CUSTOMER BEHAVIOR WHEN EXPERIENCING SMART RETAIL TECHNOLOGY: A CONCEPTUAL FRAMEWORK

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Abstract - Due to the rapid growth of Smart Retail Technology (SRT) in the digital age, the retail industry has transformed how it engages with customers and manages daily operations. This research utilizes the Value-Based Adoption Model to investigate the mechanism that may affect to customer loyalty to retail stores and electronic Word-of-Mouth (eWOM) behavior following their experience with SRT, focusing on customers' value-oriented perspectives that may not have received adequate attention in previous studies. Based on the literature review, this study identifies five factors affecting the perceived value of a customer and, consequently, his/her loyalty behavior. It also proposes the research framework to analyze customer behavior when experiencing smart retail technology.

Key words - Smart retail technology (SRT); Value-based adoption model; SOR (Stimulus-Organism-Response) model; Retail loyalty; eWOM

1. Introduction

Retail trends are changing due to the emergence of technology. Today, consumers have little patience with the inconvenience. They seek a smoother shopping experience and increasingly opt for comprehensive forms of responsiveness such as online purchases and in-store pickup. Instead of just focusing on improving online items, businesses should also focus on increasing the performance of their physical store using digital tools. In the digital era, smart retail technology (hereafter, SRT) has gained popularity in the retail industry [1]. SRT leads to intelligent collaboration between retailers and customers through increased interaction in real-time. Adopting SRT allows retailers to gain valuable insights into consumer characteristics, transactions, needs, preferences, and behaviors, enabling them to customize the shopping experience and provide superior customer service [2]. SRT has been implemented in foreign countries, and its impact on customers' attitudes and behavioral intentions has been studied in sparse research [3].

Previous research has explored the factors that influence consumers' acceptance and adoption of Smart Retail Technology (SRT) and its impact on their shopping experience and behavior. For instance, Isharyani et al. [4] employed a theoretical framework that established a connection between the smart consumer experience and the purchase intention of consumers in smart retail.

However, previous research has some limitations. For instance, most research focuses on the relationship between a consumer's shopping experience and SRT-use behavioral intent without linking it to consumer purchase intent in smart retail. In addition, while some studies have looked at the cognitive and emotional aspects of SRT adoption, future research should further investigate the determinants of customer adoption and continued use of technology products. This study is to fill this gap by building a conceptual framework to examine the relationship between customer perceived value derived from SRT and customer loyalty along with factors influencing consumer attitudes and behavioral intentions toward SRT. The results of this study will provide valuable insights for retailers on how to implement SRT effectively to enhance retail store loyalty and performance.

2. Methodology

Conceptual frameworks are products of qualitative processes of theorization. Grounded theory is adequate for conceptual framework building due also to its primary characteristics. Therefore, in this article, we used grounded theory methodology rather than a description of the targeted phenomenon and the data [5]. It builds a "context-based, process-oriented description and explanation of the phenomenon, rather than an objective, static description expressed strictly in terms of causality. Based on extensive multidisciplinary literature, we build a conceptual framework [6]. To explore the process of building conceptual frameworks, we first define the terms concept and conceptual framework and then outline the processes and procedures of conceptual framework building. A conceptual framework can be developed through an eight-phase qualitative process of analysis, referred to here as conceptual framework analysis. It includes identifying text types and other sources of data, such as existing empirical data and practices. The sources of data are theories generated by theories in multiple disciplines, which become the empirical data of the conceptual framework analysis carried out in the article. Then, we categorize the concepts and integrate and group together concepts that have similarities to one new concept. Finally, we synthesize concepts into a theoretical framework.

3. Theoretical background

3.1. Smart retail technology

Smart Retail Technology (SRT) is a groundbreaking technology that has transformed the retail industry by providing customers with a truly personalized and immersive shopping experience [7]. SRT involves the intelligent utilization of technology in retail, fostering a smart collaboration between retailers and consumers through enhanced real-time interaction. With the adoption of SRT, retailers gain valuable insights into various aspects of consumer behavior, including characteristics, transactions, needs, preferences, and behaviors. This deeper understanding empowers retailers to customize the shopping experience and deliver exceptional customer service [2].

