enabled capabilities in enhancing service process innovation and customer service. These IT capabilities, combined with service process innovation and customer service, not only create opportunities for value co-creation through resource exchange (*value-in-exchange*) but also enable customers to create value through individual service consumption (*value-in-use*). The findings further suggest co-creation experience within the retail ecosystem is shaped by customers' emotional involvement, role projection, and escapism, which collectively determine their *value-in-experience*. Finally, the proposed framework offers valuable implications for practitioners, emphasizing the need to design more integrative IT-enabled platforms to achieve improved customer value outcomes.

1. Introduction

Academic research on the acceptance and use of information technologies (IT) has experienced remarkable growth in recent years (Quach et al., 2022; Battisti et al., 2022). Discussions about sustaining innovation drivers have fostered integration among social communities and service environments, enhancing economic value (Vargo et al., 2024). The literature highlights the key role of information systems in addressing environmental and social impacts and facilitating cohesive knowledge sharing, creating pathways for economic growth. This growth provides various implications for implementing technological innovations (Dwivedi et al., 2019), improving relationships between service providers and customers, and converting resources into economic value (Palmié et al., 2022). IT capabilities refer to the perspectives such as infrastructure, process transformation, power relationships and coordination in delivering online systems (Bhatt and Grover, 2005; Mulligan, 2002; Chen and Tsou, 2012). These are in other words firms' ability to 'acquire, deploy, combine, and reconfigure IT resources in support and enhancement of validating the measures' (Lu and Ramamurthy, 2011, p.932) to achieve the organizational objectives. Based on these advancements in information technology, service innovation is pivotal in enhancing customer experience by continuously improving service offerings (Barbu et al., 2021) and delivering customer value (Lin, 2022). It differentiates from traditional innovation by focusing on process innovations and service strategies to create value through new or improved offerings (Gustafsson et al., 2020; Snyder et al., 2016).

Service innovation (SI) which refers to the strategic utilization of

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firms' resources in providing either new or modify existing services is characterized in the literature as interactive or supportive (O'Cass and Ngo, 2011). Interactive SI involves direct encounters between service firms and customers, leading to value co-creation (VCC) through superior service delivery and customization (Tajeddini et al., 2020; Gustafsson et al., 2020). Supportive SI, or the backstage interface, involves process improvements that facilitate value creation (Tajeddini et al., 2017). These types are further conceptualized through input-based, process-based, output-based, and experience-based archetypes (Helkkula et al., 2018). Successful SI requires robust backend configurations, often supported by IT structures, to offer novel value propositions (Frey et al., 2019). Understanding how advanced technologies enable service process innovation (SPI) which refers to improving service concepts, models and customer service (CS) is vital for efficient value formation.

The significance of the value formation process within service-dominant logic (SDL) has gained substantial attention in contemporary business literature (Hussain et al., 2023). Unlike the traditional goods-dominant perspective (Vargo and Lusch, 2004; Fehrer and Vargo, 2022), SDL positions service as the foundational element of exchange, emphasizing that value is co-created throughout every stage of consumption. This paradigm introduces various value typologies, such as value-in-exchange, where customers and service providers collaboratively and experientially co-create value (Prahalad and Ramaswamy, 2004; Vargo et al., 2023a). Additionally, the value-in-use underscores the significance of resource utilization and service consumption (Grönroos, 2017). Notably, this perspective offers a profound understanding of 'real value,' which is actualized during service consumption, contributing to value creation (Abid et al., 2022).

Furthermore, the evolving dynamics of customer value formation have introduced a new typology known as value-in-experience. This concept represents an 'effort-based meaning of value creation which reflects the experience of resource integration and experience sharing throughout the value fulfillment process' (actualization and realization of value) (Abid et al., 2022; Medberg and Grönroos, 2020). Understanding value-in-experience involves examining customer interactions both within and beyond the boundaries of traditional service journeys (Kukk and Leppiman, 2016). Consequently, value-in-experience is best viewed as a co-created phenomenon, wherein customers participate in a series of service encounters that shape their individual consumption experiences across diverse situations and contexts (Shamim et al., 2015; Varshneya and Das, 2017).

In this context, service-based businesses are increasingly prioritizing newly acquired knowledge—particularly insights into co-creation (Fehrer and Vargo, 2022), innovation (Blichfeldt and Faullant, 2021), and service design (Bellos and Kavadias, 2021)—as central elements of their business and marketing strategies. This emphasis on co-creation knowledge is crucial for adopting a service-centred approach to value creation, which has become particularly significant in the retail sector (Gardiazabal and Bianchi, 2021). Previous research, mainly conceptual and qualitative, has highlighted various benefits of co-creation, such as the customization of service offerings (Gao et al., 2023), cost reduction (Chung and Tan, 2022), and mitigating the risks associated with service failures (Virlée et al., 2020). Additionally, some perspectives associate value co-creation within service innovation with addressing customer needs by empowering them through co-production mechanisms (Vargo and Lusch, 2016). Concurrently, the ongoing discourse on value creation (value-in-use) underscores that true value emerges during the customer's service consumption (Grönroos and Gummerus, 2014).

Despite the growing interest in various customer value typologies, including value-in-exchange (Akin and Okumuş, 2023), value-in-use (Sheng et al., 2022), and value-in-experience (Abid et al., 2022) within SDL, there remains a notable lack of empirical evidence regarding the impact of IT capabilities in retailing. Specifically, the role of IT in enhancing SPI, improving CS, and fostering value co-creation (VCC) enabled experiences within the retail service ecosystem has been underexplored. A retail service ecosystem provides a dynamic platform where actors interact and exchange resources (Heinonen and Strandvik, 2015). Few studies have explored this concept by investigating value co-creation among actors (Gardiazabal and Bianchi, 2021) or examined the transformative effects of digitalization on the retail ecosystem (Jiang and Stylos, 2021).

However, a consensus has yet to be established regarding how firms strategically leverage IT capabilities to enhance service innovation and, consequently, facilitate VCC, value creation (VC), and co-creation experiences (CCE) within the retail service ecosystem. Recent literature underscores this gap, indicating that the role of technological systems in enabling service firms to deliver and co-create value with external partners remains underexplored (Palmié et al., 2022). Therefore, effectively channelling the various stages of the value formation process to customers—particularly within diverse sectors like retail—represents a critical area for further investigation. A service ecosystem provides a cohesive platform where different actors interact and exchange resources to foster value creation (Vargo et al., 2015). In retail environments, customers regularly engage in information and resource exchanges with businesses, creating experiences that significantly impact their lives and broader ecosystems, including their overall well-being (Tang et al., 2016). In this study, the different actors such as customers and service firms participating in these exchanges within the retail sector are conceptualized as integral components of a retail service ecosystem.

Given the critical importance of service innovation and the gaps identified in the value formation literature within service-dominant logic (SDL), particularly concerning the diverse actors, contexts, and scenarios in retail service ecosystems, advancing theoretical understanding is essential. This advancement can be achieved by conceptualizing a framework that explores IT-enabled service process innovation, and their role in value formation. Therefore, our research question is: *How does service process innovation, facilitated by IT capabilities, contribute to enhancing the customer value formation process within the retail service ecosystem?*

The contribution of this study are as follows. First, drawing from the conceptual foundations of resource-advantage theory and service-dominant logic, it develops an integrated framework that delineates the roles of various IT capabilities, SPI, and CS in generating potential value. This framework highlights opportunities for VCC, VC, and CCE between retail firms and their customers. Second, the study reveals that firms' strategic deployment of information technology capabilities enhances service process innovation (Frey et al., 2019) and customer service, thereby creating an opportunity for value co-creation within the retail service ecosystem. Third, drawing from SDL, the research proposes that service process innovation significantly improves overall customer service by enabling efficient delivery, enhanced customization, and superior service quality. This, in turn, fosters value co-creation and value creation between actors in an ecosystem. Finally, the study posits that value-in-experience—an effort-based form of value creation—is shaped by customers' co-creation experiences within the retail ecosystem. These experiences are influenced by factors such as emotional involvement, role projection, and escapism.

The structure of the paper is as follows: First, it presents a literature review that explores key concepts and theoretical linkages. Second, the qualitative research methods and data collection processes are detailed. Third, the analysis is conducted using qualitative content analysis and thematic coding. Fourth, supporting excerpts from the data analysis are provided to substantiate the development of the proposed framework. Fifth, the study's implications are discussed. Finally, we conclude by providing limitations and providing directions for future research.

2. Literature review

2.1. Overview of innovation: service-dominant logic (SDL) perspective

The broad consensus among widely studied literature conceptualizes 'innovation' as the integration of new knowledge and ideas to advance economic progression and performance (Ashurst et al., 2012; Skålén and Gummerus, 2023; Wang et al., 2023). Economists have long provided diverse interpretations of innovation, based on the context within which it occurs. For instance, Schumpeter and Backhaus (1934), early economists, defined innovation as focusing on economic well-being and performance through new product markets, sources of raw materials, and new production methods, among others. This conceptualization is summarized more as entrepreneurial and technological ways of integrating new or available resources to enhance economic performance (Hristov and Reynolds, 2015).

Earlier conceptualizations of innovation, originating from economic or organizational perspectives, primarily emphasized good-centred logic (Pantano et al., 2018). The goods-dominant logic characterizes innovation as a purely organizational task of inventing new goods outcomes, neglecting the viewpoint of services. In response, contemporary theorists (Vargo and Lusch, 2004, 2016) have challenged this perspective by introducing an entirely new conceptualization, i.e., SDL. The conceptual discussions of SDL argue that economies are governed by innovating services rather than goods as a medium to enhance economic performance (Shamim et al., 2023). This viewpoint has revolutionized the exchange processes and existing relationships between firms and customers (Fehrer and Vargo, 2022). This shift has allowed customers to become co-creator of the service rather than passive receivers of goods (Vargo et al., 2023b).

In other words, this viewpoint has changed the existing definitions of innovation and organizational thinking by emphasizing the centrality of consumers as a focal point. It underscores the extent to which service firms can leverage consumers' resources to deliver superior customer service and create exciting customer experiences. While a growing discussion differentiates the characteristics and patterns of service innovation from traditional goods-based innovation (Snyder et al., 2016), recent discussions (Opazo-Basáez et al., 2022; Skålén and Gummerus, 2023) agree that, despite these discussions, innovation in services remains an under-researched area demanding further attention.

2.2. Information technology-based service innovation and customer service: retail evolution and resource-advantage theory

Retailing is a highly diversified and multifaceted industry characterized by complex interaction formats, service exchange mechanisms, varied customer types, and dynamic preferences (Artusi and Bellini, 2020; Priporas et al., 2023). Previous research emphasizes that retail practices are evolutionary and necessitate continuous innovation. (Pantano et al., 2018; Theodoridis et al., 2017). Brown (1987) laid a foundational framework by proposing three main theoretical approaches to understanding retail evolution: cyclical, conflict, and environmental. The third approach, environmental, focuses on external factors, such as economic, political, legal, socio-demographic, cultural, and technological aspects, that influence retail evolution (McArthur et al., 2016). Among these factors, technology stands out as one of the important drivers of the modern economy, leading to an increasing demand for knowledge-intensive service innovations (Lusch et al., 2016; Lusch and Spohrer, 2012) in the retailing sector. Technological innovation is widely recognized for its role in enhancing firm operational efficiency. The ongoing digital revolution has further accelerated the adoption of technological advancements across various retail platforms (Har et al., 2022), shaping the future landscape of retailing.

Recent literature has provided various insights where technology enabled process innovations such as artificial intelligence (Shankar et al., 2021), smart retailing (Pantano et al., 2018), virtual reality, self-service technologies (Mukerjee, 2023) and robotics (Noble and Mende, 2023) have played a vital role in bringing value to the firm and the customers in retail. The discussion of technology innovation is seen at the centre of innovation studies where it is explained as the process of bringing new technology-driven innovation to enhance new SI process. The other studies have argued that technological innovation is an important driver of bringing out key driver of sustaining environment, social and economic change in the society (Denicolai et al., 2021). In this regard, technological based innovation has become one of an important consideration of the retail firms where modern technological systems are used to enhance the service innovation process in retail (Shankar et al., 2021). Retail firms with high I.T capabilities may benefit from technological innovation in their existing service offerings through technology development and technology diffusion.

Concerning the concept of retail evolution through technological innovation, retail firms continuously implement and introduce information technologies as an essential line of inquiry, focusing more on customer acceptance of these technology-based systems (Ashurst et al., 2012; Palmié et al., 2022). Several scholarly works have used the 'Technology Acceptance Model' (TAM) (Davis, 1989; King and He, 2006) in retail to predict consumer acceptance of technology and its impact on behaviour (Herrero-Crespo et al., 2022). Furthermore, the 'Unified Theory of Acceptance and Use of Technology' (UTAUT) (Dwivedi et al., 2019; Venkatesh et al., 2003) and UTAUT-2 (Venkatesh et al., 2012) are comprehensive extensions of TAM that explain customers' intentions and behaviors explicitly related to technology adoption. Similarly, the studies have highlighted the theoretical compositions of technology and innovation using the 'Innovation Diffusion Theory' (IDT) (Acikgoz et al., 2023).

Importantly, firms' ability to adopt diversity and flexibility in innovation through resource integration cultivates a favourable attitude towards market competition and positively influences firms' financial performance (Hunt and Morgan, 1997). The Resource-Advantage Theory serves as a significant theoretical lens in marketing (Hunt, 1997), offering a robust and holistic understanding of market and social structures, the competition process, and its role in economic growth (Hunt, 1999). This theory contributes to understanding the attributes of competition in terms of knowledge sharing (Hunt and Arnett, 2003), firms' diversity, and the differences observed between innovation, quality, and productivity in addressing market-based needs of economies (Hunt, 1997). It also sheds light on the factors justifying firms' efficiency and effectiveness during market competition (Hunt and Duhan, 2002).

This theory predicts the pivotal role of technological advancements in governing the capital-labour ratio in economic development (Hunt and Arnett, 2003). This theory further explains that a firm's resources have the possibility to create competitive differentiation in its service offerings (Varadarajan, 2023). Building on this idea, we argue that the significance of a firm's resources, particularly information technology, is equally crucial in driving market competition, especially in the retail industry. This differentiation allows retail firms to deliver optimal value to their customers, making it essential for them to analyze the resources required for providing service innovation (Barile et al., 2020).

Drawing upon the concept of retail evolution, SDL, and resource-advantage theory, this study conceptualizes the retail service ecosystem as a process that necessitates continuous retail-based service innovations by leveraging information technologies as essential resources for enhancing service innovation and customer experience. The firm's information technology capabilities (ITC) refer to its capacity to initiate various organizational transformations that create value for both the firm and its customers (Pantano, 2014). Information technological capabilities play a paramount role in retail evolution and contribute to creating a linkage of value formation between retail firms and customers (Battisti et al., 2022).

Integrating the mutual interests of actors—retail firms and customers—remains a significant challenge. Contemporary retail platforms are

increasingly customer-centric, with customer needs driving the service innovation process (Palmié et al., 2022). IT capabilities provide a robust foundation for successful service innovations and superior customer service (Mostaghel et al., 2022). In essence, retail evolution is technologically driven, where IT capabilities accelerate service innovation and enhance customer service. These factors significantly increase the potential for value creation and value co-creation through exchange of resources between firms and customers.

Disparities between retail offerings and customer expectations can result in negative outcomes, such as dissatisfaction and poor experiences (Shamim et al., 2023). Consequently, retailers face significant pressure to retain customers by continuously introducing service innovations to improve customer service (Biswas et al., 2022). Leveraging IT capabilities enables retailers to co-create customized, timely, and quality-focused services (Gardiazabal and Bianchi, 2021). This approach fosters customer engagement in service exchanges and resource sharing, promoting value co-creation within the retail ecosystem. Therefore, retailers must navigate the dynamic nature of retail ecosystems by utilizing diverse IT capabilities to drive service innovation and enhance overall customer service.

2.3. Conceptualization of value typologies in service-dominant logic (SDL): a service ecosystem perspective

Marketing dynamics have been broadened through cultural ecology perspectives and the development of an ecological framework to examine the crucial roles of firms and customer relationships (Alderson, 1957, 1965; Vargo and Lusch, 2016). SDL (Vargo et al., 2023b), an emerging theoretical perspective in service marketing, has re-conceptualized and re-defined the relationships between service firms and customers, offering a broader viewpoint. These discussions have revolutionized the formation of service ecological systems, specifically conceptualized as service 'ecosystems' in the SDL literature (Lusch and Vargo, 2014; Herterich et al., 2023). A service ecosystem is defined as a "relatively self-contained, self-adjusting system of resource-integrating actors connected by shared institutional logics and mutual value creation through service exchange" (Lusch and Vargo, 2014, p. 161; Vargo and Lusch, 2016, p. 10). This concept is also in line to service systems grounded in service science, which advocate integrating different actors, resources, and technologies to create mutual value (Maglio et al., 2009).

The definition of a service ecosystem in SDL is more holistic, providing a broader and more mature perspective on the specific roles of institutions, actors, and technology (Vargo et al., 2015; Herterich et al., 2023). In this context, institutions are norms and procedures created by different actors to assign meanings and understand structured phenomena (Vargo and Lusch, 2016). Actors refer to service firms and customers who jointly integrate service ideas through value co-creation efforts within the service ecosystem (Meynhardt et al., 2016). Technology encompasses the knowledge applied in various service systems to reframe service innovation and offer new solutions (Barile et al., 2020). Notably, the service ecosystem in SDL has two primary roles: initiating value co-creation and utilizing existing knowledge and resources to foster service innovation (Edvardsson and Tronvoll, 2013; Palmié et al., 2022). Thus, the service ecosystem in SDL conceptualizes the configuration of resources and actors to integrate knowledge for value co-creation efforts among multiple stakeholders (Edvardsson and Tronvoll, 2022).

In SDL's service ecosystem, the concept of VCC is vital. VCC in SDL can be defined as establishing a "nested and interlocking service ecosystem of actors involved in resource integration and service exchange enabled and constrained by institutions and institutional arrangements" (Vargo and Lusch, 2016, p. 07). This highlights that VCC resides within resource exchange among actors, representing dyadic, collaborative, and interactive phenomena known as value-in-exchange (ViE) (Chen et al., 2023). Value-in-exchange which is the negotiated measurement offered and received i.e., money and value proposition among exchange partners (Vargo et al., 2008 p.150). This phenomenon advocates that value is shaped and mediated by exchanging resources between different actors such as customers contribute operant knowledge, collaborating with service firms to offer an opportunity of VCC (Fehrer and Vargo, 2022). Others have conceptualized VCC as a joint integration of resources through a series of service interactions among different actors (Abid et al., 2022; Grönroos and Voima, 2013). Marketing discourse widely recognizes resource integration as fundamental to VCC (Holmqvist et al., 2020). Helkkula et al. (2018) propose a value-centric approach, linking service innovation archetypes to foster VCC through resource integration and experience sharing among actors.