SRT encompasses an interactive retail system that leverages a network of smart objects and devices to deliver retail services to consumers. These interconnected devices could sense the surrounding environment and engage in real-time data collection, communication, interaction, and feedback [8]. The integration of SRT can extend throughout the entire retail environment, from product displays to shopping aisles, and even encompass fully immersive retail stores. As an example, Rebecca Minkoff has recently unveiled a groundbreaking 'connected wall' featuring a mirrored screen. This state-of-the-art technology empowers shoppers to virtually test out clothing, assemble ensembles from the store's selection, ask for coordinating items, place beverage orders, and even engage with various social media platforms [9]. Such advancements in SRT exemplify a significant leap in utilizing information technology within the retail sector, seamlessly integrating the physical and digital dimensions to provide customers with a truly tailored shopping experience that meets their specific needs [10].

Accordingly, selling activities transform with the emergence of smart technologies. Consumers can now access products and services beyond the confines of physical stores, with direct access available from home, mobile devices, or storefront windows. The role of physical shopping assistants is also altered, as technology either replaces or supports their functions. Interactions between customers, retailers, and products are facilitated through smart technologies, ensuring updated information and support for salespersons' tasks [1].

Research on smart retail often focuses on the study of accepting smart retail technology. Researchers typically apply familiar models to explain customers' acceptance of smart retail technology, such as the Technology Acceptance Model (TAM), the Theory of Planned Behavior (TPB), or other models like the Unified Theory of Acceptance and Use of Technology (UTAUT). The main idea of those models is to perceive customers' acceptance of smart retail technology as a consequence of the characteristics of this technology [7]. However, based on our understanding derived from the analysis of current studies on smart retail technology, there is limited research that specifically analyzes the creation of customer value and its impact on customer loyalty. This highlights the need for comprehensive research on this topic.

3.2. Value-based adoption theory

The Value-Based Adoption Model (VAM) is a theoretical framework proposed by Kim et al. [11] to address the limitations of the Technology Acceptance Model (TAM) in explaining the adoption of new information and communication technologies (ICTs). The VAM is grounded in the concept of perceived value, which is defined as "the consumer's overall assessment of the utility of a product (or service) based on perceptions of what is received and what is given" [12]. The VAM model incorporates the concepts of perceived benefits, sacrifices, and perceived value to explain the technology adoption behavior of service consumers based on the TAM [13]. Kim et al. [11] argued that the TAM is limited in explaining the adoption of new technology, as it considers ICT users solely as technology users rather than consumers. The VAM addresses this limitation by considering the consumer's cost and risk in adopting new technology, and by examining the perceived value of the technology from the consumer's perspective.

Since its introduction, the VAM has been used in a variety of research contexts, including Internet shopping [14], tourism [15], hospitality [16], wearable devices [17], smart homes [18], social commerce [19], and AI-based products [20]. For instance, Chung and Koo [15] used VAM to examine the adoption of mobile applications by tourists. They found that the perceived value of the mobile application had a significant impact on adoption intention, with both perceived benefits and sacrifices influencing the perceived value. Another study by Yang et al. [17] used the VAM to explore the adoption of wearable devices. They found that perceived value significantly influenced intention to use, with both perceived benefits and sacrifices playing a role in shaping perceived value.

According to the VAM, studies indicated that perceived advantage and perceived novelty could be intrinsic motivations, while perceived enjoyment is an extrinsic motivation in the context of studying the adoption of new technology [7, 18]. These motivations can be categorized as "perceived benefits" and contribute to the overall perceived value, which subsequently influences the intention to adopt new technologies [13, 18]. Previous studies have also recognized the impact of these motivations on users' perceived value and intention [21, 22]. Besides, perceived sacrifices encompass non-monetary aspects such as time, effort, and psychological costs associated with using SRT [11]. Similarly, perceived complexity is akin to the perceived ease of use construct in the Technology Acceptance Model (TAM) and refers to users' understanding of the sophistication of SRT compared to other means of experiencing the destination. Additionally, perceived risk is a crucial element and pertains to users' perception that using SRT may involve factors beyond their control. Consequently, this study considers perceived benefits (including perceived novelty, perceived advantage, and perceived enjoyment) and perceived sacrifices (including perceived complexity and perceived risk) as factors influencing the perceived value of using SRT.