Similarly, the second typology which is value-in-use (ViU) refers to the customers' service consumption (Medberg and Grönroos, 2020). Earlier scholars such as Lusch et al. (2008) have argued where "Value-in-exchange might represent expected utility, but it is not the actual utility; utility (value in-use) can only be realized by and in the context of the life of the customer" (p. 12). This argument was further extended by Grönroos and Voima (2013) "The nature of value-in-use is the extent to which a customer feels better off (positive value) or worse off (negative value) through experiences somehow related to consumption" (p. 136). Based on that, scholars such as Sweeney et al. (2018) have highlighted that ViU is 'the value that emerges, is created or realized by the customer during their usage of resources' (p. 1101). These arguments conceptualize that value creation resides in customers' service usage and consumption (Medberg and Grönroos, 2020; Dahl et al., 2023). Within SDL's service ecosystem, value creation is a real value which is facilitaed throughout service exchanges (Grönroos and Gummerus, 2014; Vargo et al., 2023b). However, it is only created when customers individually use the service (Holmqvist et al., 2020). Therefore, value creation is context-specific, dependent on customers' resource integration efforts, and realized through ViU and ViE mechanisms.

The growing focus on value co-creation, resource integration, service ecosystems, and design thinking within SDL has spurred discussions on experiential value archetypes (Helkkula et al., 2018). Rooted in phenomenology (Abid et al., 2022; Husserl, 1970), the experiential aspect of value has become central to theories of value co-creation and value creation in both service-dominant logic (SDL) (Fehrer and Vargo, 2022) and service logic (SL) (Holmqvist et al., 2020). SDL's foundational premise (FP10) theorizes the 'determination' of value which customers uniquely and phenomenologically experience (Hussain et al., 2023). Earlier scholars have argued that value is co-created through the experience of resource integration between actors, which is always determined by the beneficiaries (customers) (Prahalad and Ramaswamy, 2004; Verleye, 2015).

Based on that, the experiential marketing strategy has conceptualized a new logic of value co-creation that explains how value is deep-rooted in customer experiences molded by various interactions between customers and service providers (Vargo et al., 2008; Abid et al., 2022). In other words, to make an experience meaningful, exciting, and unique, it must be co-created between the customers and service firms. Customer co-creation experience is a multi-dimensional and complex process built over time and involves a series of interactions (Hussain et al., 2023). These service interactions further channelize and configure the customers' co-creation emotional involvement during resource integration (Verleye, 2015), customers' specific role projection during co-creation (Prahalad and Ramaswamy, 2004), and escapism. Value-in-experience, 'an effort-based meaning of value creation, explains actors' resource integration and experience sharing throughout the value fulfillment process' (Abid et al., 2022; Kukk and Leppiman, 2016). In other words, value resides in the customer experience co-created during multiple interactions between the service firms and the customers, which is an individual sense-making of the phenomena. Therefore, we posit that value-in-experience could be determined through co-creation experience (positive vs negative), relies on customers value creation through service consumption (value-in-use) (Table 1).

Table 1
Contribution of studies highlighting value-in-exchange, value-in-use, and value-in-experience in service marketing scholarship.

Sr. No	Value-in-exchange	Value-in-use	Value-in-experience	Study level	Study design/ Methodology	Key findings	Reference
1.	✓	✓		Service firms and customer level	Conceptual	This article introduces a novel concept of Service-Dominant Logic within the context of services marketing. It challenges the traditional Goods-Dominant Logic by proposing a Service-Dominant Logic framework for rethinking approaches in services marketing. Furthermore, the article emphasizes the role of customers as active co-creators of value in this paradigm.	(Vargo and Lusch, 2004)
2.	✓	✓		Service firms and customer level	Conceptual	This study conceptualizes a Service Logic perspective in response to the Dominant Logic framework proposed by Vargo and Lusch (2004). Building on the Nordic School's research tradition, it explores the contribution of service marketing to the broader field of marketing. Additionally, the study contrasts Service Logic with Goods Logic by emphasizing the critical conceptualizations of value-in-use and value-in-exchange.	(Grönroos, 2006)
3.	✓	✓		Service firms and customers' level	Conceptual	This study emphasizes the role of service firms across various stages of value creation. The role of firms extends beyond merely offering value propositions to actively supporting customers in co-creating value during service exchanges. Ultimately, value creation is determined by the customers' ability and willingness to utilize the service effectively.	(Grönroos and Ravald, 2009)
4.	✓	✓	✓	Service firms and customers level	Conceptual	This study conceptualizes and revises the foundational premises of Service-Dominant Logic, as initially proposed by Vargo and Lusch (2004). Additionally, a new premise, FP-10, is introduced, which highlights that customers uniquely and phenomenologically experience value. In other words, value is inherent in the experiences of different customers.	(Vargo and Lusch, 2008)
5.	✓	✓		Service firms and customers' level.	Conceptual invited commentary.	This study utilizes the customer integration-facilities transformation-use (CI-FTU) framework, proposed by Moeller, as a foundational basis to deepen the understanding of value creation in Service-Dominant Logic, beyond the original conceptualization of CI-FTU.	(Vargo, 2008)
6		✓		Service firms and customers' level.	Conceptual	This study analyses value creation through the lens of Service Logic in marketing. It further proposes an insightful conceptualization of the value co-creation process, highlighting the distinct roles of service firms and their customers in value formation. Finally, the study redefines seven foundational premises (FP) of Service-Dominant Logic.	(Grönroos, 2011)
7	✓	✓	✓	Service firms and Customers' level.	Conceptual	The article offers a solid conceptual foundation for understanding value creation within Service Logic. It further develops the understanding of the provider and customer spheres, emphasizing the significance of various points of interaction in the value creation process. Additionally, the article expands the conceptual framework for understanding the role of interactions in value creation.	(Grönroos and Voima, 2013)
8			✓	Customers' level	Conceptual	This study conceptualizes the experiential nature of value as an iterative, ongoing process in customers' specific service encounters. Additionally, it systematically characterizes value in the experience by developing four theoretical propositions of value-in-experience, grounded in Service-Dominant Marketing Logic.	(Helkkula et al., 2012).
9	✓	✓		Service firms and customers level	Invited conceptual paper	This study provides an insightful comparison of two emerging service-based logics: Service Logic (SL) and Service-Dominant Logic (SDL) in services marketing. The findings revealed a metaphorical view of co-creation and value co-creation in SDL where service firms drive the value creation process. Contrarily, SL relies on analytical approach with a more comprehensive understanding of value creation and co-creation perspectives between service firms and their customers. Value creation is customer driven.	(Grönroos and Gummerus, 2014)
10	✓	✓	✓	Service firms and customers' level.	Conceptual	This study proposes and develops a 'relationality' framework based on the three domains—Self, Other, and We—to elaborate on relational behaviors within the context of Service Logic in marketing.	(FitzPatrick et al., 2015)
12	✓	✓		Institutions and ecosystem level.	Conceptual	This study calls for the development of more robust and in-depth conceptual frameworks to better understand the roles of different actors in the service ecosystem, using Service-Dominant Logic in services marketing.	(Vargo and Lusch, 2017)
13	✓	✓		Institutions and ecosystem level	Conceptual	This study conceptualizes and introduces the 11th foundational premise (fifth axiom) of Service-Dominant Logic. This premise specifically focuses on the role of various institutions and institutional arrangements within systems of value co-creation, i.e., the service ecosystem.	(Vargo and Lusch, 2016)

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Table 1 (*continued*)

Sr. No	Value-in-exchange	Value-in-use	Value-in-experience	Study level	Study design/ Methodology	Key findings	Reference
14	✓	✓	✓	Ecosystem level	Conceptual	This article discusses the conceptual understanding of different archetypes of service innovation and conceptualizes a value-centric approach to offer implications for value co-creation. Furthermore, the study highlights the importance of experiential and systematic archetypes in an integrative manner, presenting an extensive agenda for future research using Service-Dominant Logic (SDL) in services marketing.	(Helkkula et al., 2018)
15		✓		Customers' level	Qualitative; critical incident technique.	This study identifies seven empirical dimensions of value-in-use using the critical incident technique. Additionally, the study provides valuable insights into using service quality as a proxy for value-in-use within the service context. It also offers a detailed agenda for future research to explore how customers experience value-in-use over time.	(Medberg and Grönroos, 2020)
16		✓	✓	Customers' level.	Qualitative; Content Analysis	This study conceptualizes the experiential nature of value-in-use by proposing Experience-Dominant Logic, integrating value-in-experience and value-in-context. Furthermore, the study introduces an integrated experiential phenomenon of value-in-use, which varies across different customers. It suggests that value-in-use may lead to either value creation or value destruction, depending on the customer's service usage, producing distinct experiential outcomes for different customers even for the same service. In conclusion, the study asserts that value resides in the customer's experience.	(Abid et al., 2022)

2.4. Service innovation archetypes and retail service ecosystem

Scholarly insights on service innovation reveal three dominant schools of thought in service marketing: assimilation, demarcation, and synthesis (Coombs and Miles, 2000; Helkkula et al., 2018; Vargo et al., 2024). Assimilation suggests that service innovations are analogous to manufacturing processes, potentially causing confusion by equating product and process innovation theories across different contexts (Witell et al., 2016). Conversely, demarcation highlights the fundamental differences between products and services (Helkkula et al., 2018). This perspective underscores the unique characteristics of services, distinguishing them from products, and explores their theoretical and practical foundations (Frey et al., 2019; Chandler and Lusch, 2015).

The third synthesis approach, emphasizes value as the central concept in service innovation (Carlborg et al., 2014). This study by adapting synthesis approach integrates four archetypes—input-based, process-based, output-based, and experience-based—to foster supportive and interactive service process innovation through information technology. These platforms enable service firms to deliver efficient customer service and facilitate value creation with customers (Snyder et al., 2016). Input-based and process-based archetypes highlight how IT enhances service process innovation and promotes value co-creation through service exchange and resource integration in retail. In contrast, output-based and experience-based archetypes focus on the customer sphere, where value creation drives customers co-creation experience. Together, these archetypes offer a comprehensive

Table 2
Role of actors in the retail service ecosystem.*

	Input based	Process based	Output based	Experiential based
Conceptualization of different value typologies under archetypes of service innovation.	**Potential value:** Potential value which arises by integrating different resources of the firm as IT capabilities which helps in creating an opportunity of co-creation of value through exchange.	**Value-in-exchange:** Processes utilized for co-creating value through resource sharing and resource exchange that rely on the firms' actions of providing good customer service by innovating their existing services in the retail service ecosystem.	**Value-in-use:** Value-in-use is the customers' value creation which resides in individual service usage and is influenced by customers' value-in-exchange mechanisms in retail service ecosystem.	**Value-in-experience:** Value in experience is an effort-based meaning of value creation which is determined through customers' co-creation experience as positive or negative in the retail service ecosystem.
Role of actors under each archetype of service innovation in the retail service ecosystem.				
Service Firms	Retail firms are the value facilitators which helps in creating an opportunity of co-creation of value through exchange.	To enable new service processes to facilitate value co-creation between different actors in the retail service ecosystem.	To facilitate the value creation which resides in individual service consumption.	To co-facilitate new service and shopping experiences for the customers after value creation.
Employees	To utilize the resources of the retail firms for providing superior customer service.	To provide a superior customer service and valuable platform for exchange of service ideas with customers.	To facilitate the customers value creation (value-in-use) process.	To facilitate the co-creation of exciting and memorable customers experience during service encounter.
Customers	To provide continuous feedback on existing services being offered in retail.	To exchange the service ideas for co-creating value with the service provider.	To integrate the operant resources with value offered to use the value in a right way for value creation.	To provide honest feedback of both service and shopping experience in improving the existing services based on the positive or negative retail co-creation experience after using the service in real time settings.

* Adapted and modified from Helkkula et al. (2018). Please refer to the full article for additional information on archetypes of service innovation.

understanding of value typologies—exchanged, used, and experienced—within the retail service ecosystem.

Drawing on Gardiazabal and Bianchi's (2021) definition, this study conceptualizes the retail service ecosystem as the interaction between diverse actors who promote resource sharing and service exchange through IT capabilities, fostering VC and CCE in the retail context. IT capabilities are crucial for initiating service innovation processes and delivering quality customer service. This creates opportunities for VCC, influences VC, and enhances CCE across various service innovation archetypes. Table 2 of the study illustrates the formation of different customer value typologies and the distinct roles of actors within the retail service ecosystem.

2.5. Research context: non-fuel retail

Retail experiences in sectors such as banking, supermarkets, and entertainment have evolved to meet changing customer needs (Priporas et al., 2023). Recently, non-fuel retail services have emerged as a significant area of focus (McKinsey and Company, 2021; Shamim et al., 2024). Fuel companies are adapting their business models to include non-fuel retail services, driven by shifting customer preferences, the rise of electric vehicles, and fluctuating oil prices (Abid et al., 2025). Given the unique characteristics of fuel station retail establishments, a substantial customer volume is anticipated (McKinsey and Company, 2016). These non-fuel retail stores—often known as "tuck shops—offer value-added, experience-driven services, creating one-stop solutions to enhance customer satisfaction" (Shamim et al., 2024). Consequently, fuel retailers are innovating their business models and improving customer service to address dynamic market demands (McKinsey and Company, 2021). Consequently, this aims to be a primary motivation in initiating a study in the Asian context such as Malaysia. This research could potentially uncover better opportunities for co-creation of value and experiences through service exchange and resource sharing at non-fuel outlets within petrol stations. The integration of information technology in this context could prove instrumental in elevating the customer experience and enhancing the value proposition for both customers and fuel retailers.

3. Research methodology

3.1. Study design

This study employs an inductive approach, offering flexibility and fostering new ideas while closely considering contextual factors. Data analysis was performed through content analysis, a method emphasizing the researcher's role in constructing meaning from datasets (Bell et al., 2022). Content analysis systematically identifies message characteristics, making it suitable for drawing inferences (Holsti, 1969). Early scholars view content analysis as systematic, objective, and quantitative (Kassarjian, 1977), providing support for using this analytical approach in qualitative methods. However, the latter Krippendorff (2013) specifically criticized the heavy influence of content analysis as quantitative and argued that it involves the personal interpretation of meaning assigned to understand the message of the data, which in most cases is qualitative and exploratory.

Notably, the literature has characterized three main approaches to qualitative content analysis: conventional, directional, and summative (Hsieh and Shannon, 2005). The primary motive of these approaches is to provide a more precise and clearer picture of the meanings of the data sets through condensation and abstraction (Vespestad and Clancy, 2021). Condensation helps reduce the unfamiliar data and irrelevant data responses, and abstraction helps the researchers to reconstitute the text into a more precise and refined form using different coding procedures to develop familiar themes and categories (Patton, 2002). Few studies have criticized this method as being overly simplistic (Elo and Kyngäs, 2008) and suggested it be used with other interpretive methods; however, others (Kassarjian, 1977; Krippendorff, 2013) have justified this method to be used as stand-alone. Therefore, a recent review by Vespestad and Clancy (2021) has proposed content analysis as a versatile method that can be used in different forms depending on the nature of the research methods and context.

Based on that, different studies have employed qualitative content analysis to achieve their inductive-based discovery-oriented outcomes. For instance, Hamzah et al. (2014) used 'directional content analyses' to analyze the qualitative data acquired through focused group discussions by identifying codes and procedures to assign meaning to the data set by developing themes and categories. Van Nguyen et al. (2022) used qualitative content analysis to analyze the transcribed documents to scrutinize the written expressions of the respondents, followed by thematic analysis to finalize the codes and themes in omnichannel retailing. Other studies, such as Abid et al. (2022) and Centobelli et al. (2023), have also used qualitative content analysis to explore emerging themes and categories to develop a conceptual framework of experiential value and consumer experience in the e-beauty and tourism context. Therefore, based on past insights, this study has adopted a qualitative content analysis drawing from a directional approach to extract valuable keynotes from the insights of the qualitative data.

3.2. Data collection procedure

This study has designed a semi-structured interview protocol to achieve a discovery-oriented research objective. Semi-structured interviews work best as a medium of knowing respondents' insights and rich-context-driven feedback based on their language to understand the phenomena (Adams, 2015). They also provide in-depth knowledge about the personal experience of different participants (Van Nguyen et al., 2022). Two academic experts having knowledge of qualitative research have performed content and face validity of the interview protocol to ensure it would yield comprehensive insights. Accordingly, non-fuel retail stores were chosen as the research focus to gain rich, context-specific data.

To explore the retail service ecosystem, this study involved dyadic actors—employees and customers—to ensure comprehensive insights. Interviews were conducted with non-fuel retail employees and customers using purposive and snowball sampling techniques. Real-time interactions with these participants provided meaningful insights based on their recent experiences within the non-fuel retail service ecosystem. Respondents received an overview of the study theme to maximize relevant information aligned with our research objectives. Benchmarking and exclusion criteria were established beforehand, and only current employees and customers of non-fuel retail stores were selected for data collection.

Data collection was conducted in two stages. In stage 1, 12 employees from non-fuel retail stores were interviewed. In stage 2, only customers who had used non-fuel retail services at the fuel stations in stage 1 were selected for interviews. On-site data collection was carried out by interviewing customers who had interacted with and used non-fuel retail services. Only customers who consented to participate were included. A team of researchers comprising one lead researcher and two assistants were present during the interview sessions to record the transcriptions which emerged through statements through pen and paper technique. A total of 24 interviews were conducted (12 employees and 12 customers) at various fuel retail stations across Malaysia, with respondents' identities and job designations kept confidential due to privacy considerations. Data collection continued until saturation was reached, with interviews conducted in major Malaysian cities with non-fuel retail stores. The overall qualitative research design is illustrated in Flow Chart 1, and respondent profiles are presented in Table 3, with the interview protocol provided in the web appendix.

3.3. Data analysis

The data were analyzed using directed qualitative content analysis and thematic coding (Centobelli et al., 2023). The directed approach of content analysis mainly focuses on starting with a review of relevant theories and relevant research findings, which serves as a guide for the researchers to develop initial codes and the main concept under investigation (Hamzah et al., 2014; Hsieh and Shannon, 2005; Vespestad and Clancy, 2021). For instance, this study has determined customer value typologies, service innovation archetypes, and the main theme: the retail service ecosystem supported by literature sources mainly resource advantage theory and service-dominant logic. In other words, this study has achieved triangulation (Jick, 1979) using desk analysis by reviewing the secondary data such as literature insights and reports published by Deloitte, Mckinsey and Company and integrating them with the primary data acquired through semi-structured interviews.