The use of the VAM model in this study is a reasonable and appropriate choice for investigating the influences of SRT on customer retail store loyalty. The VAM model is a well-established research framework that has been extensively used in various research studies to analyze the relationships between variables and identify the most significant factors influencing a particular phenomenon. It is a suitable theoretical framework because it takes into account the perceived value of a product or service, including benefits and sacrifices, which is highly relevant in understanding consumers' adoption and loyalty behavior towards new technology in the retail industry. Furthermore, VAM has been successfully applied in various studies related to consumer behavior, including in the context of technology adoption, tourism, and hospitality. This suggests that its applicability in this study is highly promising. By utilizing VAM in an integrated theoretical framework approach, this study may provide valuable insights into the relationship between SRT and retail store loyalty.

3.3. SOR (Stimulus-Organism-Response) Model

The SOR (Stimulus-Organism-Response) model was initially proposed by Mehrabian and Russell [23] as a framework suggesting that certain environmental aspects can affect an individual's emotional and cognitive state, leading to particular behavioral outcomes. The model was later modified by Jacoby [24] to reflect changes in the field of consumer behavior.

In the S-O-R model, stimulus refers to any external factor that can influence an individual's internal state. Organism, in this model, represents the affective and cognitive state of the individual caused by the stimulus. The response, the final component of the S-O-R model, refers to the observable behavior of the individual, which can be approach or avoidance behavior [25]. The S-O-R framework has also been used in various studies on consumer experience [26, 27] and elaborates on the various behaviors of customers [28, 29].

In the present study, the SOR model is applied to examine the relationship between SRT and retail store loyalty. The stimuli, in this case, refer to the characteristics of SRT in retail stores, while the organism component includes the cognitive responses of customers to these stimuli. The response component involves behavioral outcomes, such as retail store loyalty.

Overall, the SOR model is an appropriate framework for examining the influences of SRT on retail store loyalty. The model provides a comprehensive approach to understanding the relationship between stimuli, organisms, and responses, which can help to gain insights into the complex dynamics of consumer behavior in the context of SRT in the retail industry.

4. Research model and hypotheses development

4.1. Perceived novelty and perceived value

Perceived novelty is the extent to which consumers perceive a technology or innovation to be unique and new in helping them accomplish shopping tasks more enjoyably compared to existing retail technologies [30]. Perceived novelty is a crucial factor in understanding human behavior and decision-making in various fields such as tourism, and marketing.

In the retail sector, the concept of perceived novelty has been widely discussed in the literature as a critical factor in influencing people's attitudes and behaviors towards new products and technology such as SRT [7]. When consumers encounter SRT, they are likely to experience a sense of novelty and interest, as the technology provides a unique and personalized shopping experience [31]. This novelty can generate curiosity and interest in new products or technology, leading to an increase in perceived value. Based on those arguments, this study proposes that perceived novelty associated with SRT positively influences consumers' perceived shopping value through SRT, as it creates a sense of novelty and interest, provides enhanced interactivity and control, and enables personalized customer service. Therefore, the following hypothesis is suggested:

H1: Perceived novelty of SRT positively affects the consumers' perceived value of SRT.

4.2. Perceived advantage and perceived value

Perceived advantage refers to how potential adopters perceive the innovation as superior to existing conditions, and this positive perception serves as a motivation to adopt the innovation. The extent of the relative advantage is often measured in terms of profitability, cost reduction, or transaction acceleration [32].

Perceived advantage is a crucial factor in the adoption of new technologies and innovations in various fields, including business, marketing, and technology. Several studies have investigated the impact of relative advantage on the adoption of e-commerce, mobile payment systems, and social media platforms. For instance, Rawash [33] used the DOI theory and TOE framework and found that perceived advantage positively influenced SMEs' adoption of e-commerce. Similarly, Setiyani and Rostiani [34] found that relative advantage had a positive effect on technology and the intention to adopt e-commerce. Therefore, the following hypothesis is suggested:

H2: Perceived advantage of SRT positively affects the consumers' perceived value of SRT.

4.3. Perceived enjoyment

Perceived enjoyment is a concept that has been extensively studied in the fields of consumer psychology and technology. Perceived enjoyment refers to how much someone finds the act of using a system enjoyable by itself [35]. When a person experiences positive emotions while using a service, they are naturally motivated to keep using it [36].