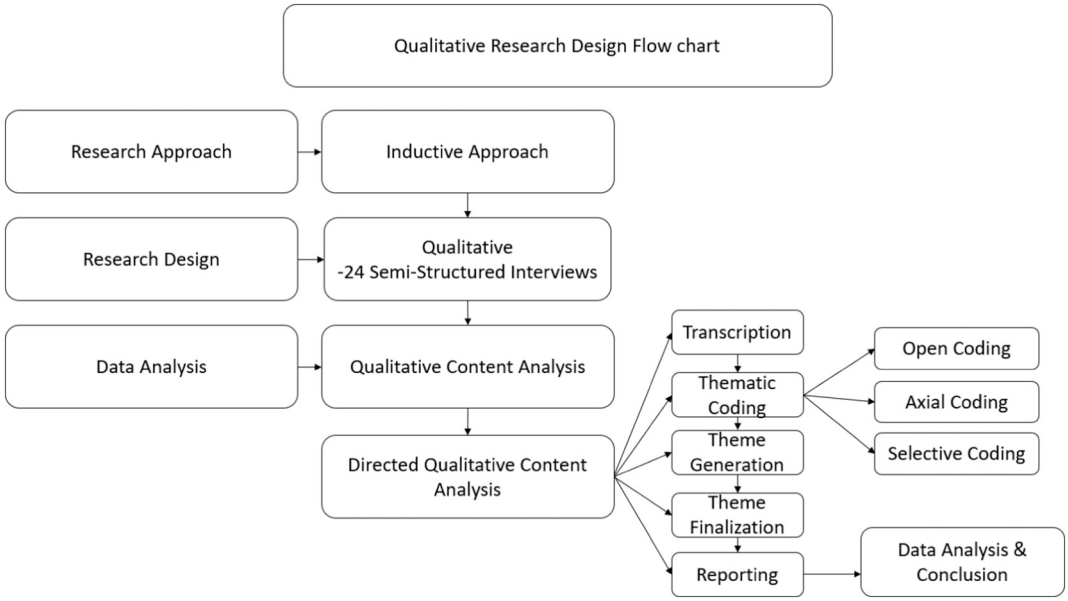
The first step involves transcribing the interview sessions. Transcription was performed to get familiar with the data. A transcription process was completed by going through each line of the interview sessions and assigning specific meanings to the respondents' insights. Each transcribed document took around 4–6 h, depending upon the complexity and length of the interview session. A team of 5 academic experts carefully performed the transcription process to identify the repeated patterns within data set. The transcription process was repeated multiple times to ensure consistency against the specified codes (Gibbs, 2007).

The second step includes the coding of the transcribed documents using thematic coding. This step further included investigator triangulation as two independent academic experts with experience in qualitative coding have independently performed the coding process (Palmié et al., 2022). The coding process was done several times to guarantee that the meaning of the assigned codes didn't change and that the data were consistently collected during transcription (Gibbs, 2007). According to developed codes and different coding techniques, including axial coding and selective coding, the transcripts of the interviews were coded (Sheth et al., 2023).

The third step involves identifying recurring themes within the coded dataset. Axial coding was adapted to connect various data chunks with related codes immediately after establishing initial codes driven by theory and literature support (Sheth et al., 2023). The fourth step involves reviewing these recurring themes and categories. To assess the accuracy of the finalized codes, themes, and categories a meeting was held between the team of researchers to meet a consensus.

Additionally, one independent expert from academia was invited to thoroughly review the results. This step in other words ensures the content validity as suggested by Creswell and Poth (2016). The credibility of the overall qualitative process was achieved through four main components and different strategies ensuring the trustworthiness of qualitative rigor using Lincoln and Guba (1985) qualitative trustworthiness rigor criteria. A detailed description of trustworthiness qualitative rigor is provided in the table by following Singh et al. (2021) initial guidelines against different components and verification strategies provided in the web appendix. Lastly, after consensus, 11 themes were finalized, which were 'a) *information technological infrastructure, b) information technological business experience, c) information technological relationship resources, d) information technological human resource (competencies), e) service process innovation, f) service delivery, g) service quality, h) service customization, i) customers' emotional involvement, j) customers' role projection, k) escapism.* Two themes, value co-creation and value creation, were literature enabled further validated through respondents' insights during the data analysis. Flow chart 1 explains the qualitative research design.

Finally, selective coding was conducted to develop a conceptual framework by establishing relationships between factors supporting the retail service ecosystem. These relationships were informed by respondent insights and theoretical support from existing literature. Similar factors were grouped into categories to form an integrated framework for the retail service ecosystem. For example, four factors—technological infrastructure, business experience, relationship resources, and human competencies—were categorized under the input-based archetype as key enablers of value delivery, grouped under 'information technology capabilities.' Second, firms' service process innovation and customer service were placed under the process-based archetype as mediums for delivering value-in-exchange, through service delivery, quality, and customization categorized as 'customer service.' Third, value co-creation under joint sphere and customer value creation was placed under the output-based archetype, supported by SDL, which views co-creation as resource integration and exchange, with value realized only when used by customers (Grönroos and Voima, 2013; Grönroos and Gummerus, 2014). Lastly, factors like emotional involvement, role projection, and escapism were categorized under the experiential archetype to represent customers' co-creation experiences.



Flow Chart 1. Qualitative research design.

Table 3
Respondents Profile Employees of non-fuel retail station.

No.	Gender	Employment Experience	Respondents Age in years
1	Female (F-01-E)	2 years	24
2	Male (M-01-E)	3 years	26
3	Female (F-02-E)	2.5 years	31
4	Female (F-03-E)	4 years	34
5	Female (F-04-E)	3 years	25
6	Female (F-05-E)	4 years	22
7	Female (F-06-E)	3 years	28
8	Female (F-07-E)	5 years	33
9	Female (F-08-E)	6 years	34
10	Male (M-02-E)	3 years	29
11	Male (M-03-E)	2 years	23
12	Male (M-04-E)	3 years	27
Non-fuel retail customers			
No	Gender	Consumer buying behaviour experience.	Respondents age in years
1	Male (M-01-C)	4 years	27
2	Male (M-02-C)	6 years	33
3	Female (F-01-C)	3 years	34
4	Female (F-02-C)	7 years	38
5	Female (F-03-C)	9 years	28
6	Female (F-04-C)	2 years	27
7	Male (M-03-C)	11 years	29
8	Female (F-05-C)	5 years	30
9	Female (F-06-C)	3 years	24
10	Male (M-04-C)	4 years	26
11	Female (F-07-C)	15 years	31
12	Female (F-08-C)	8 years	39

*E-stands for non-fuel retail Employee. *C-stands for non-fuel retail Customer.

4. Discussion of findings

4.1. The role of information technological (IT) capabilities 4.0 in a retail service ecosystem

The conceptual discussions of the service ecosystem have provided two primary roles: integrating resources between different actors (Vargo et al., 2023b) and initiating VCC through service exchange (Fehrer and Vargo, 2022). Based on that, the retail service ecosystem is conceptualized in this study as a platform that uses technology as knowledge applied in different retail-based service systems to reframe service innovation and provide new solutions to enhance customer service in retailing. IT capabilities, as defined, are part of organizational capabilities which are viewed as a resource to initiate change in this age of digitalization (Horng et al., 2018). One of the respondents highlighted the importance of technology as.

> I believe that technology is shaping the world rapidly. As an actor in this world, we should recognize the importance of technological implementations in the non-fuel retail sector (F-06-E).

Therefore, different IT based capabilities, including IT infrastructure, IT business experience, IT relationship resources, and I.T human resources, are optimal for the organization to initiate change in the innovation processes to enhance customer service. Based on these insights, the relationship between different factors is discussed in the subsequent sub-sections.

4.1.1. Information technological (IT) infrastructure, customer service (CS) & service process innovation (SPI)

The digitalization has changed the medium of communication between firms and customers, where information technology is vital in incorporating different strategies for meeting the challenges of this competitive tenure (Wijaya et al., 2020). Based on that, one of the employees has shared the importance of technology-based implementations by developing a solid infrastructure that could bring value to the customers. Further, she highlighted that technology rapidly changes retail platforms, and IT-based infrastructure is necessary to retain customers.

> I believe that technology is shaping retail platforms. We should recognize the importance of technological implementations, which can enhance more chances of innovation in existing retail services (F-06-E).

Notably, the increased emphasis on IT has transformed communication styles and driven shifts in various SI processes. These innovation-based services are now seen as a medium to deliver quality customer service in the market (Rashidirad et al., 2017). As another employee has highlighted.

> The advance technological infrastructure of the firm will provide an opportunity to achieve differentiation in the market. Through advanced infrastructure and modern tools, we can provide quality services and increase customization (F-02-E).

The excerpt analyses how a robust IT-based infrastructure creates an opportunity for competitive advantage for retail firms. An effective IT infrastructure, encompassing both hardware and software, can drive innovation in existing service processes. Additionally, IT-based infrastructure can enhance overall customer service by minimizing service delivery time and providing more customized and higher-quality services. Therefore, it can be concluded that a strong IT infrastructure serves as a primary foundation for enhancing service innovation and improving overall customer service.

Based on that, we propose that:

P1. : The IT infrastructure of the service firm helps to enhance a) service process innovation, and b) customer service through service delivery, good service quality, and more service customization.

4.1.2. IT business experience, CS & SPI

Furthermore, firms with extensive business experience and competitive staff are better equipped to meet the customer demands (Nugroho et al., 2022). This capability stems from their competence in transforming service processes to foster innovation through robust customer service platforms (Carlborg et al., 2014). One employee highlighted the importance of businesses gaining exposure to the market and acquiring experience with technology-based platforms to enhance service innovation processes and customer service. Specifically, she referred to

online platforms as technology-based software utilized in physical retail (offline) settings. The knowledge of integrating these IT-enabled applications is acquired through the experience that retail businesses accumulate in the market, as they become familiar with and incorporate these technology-based tools to enhance customer service and overall service innovation processes.

> It is important how much time a business has spent in the market and how much experience it has about using technology-based operations. I believe there is a difference between online and offline business, so having a knowledge of technology enabled business operations is very important for retail firms (F-04-E).

Another employee has shared that retail firms with more IT business experience can create and design better and more innovative service processes. These innovative features might include using web services for better customer inquiry and information handling, enhancing multichannel purchase features, consultation for their customers, and providing rich after-sale services.

> The business experience of using information technology platforms allows the retail firms to learn and get familiar with the different needs of the customers, which can be satisfied through modifications in existing services by innovating or improving them. These modifications might improve customer inquiry and information handling by taking customers' insights, which may increase customer service with existing retail stores (M-02-E).

Hence, IT business experience plays a vital role in providing innovative services because it allows the firm to change its thinking style, which is an essential contributor to service innovation and customer service. We propose that:

P2. : The information technological business experience of the retail service firm helps to enhance a) service process innovation, and b) customer service through service delivery, good service quality, and more service customization.

4.1.3. IT relationship resources, CS & SPI

The respondents have further debated on how firms should optimally utilize their relationship resources to initiate new service innovation activities and drive innovation in retail service processes. The literature also supports that firms' technological resources play a crucial role in enhancing the digital service innovation process (Wiesböck and Hess, 2018) and improving overall customer service (Chen and Tsou, 2012). Similarly, one employee shared their experience by explaining.

> Information technology-based systems should be capable of integrating different business operations and cross-departmental functions to synchronize the innovation activities for better customer handling and provide specific services according to their needs (M-01-E).

The excerpt analyses that IT relationship resources refer to the competence of the IT system to integrate and synchronize retail operations with other department functions. Such a system enables retail firms to better analyze customers' needs and demands within their retail stores. Retail firms can enhance their existing services by improving service delivery, quality, and customization through strengthening their technology-enabled relationships within the business and with customers.

P3. : The information technological relationship resource of the retail firm helps to enhance a) service process innovation and b) customer service through efficient service delivery, good service quality, and more service customization.

4.1.4. IT human resources, CS & SPI

The role of skilled employees is deemed necessary when delivering potential customer value. Similarly, the respondent has shared her opinion by explaining that the skilled employees who knows how to operate the technological systems could enhance customer service and innovation in services for that particular store.

> The competitive staff in the firm who knows how to operate the latest tools and digital techniques will have an extra advantage for the firms in the market (F-01-E).

Further, another employee has emphasized that human capital is one of the important resources in retailing despite the inclusion of new technologies. The expert employees who are aware of operating the I.T systems create more value for the retail firms than those who lack I.T knowledge of operating technology-based platforms. Therefore, skilled and experienced employees with knowledge of handling different kinds of IT-based systems will use them more effectively, bringing efficient customer service and innovation to existing service offerings.

> The skills and expertise of employees to operate the latest technological systems matter a lot as it contributes to initiating new service ideas which will help to satisfy our customers by providing better service (F-05-E).

Therefore, based on that, we propose that:

P4. : The information technological human resource having more competencies helps retail firms to enhance a) service process innovation and b) customer service through efficient service delivery, good service quality, and more service customization.

4.2. The role of the service process innovation in a retail service ecosystem

Retail firms involved in customer-oriented activities require a challenging service innovation process because they require a change in customer thinking, participation, and capabilities to realize and co-create value for the firm (Horng et al., 2018). For instance, one of the employees has shared her opinion regarding the importance of service process innovation as follows:

> In my opinion, the service firms should improve their innovation process by providing digital platforms as initiatives for service customization, as it will enhance overall customer service in the market (F-05-E).

This transformation occurs when the firm possesses comprehensive data and information regarding the preferences and needs of its potential target audience, allowing for the design and redesign of processes to achieve competitive outcomes. This empowers the firm to adapt its service patterns and align them with the customized needs of customers (Chandler and Lusch, 2015). Consequently, active involvement of customers during service processes becomes crucial, enhancing the quality of customer service delivery in the market. In this era, customers highly value ongoing feedback about their experiences and expect to see their inputs implemented during service innovation processes. Therefore, firms can identify customers' needs and individual preferences, developing innovative initiatives required to meet their expectations.

> The improvements in existing service structures such as customers complaints handling ultimately create an opportunity to provide better service quality for the customers (F-05-C).

Another customer has shared his viewpoint that innovation-oriented retail platforms improve service delivery, which is one factor in measuring the overall customer service in retailing.

> The innovation platforms, in my opinion, may result in efficient and fast service delivery, which positively impacts the customers' minds because I am getting good, on-time, and efficient service from the service provider (M-02-C).

Based on the above discussion, the following proposition is developed:

P5. : Competitive service processes innovation initiatives and implementations in the business structure shall enhance the service delivery, service quality, and service customization which increases an overall customer service in the retail service ecosystem.

4.3. Customers value co-creation (value-in-exchange) and customer value creation (value-in-use) in a retail service ecosystem

A consumer proposition is appealing based on a service-dominant rationale (Lusch et al., 2016) where the emphasis is not providing products but on the value co-creation and value creation process of the consumers, from which interest for consumers arises in a service ecosystem. Fehrer and Vargo (2022) proposed that interest is not generated until the user translates the service provider's services into their context and combines them with other operant resources. This study section analyses the role of service process innovation and customer service in enhancing an opportunity for value co-creation between retail firms and customers. Moreover, this section will further analyze how customer service and service process innovation influence customer value co-creation and value creation in the retail service ecosystem.

4.3.1. CS and SPI as a medium to enhance VCC (value-in-exchange) in a retail service ecosystem

Understanding the dynamics of customers is important for firms (Vargo and Lusch, 2016). Nowadays, customers actively participate in the service process settings because they are motivated when they are given autonomy to contribute their ideas for customized services in the service ecosystem (Payne et al., 2021). These service encounters help the mutual exchange of service ideas, allowing firms to provide more efficient customer service through advanced service innovation processes.

Based on that, one of the employees has shared.

> In my opinion, retail firms should work to provide digital platforms for customers. It will create an opportunity of taking customers' feedback about the existing customer service (F-08-E).

The excerpt suggests that retail firms should focus on innovating their existing services to enhance overall customer service. Customers consistently seek updated retail services characterized by good service delivery, quality, and customization. These factors contribute to creating a positive impression in customers' minds, presenting an opportunity to secure customers' consent to participate and obtain their feedback for better co-creation of value in the retail sector. Leading the discussion forward, another employee has validated by sharing the importance of value co-creation in retail. He emphasized similarly that customer feedback is an important factor that helps retail firms provide more customized and quality customer services. This can be achieved by providing more digitalized retail platforms where customers can interact through technology and provide customized feedback for better value co-creation.

> In my opinion, retail firms should incorporate customer insights during service improvements. This can be done by taking customers' feedback and incorporating this feedback during innovation-based activities as well as for improving the customized-based service offerings (M-03-E).

Notably, the value co-creation process involves both actors, such as customers and retailers. Therefore, we have decided to take the customers' viewpoint. The customers have shared that they are happy to share their viewpoints with the retail firms. However, it depends on the customer service they are getting in return. For instance, one of the customers has shared.

> I always have enjoyed contributing my skills and ideas to my non-fuel service provider. However, it depends on the store and how much they are willing to take up my input to provide their services in the market (F-06-C).

The excerpt provides an interesting explanation that shows that retail firms should incorporate the customers' viewpoint. The customers should be treated as an equal asset, and their opinions should be included while providing new or improvements to existing services. Another customer has shared and focused on using technology-based applications, which are important to enhance customer service by providing quality, customized, and timely service. Digital applications in retail settings have provided autonomy to customers by sharing their opinions online, which saves them time and record their opinion as well. These service encounters help the mutual exchange of service ideas, allowing firms to provide more efficient customer service through advanced service innovation processes.

> I always prefer to provide feedback through online apps because it will save me time, and I only have to record my response through my smartphone (M-04-C).

Therefore, we propose that:

P6. : Process enabled service innovation and good customer service help service firms engage their customers in value co-creation initiatives.

4.3.2. CS and SPI as a medium to influence customers' VC

Retail firms can be defined as value facilitators when they put in their efforts in providing good customer service and upgrade the service processes through innovation. The role of customers in this scenario is significant as they create value for themselves (value-in-use) (Grönroos, 2000, 2017) by using the service. Value-in-use for customers does not create a singular point of time; it evolves during usage (Gummerus, 2013). Furthermore, value creation is essential for both customers and firms as they work together to provide beneficial insights. Based on the analysis, we posit that the customers' value creation is influenced by the firms' customer service and their ability to innovate the service offerings. For instance, one of the customers has shared.

> I can only provide my honest opinion regarding any service, whether positive/negative, if I have personally used the service (M-03-C).

The excerpt offers an interesting insight, suggesting that value creation or destruction hinges solely on an individual's inclination to use a service. Customers, while exchanging their ideas, have the ability to co-create value during exchange mechanisms. However, the potential for value creation or destruction is contingent upon customers' usage patterns. Furthermore, we deduced that customer value creation is influenced and affected by the firms' activities in providing value, particularly in terms of customer service and the service innovation process. For instance, another customer shared.

> It has happened me several times that I have encountered bad customer service and despite having a good product, I am not satisfied with their services after using them (M-02-C).

The insights have revealed that customers' value creation resides in their ability to use the service. This service usage is relying on the customers' service provided by the retail firms. The negative customer service creates a negative impact on the customers service usage despite good quality services they will be dissatisfied leading to value destruction. Another customer has provided similar thoughts and adding to the discussion that she is always keen to visit that store which technologically sound and providing good customer service. This shows the importance of CS and SI by using technology-based systems in retail. The customers' value creation is influenced by these factors, which help them to create positive value-in-use in specific contexts.

> The service of the retail store matters a lot. For instance, I always prefer to choose a store that provides me with versatile products and

digital payment options as it saves my time and creates a positive image of that store (F-06-C).

Therefore, we propose that:

P7. : The service processes innovation and good customer service impacts customers' value creation which resides in the individual service usage of each customer.

4.4. The formation of value-in-experience in a retail service ecosystem

'The value-in-experience can be explained as an effort-based meaning of value creation which reflects the experience of resource integration and experience sharing throughout the value fulfillment process' (Abid et al., 2022, p.12; Mele and Polese, 2011). It is further evolved as an outcome of different interactions between the actors involved in the value creation process (Varshneya and Das, 2017). Based on that, this study has conceptualized that value-in-experience is determined through customers' co-creation experience, which is influenced by the customers' value creation in the retail service ecosystem. Research has observed that individuals engage in co-creative activities to seek a better experience (Prahalad and Ramaswamy, 2004; Shamim et al., 2016). This co-creative experience further generates a sense of competence, autonomy, and task enjoyment (Dahl and Moreau, 2007; Hussain et al., 2023). Vargo and Akaka (2012) indicate that the outcome of value-in-use is the experiential value that results after using the product/service offerings. Firms actively engage their customers with innovative offerings that create value and evoke a better co-creation experience. The shift in the institutional arrangements has changed the whole ecosystem, systems, processes, and outcomes to make a positive service innovation experience for their customers (Vargo et al., 2023b).