In the retail sector, Chen et al. [37] investigated the influences of virtual reality shopping characteristics on consumers' impulse buying behavior and found that perceived enjoyment was positively related to impulse buying behavior in virtual reality shopping environments. Accordingly, perceived enjoyment may have a positive influence on consumers' perceived value through SRT. If consumers perceive SRT as an enjoyable and pleasurable experience, they are likely to have a positive perception of the value they receive from their shopping experience. Therefore, perceived enjoyment associated with SRT is likely to positively influence consumers' perceived shopping value through SRT [38]. Therefore, the following hypothesis is suggested:

H3: Perceived enjoyment of SRT positively affects the consumers' perceived value of SRT.

4.4. Perceived complexity and perceived value

Perceived complexity is a critical factor that influences the adoption of various technologies, especially in the financial services industry and e-commerce. When technologies seem complex, users may react negatively when adopting them. Prior studies suggested that complexity could act as a significant barrier to the intention to adopt an innovation and discourage adoption [39].

In the case of SRT, it has the potential to enhance the shopping experience for consumers by providing personalized insights into their preferences and behaviors. However, if consumers perceive SRT as complex or challenging to use, it may negatively impact their perceived shopping value through the technology [40]. A perceived complexity barrier could lead to frustration and a negative shopping experience, resulting in a lower perceived value. Thus, it is reasonable to hypothesize that

the perceived complexity associated with SRT negatively influences consumers' perceived shopping value through SRT. Therefore, the following hypothesis is suggested:

H4: Perceived advantage of SRT positively affects the consumers' perceived value.

4.5. Perceived risk and perceived value

Perceived risk refers to the uncertainty that people feel about the potential outcomes of a particular action or decision [41]. When faced with a risky situation, individuals typically want to avoid any potential losses and may take certain actions to mitigate the perceived risk. Perceived risk is a crucial factor that influences consumer behavior and decision-making in various fields, including business, marketing, finance, IoT, e-commerce, and technology. Different studies have been conducted to understand the impact of perceived risk on consumer behavior and intention [42, 43]. For instance, Roy et al. [3] used the theory of planned behavior to test the hypothesis that perceived risk has a negative direct effect on behavioral intentions toward SRT. The results supported this hypothesis, indicating that the higher the perceived risk, the lower the behavioral intention of consumers toward SRT.

Based on the findings of prior studies, it can be seen that any increase in perceived risk can make consumers hesitant to use SRT due to concerns about potential negative consequences, such as financial loss, privacy breaches, or technical issues. Therefore, this study hypothesized that perceived risk associated with SRT negatively influences consumers' perceived shopping value through SRT. the following hypothesis is suggested:

H5: Perceived risk associated with SRT negatively influences consumers' perceived shopping value through SRT.

4.6. Perceived value and retail store loyalty

Retail store loyalty is a complex concept that has been the subject of extensive research. Traditionally, loyalty has been understood to consist of two distinct components: attitudinal and behavioral loyalty [44]. Attitudinal loyalty relates to consumers' psychological disposition towards a specific brand or store, and it involves measuring consumer attitudes and emotional attachment [45, 46]. On the other hand, behavioral loyalty captures customer tendencies based on their past purchases or patronage of the same brand or store and the likelihood of future purchases [47]. Understanding and enhancing retail store loyalty is crucial for retailers as it directly impacts customer retention and revenue generation. By identifying the drivers of retail store loyalty, retailers can develop targeted strategies to foster repeat purchases and strengthen customer relationships. Additionally, measuring and tracking behavioral loyalty enables retailers to assess the effectiveness of their marketing initiatives and identify opportunities for improvement.

Prior studies have shown that perceived value is crucial in determining a customer's attitude and behavioral intention toward the service provider. Perceived value pertains to a customer's holistic evaluation of a product or service, determined by their perception of what they received about what they provided. Perceived value is an evaluation of the benefits of a product or service based on the customer's pre-purchase sacrifices and post-purchase satisfaction [48]. Perceived value is also linked to customer satisfaction and serves as an extrinsic signal of quality [49].