4.4.1. Customers' co-creation experience

While interviewing the respondents, we analyzed that customers' co-creation experience is somewhat relying on the customers' emotional involvement with the retail store. The customers eventually develop an emotional connection with the retail store. This emotional involvement will help them decide their overall co-creation experience while shopping at the retail store. For instance, one of the customers has shared that.

I believe customer experience is not an outcome of a single entity but is based on several service touchpoints. For instance, I will start experiencing the moment I enter the retail store. My experience is based on interactions with employees, retail services, and specific service usage that will be concluded as a good or bad experience (F-02-C).

The excerpt provides insights into what customers start to experience the moment they enter the retail store. Their interactions with different services, employees, and other retail touchpoints will affect their emotional involvement with that store. Moreover, customer service usage from that particular store affects their emotional connection. This factor will help them to decide their overall co-creation experience as good or bad based on their emotional involvement with that retail store. Additionally, our findings have analyzed that the co-creation experience results from customers' role projection during service exchange. The customers get themselves involved in different co-creation activities and service exchange in retail. They eventually feel they are performing their tasks in a specific role with the service firms. For instance, while interviewing one of the customers, she shared.

Most of the time, if my service provider is taking my ideas (through feedback mostly), it will enable me to be in a specific role and position I am performing to improve customer service. These inputs are, of course, helping in developing a positive experience (F-07-C).

This situation also enables the customers to feel a sense of autonomy, task enjoyment, and empowerment in their minds that their opinions are valued and incorporated for the betterment of the services in retail. These factors will eventually create a positive co-creation experience for the customers.

Notably, we find that customers' co-creation experience relies on the type of service exchange in which they are interacting with the retail provider. The strong and emotionally sound interactions eventually bring joy and happiness to the customers by escaping them from their normal routine activities for some time, which will create a positive co-creation experience for them. While interviewing a customer shared that she is happy to spend time in a good environment and providing her feedback when is asked the retails store. This happiness allows her to let go of her worries for some time as she feels important that her service ideas are being implemented to improve services in retail. Additionally, an attractive ambiance, music and good service can be the reasons of creating good experience.

It will help me to let go of my other worries for some time as I am happy that my service provider is giving me the importance of improving the overall service design by taking my service ideas (F-08-C). Apart from that, store aesthetics such as ambiance, music, lighting also plays an important role in experience creation.

Lastly, the respondents have shared that service usage ultimately affects their overall co-creation experience. For example, a customer has shared that his experience relies on the quality of the services he is paying for. The average taste of the product after utilizing it is somewhat creating a negative experience for him.

If the product's taste is not good, I will be disappointed and take this as a negative experience (M-01-C).

Contrarily, another customer has shared that the satisfied service consumption will contribute to building a positive experience for him.

If I am satisfied with the retail services, the environment and food, I will be happy and provide positive feedback about that particular store (M-03-C).

This shows that customers' service consumption, which drives their value creation, affects their emotional involvement, feedback to the service provider, and overall experience, positively or negatively. Therefore, customers' co-creation experience relies on their emotional involvement during service exchange and interaction with employees and other services, their ability to experience the specific service exchange as particular roles, and their tendency to let go of their normal states such as anger, sadness or vice versa while co-creating service ideas with the retail service provider in the service ecosystem.

Therefore, we propose that.

P8. : Customers' value creation impacts the customers' overall co-creation experience in the retail service ecosystem.

P9. : Customers' co-creation experience combines customers' emotional involvement, role projection, and escapism in the retail service ecosystem.

Conclusively, by integrating the resource-advantage theory and service-dominant logic, this study has channelled and reshaped the concept of the retail service ecosystem, which involves multiple service systems aimed at enhancing two-way interactions to foster the co-creation of value among customers (Vargo and Lusch, 2014). Additionally, this section concludes that customers are increasingly engaging with digital services. Therefore, organizations involved in service innovation should adapt organizational strategic capabilities in their service inputs across various IT-based systems. The first is technology sensing, which measures firms' ability to evaluate changes in its environment and modify its procedures to improve service outcomes. The second is shared vision, which refers to the extent to which individuals within an organization collaborate on common ideas and platforms to produce unique results. The third is relationship building, which refers

to how far staff go to establish favourable relationships with clients. Employing various information technologies in digital service innovation design is crucial for delivering potential customer value.

Improved service, achieved through process innovation, enables service firms to provide timely services and enhanced customization, facilitating value-in-exchange with customers. This service process innovation supports value creation by enabling efficient service delivery and customization within the process-based service innovation archetype. Customers prefer interacting with service providers who encourage them to share ideas to improve overall service design. By exchanging service ideas, customers co-create value, which influences their value creation under the outcome-based archetype of service innovation. Finally, based on the findings and previous literature, this study identifies that value-centric retail firms combine supportive and interactive service innovation (Tajeddini et al., 2020), enhancing the co-creation experience and realizing value-in-experience under the experiential-based archetype of service innovation (Fig. 1).

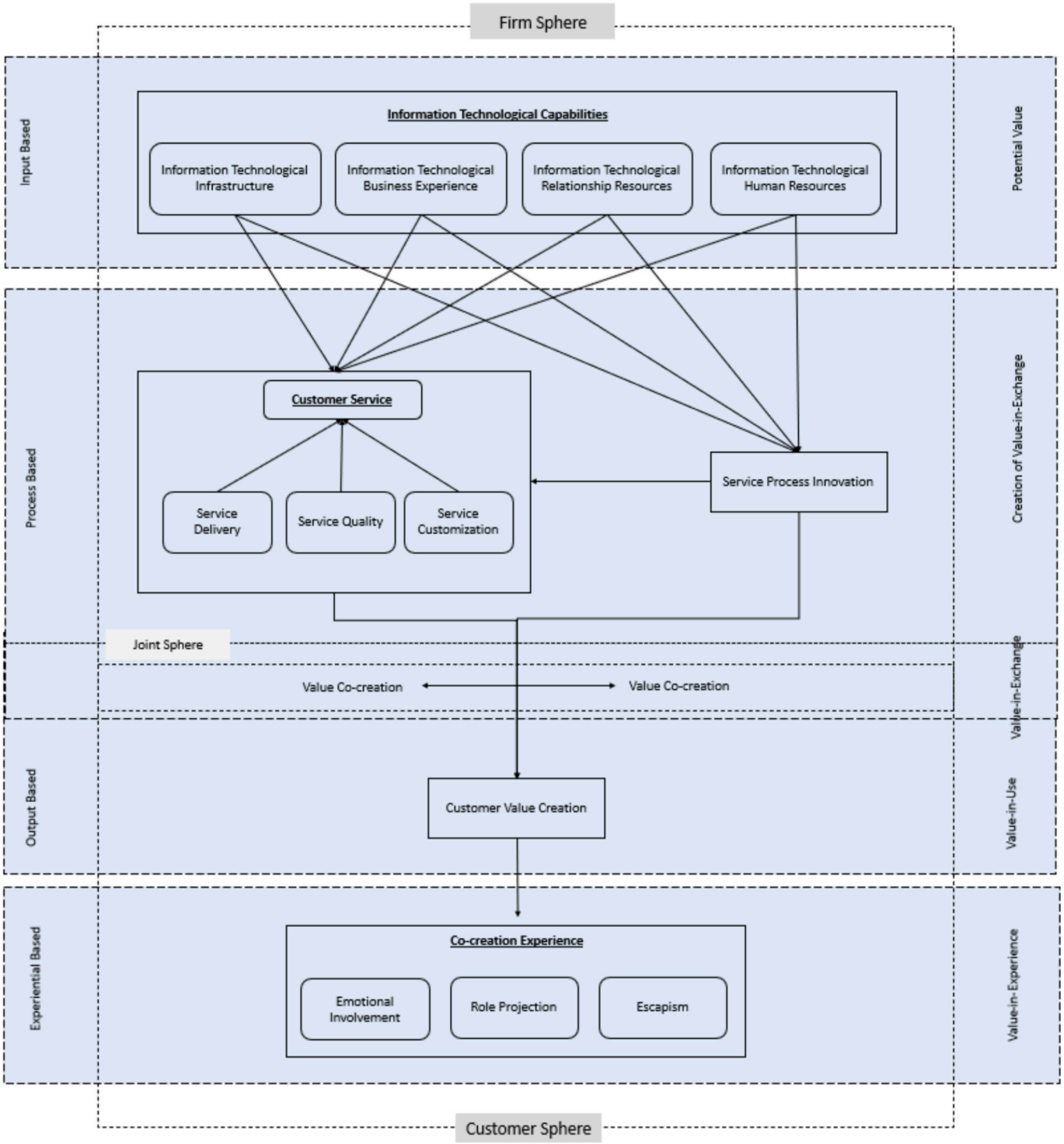


Fig. 1. Conceptual framework. Retail service ecosystem in multi-actor network.