When customers believe that the price of the service is reasonable, it can generate a favorable impression of the service provider, resulting in a willingness to make purchases from them. This willingness to buy can further develop into strong purchase intentions, eventually leading to customer behavioral loyalty [49]. Various studies have also established that perceived value has a positive impact on customer loyalty. For instance, Ngo et al. [50] found that perceived value had a positive impact on customer engagement, and customer engagement, in turn, had a positive impact on customer loyalty. Another study on the factors influencing the intention to adopt cryptocurrency among university students found that perceived value positively affects individuals' attitudes toward using cryptocurrency. In the context of convenience stores, Cuong and Khoi [51] investigated the effect of brand image and perceived value on satisfaction and loyalty. Given the benefits that SRT can provide, including the ability to customize the shopping experience and provide superior customer service, this study hypothesized that the perceived value associated with SRT can positively influence consumers' retail store loyalty.

H6: Perceived value associated with SRT can positively influence consumers' retail store loyalty.

4.7. Perceived value and eWOM

eWOM is any statement made by potential, actual, or previous customers about a product or company that is disseminated over the Internet, including social networking sites and online consumer opinion platforms [52]. According to previous studies, if users perceive a high value in using a product or service, which positively affects customer satisfaction, they are more likely to continue using it habitually and recommend it to others through word-of-mouth (WOM) activities [53, 54]. In the context of contactless payment methods, Zhong and Moon [55] showed that if customers perceive a high value in using these payment methods, they are more likely to have positive experiences and recommend them to others through eWOM.

Previous research has shown that perceived value positively influences eWOM activities and recommendation intentions, indicating that the value of a product or service is a significant factor that can positively influence eWOM [56, 57].

The adoption of SRT in the retail industry can lead to a higher perceived value for consumers, which can positively influence their overall satisfaction with the shopping experience and, consequently, result in positive electronic word-of-mouth (eWOM) from satisfied customers. Firms that focus on delivering high perceived value through SRT are more likely to benefit from positive eWOM, leading to increased brand awareness, customer loyalty, and improved business performance. Therefore, this study hypothesized that the perceived value associated with SRT can have a significant impact on consumers' eWOM intentions.

H7: Perceived value associated with SRT can positively influence eWOM intention.

Based on our hypotheses and extant literature, we

propose the following conceptual model (Figure 1).

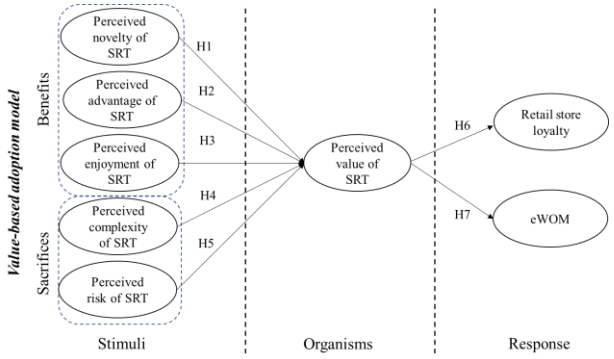

Figure 1. *Research framework*

5. Discussion

The mechanism of customer behavior when using SRT is still vague. An integration of diverse and varied literature found in international journals over the last five decades may contribute to facilitate a better understanding of customer loyalty and mechanism for this concern. It can be stated that customer experience on SRT is depicted as having a complex mixture of benefits (i.e., perceived novelty, perceived advantage, and perceived enjoyment) and sacrifices (i.e., perceived complexity, perceived risk) element. In addition, the conducted literature review outlines the fact that the majority of studies focused on the impact of SRT on its usage. Consumers' perceptions about the usefulness, ease of use, relative advantage, and enjoyment influence the adoption and usage of SRT [40]. In addition, their actual experience with the value of SRT dominates customers' eWOM and loyalty [2]. Therefore, we can conclude that to create customer loyalty and their positive voice, the firm must first promote customer experience with SRT in their buying behavior [3, 7, 10, 11]. For this view, a conceptual framework of customer experience with SRT is developed and proposed in the article.

6. Conclusion

Given the changing role of customers and their potential to become a firm's loyal ambassador, this study undertakes a comprehensive review of both the antecedents and mechanism for customer loyalty. Using the grounded theory method, the research proposes a conceptual model in which five factors affecting the perceived value of a customer on SRT and, consequently, their loyalty behavior as well as their positive eWOM are identified. This study thus provided a more holistic approach to the customer's perception when using SRT. However, since the article focuses only on theoretical aspects, empirical evidence should be provided in future research to prove the proposed framework.

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