5. Theoretical implications

This study makes several key contributions. First, it conceptualizes the retail service ecosystem through the lenses of resource-advantage theory and service-dominant logic. Building on the service ecosystem perspective (Vargo and Lusch, 2016), service innovation archetypes (Helkkula et al., 2018), and customer value typologies (Grönroos and Gummerus, 2014), an integrated framework is developed. This framework characterizes the roles of IT capabilities, SPI, and CS in delivering potential value. It creates opportunities for VCC through service exchange (value-in-exchange), VC through service consumption (value-in-use), and CCE (value-in-experience) between retail firms and customers. This study extends existing discussions by defining the retail service ecosystem as an integrated platform for resource sharing and exchange, influenced by institutional logics that promote value co-creation. This aligns with the standard definition of a service ecosystem as a "self-contained, self-adjusting system of resource-integrating actors connected by shared institutional logics and mutual value creation through service exchange" (Lusch and Vargo, 2014, p.161; Vargo and Lusch, 2016, p.10). Additionally, it highlights that the retail service ecosystem relies on IT capabilities as a knowledge resource, driving service innovation and enhancing customer service. This mutual exchange ultimately influences customers' VC and their overall CCE, helping define their value-in-experience as positive or negative within the experiential archetype of service innovation.

Second, by integrating resource-advantage theory with service-dominant logic, this study highlights that a firm's operant resources are key to achieving strategic benefits and competitive differentiation in its product/service offerings. Our findings suggest that the IT capabilities of service firms play a crucial role in shaping the SPI (Blichfeldt and Faullant, 2021) and improving CS (Rashidirad et al., 2017). Firms with advanced IT infrastructure, business experience, customer relationship resources, and IT human resources (competencies) within the retail ecosystem create potential value for their customers under the input-based archetype of service innovation.

Third, the findings of this study suggest that IT-related capabilities enhance both CS and SPI, supporting previous literature (Chen and Tsou, 2012). We extend this discussion by proposing that SPI and CS create opportunities for VCC within the retail service ecosystem. Our findings highlight that customers seek innovation-driven service platforms and high-quality customer service to actively engage in co-creation. Therefore, it is advantageous for retail firms to retain customers by offering innovative services and excellent CS. By improving service quality, delivery, and customization, retail firms can enhance the success of their offerings in the market.

Fourth, this study proposes that high-quality CS and SPI enhance customers' VC within the retail service ecosystem. While the literature asserts that value creation occurs through customers' individual service consumption, or value-in-use (Abid et al., 2022), it is influenced by factors such as CS and SPI. This aligns with the interdependent self-construal approach of self-construal theory (Shamim et al., 2023), which suggests that customers co-create value with the service provider, thereby influencing their independent VC. We argue that firms' efforts to provide excellent CS and innovative service offerings can engage customers in VCC through service exchange (value-in-exchange), which in turn impacts value creation through customers' ability to use the service (value-in-use) within the retail ecosystem.

Finally, this study proposes that value-in-experience is determined by customers' co-creation experiences under the experiential archetype of service innovation within the retail service ecosystem. We argue that the customer experience of co-creation is not an individual task but the outcome of multiple service encounters during value co-creation (value-in-exchange). This is further affirmed by individual service usage (value-in-use), which allows customers to confirm their positive or negative retail co-creation experiences (value-in-experience) as an outcome of the value formation process in the retail service ecosystem. Therefore, customers' co-creation experience is the fundamental mechanism through which they experience the value offerings after using the service. Recent literature has conceptualized and measured co-creation experience through hedonic, pragmatic, cognitive, and social dimensions (Hussain et al., 2023). Drawing from the conceptual discussions of the customer experience literature (Becker and Jaakkola, 2020; Lemon and Verhoef, 2016), we have extended this line of discussion by conceptualizing three dimensions of co-creation experience: emotional involvement, role projection, and escapism. Customers are emotionally involved during co-creation initiatives, providing them the autonomy to enjoy specific roles and experience a temporary escape from their routines. Therefore, while co-creating their experiences, customers engage in emotional involvement, role projection, and escapism, which ultimately help them determine their value-in-experience, either positively or negatively, after using the services in the retail service ecosystem.

6. Managerial implications of the study

This study contributes to managerial implications in several ways. First, it highlights that a business's success largely depends on the value it delivers to its customers. Our research provides a framework emphasizing the critical role of IT capabilities in creating and delivering value. Robust infrastructure, skilled human resources, business expertise, and organizational assets are essential for innovating existing business models and enhancing customer service. Non-fuel retail managers should prioritize developing a reliable and consistent technological system. Such a system can drive innovation in service platforms and significantly improve customer service. In other words, effectively integrating diverse IT capabilities within non-fuel retail firms can enable them to focus on delivering customer value rather than merely offering standard products in stores. Therefore, we recommend that non-fuel retail managers leverage technological platforms to innovate their business models, which could help improve overall customer service.

Second, our framework has highlighted that customer service relies on technology and service innovation. Customers are concerned about service quality, service delivery, and customization while shopping at the particular store (Shamim et al., 2024). We suggest non-fuel retail managers to focus on integrating their IT capabilities as a medium of providing quality services and possibly enhance the degree of customization which could drive the customer service positively. This could attract more customers to shop at the particular store. Therefore, non-fuel retail stores must integrate their technological systems and service innovation processes for better customer service.

Third, we suggest the managers to establish a co-creative relationship with their customers. Involving customers as their key partners could possibly help them in availing the opportunity to co-create value with customers in non-fuel retail. Our framework has provided a pathway where we argue that better customer service and innovating the existing models through IT capabilities could unlock the pathway of co-creation between the non-fuel retail and customers. Therefore, non-fuel retail firms should work closely with the customers, engaging them to co-create value which could enhance long term relationship between different actors in the ecosystem.

Fourth, our findings have provided valuable insights into where customer value creation is influenced and affected by overall customer service, service innovation, and their ability to co-create value with the service provider. We suggest non-fuel retail management work on customer value creation. Our findings have indicated that customer value creation resides in the individual service usage of the customers (Holmqvist et al., 2020). Given the dynamic nature of value creation, even satisfactory products may receive negative feedback if customers are dissatisfied with the overall service or the perceived level of innovation at the store. Therefore, non-fuel retail firms should revamp their approach to service by emphasizing value co-creation and tailoring value creation to meet the unique needs and expectations of individual customers.

Fifth, our findings reveal that customers' co-creation experiences are significantly influenced by their level of emotional attachment, role projection, and the sense of escapism associated with various offerings. Consequently, managers should strive to create a more personalized and interactive environment. This approach enables managers to involve customers in roles such as co-creating service ideas, fostering a sense of collaboration and engagement. Additionally, managers can focus on providing an immersive environment that offers multi-sensory experiences through elements like attractive ambiance, lighting, and music. Such initiatives allow customers to momentarily escape their daily routines, enhancing their overall experience. In essence, these strategies can help non-fuel retail firms develop stronger value-in-experience for their customers.

7. Limitations and directions for future research

This study provides several directions for future research. First, this study was investigated in Malaysian context. Our findings are focused on individual service consumption facilitated through IT capabilities which drives the customers value co-creation (value-in-exchange), value creation (value-in-use) and co-creation experience (value-in-experience) under archetypes of service innovation using qualitative study. Customer individuality and experience vary in different situations and contexts. Therefore, we suggest future researchers to empirically validate the findings in other regions specifically incorporating culture context in retail for more robust and generalizable outcome.

Second, our study is based on the traditional theme of IT capabilities and their role in enhancing service innovation, customer service and value typologies. We suggest future researchers to consider more advanced techniques such as machine learning particularly symbolic approaches such as decision tree learning, rule-based learning, inductive logic programming (ILP), association rule learning to measure constructs proposed in the framework. These techniques for instance rule-based learning could better help in measuring insights for improving service quality and guide better customized solutions in retail. While the other ILP could help the researchers in investigating the complex relationships between IT capabilities, service innovation, customer service and value typologies through logical rules derived from the large data sets. We believe that using these approaches and large data sets would enhance the generalizability of the results and draw more robust and logical managerial implications to support the innovation of service models in retailing. Third, since the main focus of this study is on value formation process through IT capabilities, service process innovation and customer service, we have provided a general overview of different archetypes of service innovation and explain how different factors under each archetype could influence value co-creation, value creation and co-creation experience. Future research should investigate an in-depth role of these archetypes using different approaches in advancing the understanding of digital service innovation in retail service ecosystem (Helkkula et al., 2018; Snyder et al., 2016; Witell et al., 2016; Vargo et al., 2024). Fourth, we suggest future researchers to consider developing a framework conceptualizing the role of 'self-service technologies', 'zero-touch service technologies', and their role in enhancing customers co-creation experience using multiple and mixed methods techniques. Notably, our demographics do not include senior respondents aged above 45 years. Future research should include the data of various age groups to see any persistent differences in the findings.

Fifth, this study has provided the importance of technological systems in initiating the value formation process using the synthesis approach of different archetypes of service innovation. We did not study the implications and usage of technological systems from an intra-organizational perspective and their impact on handling the issues related to the external environment. Future research should investigate in more detail the impact of I.T within intra-organizational levels and further develop a linkage between different service innovation archetypes and the threats related to the external environment such as cultural, social and economic. Sixth, we adapted qualitative content analysis and thematic coding to analyze the results. Future research should perform the cross-case analysis to better compare the study's findings through multi methods. Seventh, customer trust is a primary factor in using and engaging with online retail platforms (Abid et al., 2023). This study did not include this factor. Future research could study the impact of customer data privacy concerns in enhancing value creation in non-fuel and other retail contexts. Finally, this study was cross-sectional. Future research should conduct longitudinal studies comparing non-fuel retail and other retail sectors to see and examine if any significant differences exist in the behaviors and consumption patterns. See table 4 in web appendix for implications for future research.

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CRediT authorship contribution statement

Muhammad Farrukh Abid: Writing – review & editing, Writing – original draft, Visualization, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Amjad Shamim:** Writing – review & editing, Writing – original draft. **Park Thaichon:** Writing – review & editing, Writing – original draft, Project administration. **Sara Quach:** Writing – review & editing, Writing – original draft, Conceptualization. **Junaid Siddique:** Writing – review & editing, Writing – original draft.

Declaration of competing interest

No conflict of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.techfore.2025.124078.

Data availability

Data will be made available on request.

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