INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES

Vol 15, Issue 3, (2025) E-ISSN: 2222-6990

A Literature Review on the Impact of SOR Theory on the Retail Industry and its Applicability in Studying Blockchain Technology's Influence on Consumer Loyalty

Yue Su, Poh-Chuin Teo

Azman Hashem International Business School, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia

To Link this Article: http://dx.doi.org/10.6007/IJARBSS/v15-i3/25102 DOI:10.6007/IJARBSS/v15-i3/25102

Published Date: 22 March 2025

Abstract

The Stimulus-Organism-Response (SOR) theory has had a significant impact on research in the retail industry, providing a solid theoretical foundation for analysing consumer behaviour and loyalty (Khan et al., 2024; Ho et al., 2024; Duong et al., 2024; Abumalloh et al., 2024). As blockchain technology, with its key characteristics of cost efficiency, transaction transparency, and data security, continues to reshape consumer trust patterns, its influence on the retail sector has become increasingly prominent, particularly in highly digitalized markets (Guo & Yu, 2022; Ismail, 2023). The impact of blockchain technology on consumers' perceived level and brand loyalty has garnered growing academic attention (Rejeb et al., 2020; Maseke, 2024; Vazquez et al., 2025). The SOR theory provides a systematic approach to explaining how blockchain technology, as an external stimulus, influences consumer psychological cognition and ultimately shapes loyalty behaviours (Ho et al., 2024; Mu & Yi, 2024). This study systematically reviews the application of the SOR theory in blockchain-enabled retail environments, focusing on its role in consumer trust, decision-making processes, and long-term loyalty (Banerjee et al., 2024; Wu et al., 2024). The findings not only provide theoretical support for academic research but also offer practical guidance for retail enterprises to optimize blockchain strategies, enhance consumer loyalty, and strengthen market competitiveness (Duong et al., 2025; Anudeep et al., 2024).

Keywords: Blockchain Technology, Stimulus-Organism-Response (SOR) Theory, consumers' perceived level, Consumer Loyalty, Marketing Research

Introduction

In the context of the rapid development of the digital economy, consumer behaviour patterns are being profoundly influenced by emerging technologies. As one of the most transformative innovations in recent years, blockchain technology, with its decentralization, transparency, and security, is being widely applied in the retail industry (Hoang *et al*., 2025).

However, although blockchain technology has demonstrated significant potential in supply chain management, payment systems, and consumer trust mechanisms, how it truly influences consumer behaviour and subsequently shapes brand loyalty remains lacking in systematic theoretical support and in-depth empirical research. This research gap leaves enterprises without clear direction in implementing blockchain strategies and simultaneously limits the academic community's understanding of the behavioural driving mechanisms of this technology in the retail industry.

Against this backdrop, the SOR theory provides a highly applicable analytical framework. In the retail industry, the formation of consumer behaviour is typically influenced by the technological environment (S), consumers' psychological perceptions (O), and their final behavioural responses (R). Therefore, when exploring the impact of blockchain technology on consumer behaviour in the retail sector, the SOR theory serves as a highly suitable theoretical foundation (Khan *et al*., 2024; Ho *et al*., 2024; Duong *et al*., 2024).

With its core characteristics of cost efficiency, transaction transparency, and data security, the widespread application of blockchain technology is fundamentally reshaping consumer trust patterns in the retail industry. As blockchain technology continues to evolve, researchers and retail enterprises are gradually recognizing its potential value in optimizing consumer behavioural pathways and enhancing brand loyalty (Guo & Yu, 2022; Ismail, 2023; Anudeep *et al*., 2024; Souto *et al*., 2025). Particularly in China's highly digitalized and large-scale retail environment, blockchain-based applications not only improve supply chain transparency and data traceability but also enhance consumer trust and brand loyalty through decentralized mechanisms.

Meanwhile, the impact of blockchain technology on consumers' perceived value has become a hot topic in academic research (Rejeb *et al*., 2020; Maseke, 2024; Vazquez *et al*., 2025). Studies indicate that blockchain's security, immutability, and decentralized payment mechanisms influence consumers' perceptions of brands, thereby shaping their brand loyalty. However, consumers' awareness and acceptance of blockchain technology may also be influenced by technological complexity, user experience, and perceived risks, which in turn determine their long-term reliance on brands.

Therefore, this study will systematically review the SOR theory and its applications in the retail industry, with a particular focus on exploring the impact of blockchain technology on retail consumer behaviour (Abumalloh *et al*., 2024; Wu *et al*., 2022; Alamoudi *et al*., 2025). On this basis, this study not only expands the applicability of SOR theory in the context of digital technology but also deepens the research perspective on how blockchain shapes consumer behaviour and brand loyalty, providing a solid theoretical foundation for future related research. Furthermore, the findings of this study will help retail enterprises gain a more comprehensive understanding of the role of blockchain technology in optimizing consumer experiences and provide theoretical guidance for effectively leveraging blockchain technology to enhance brand competitiveness.

Review of Literature

SOR Theory

The SOR theory aims to explain how individuals respond to specific stimuli. This model posits that human behaviour is driven by external stimuli, while internal factors within the individual mediate responses to these stimuli (Song *et al*., 2021; Brendl & Sweldens, 2024).

The SOR theory evolved from the earlier Stimulus-Response (SR) theory, which was introduced by Russian physiologist Ivan P. Pavlov in the early 20th century. At the end of the 19th century, Pavlov pioneered the SR theory through his research on conditioned reflexes (White, 1993). The SR theory primarily focused on the direct relationship between stimuli and behavioural responses, arguing that environmental stimuli directly trigger individual behavioural reactions, with different stimuli eliciting different responses. This theory emphasizes the direct impact of external stimuli on behaviour and is characterized by its simplicity and straightforwardness (Xiao *et al*., 2023; Fakfare *et al*., 2024).

With continued research by scholars such as John B. Watson (1913), Edward C. Tolman (1932), Kurt Lewin (1947), and B.F. Skinner (1953), the SR model gradually evolved into the SOR model (Luthans, 2011; Kexin & Teo, 2023). The SOR framework posits that environmental attributes stimulate an individual's cognitive and emotional states, which in turn drive behavioural responses (Lin, 2022; Li & Gu, 2024).

This framework has been widely applied across multiple fields, including the computing industry (Sarılgan *et al*., 2022; Abumalloh *et al*., 2025), advertising (Hussain *et al*., 2023; Banerjee et al., 2024), retail and e-commerce (Saricam, 2023; Erensoy *et al*., 2024), the financial sector, and other areas of consumer behaviour research (Han *et al*., 2022; Behera & Dadra, 2024).

In the context of applying SOR theory to studying the impact of blockchain technology on consumer loyalty, blockchain-related attributes often serve as the stimulus component within the SOR framework (Eroglu *et al*., 2001; Ho *et al*., 2024; Fortagne & Lis, 2024).

SOR Theory in Retail Industry

The study by Donovan and Rossiter (1982) systematically examined the impact of store atmosphere on consumer emotions and purchasing behaviour, demonstrating that environmental factors (such as lighting, music, and layout) can effectively enhance consumers' shopping experiences and further strengthen their loyalty. Reichheld et al. (2000) explored the formation mechanisms of customer loyalty in the context of e-commerce, emphasizing that despite the transformation of business models, traditional commercial principles remain applicable to digital environments, with service quality being a core element in maintaining consumer loyalty.

Eroglu et al. (2001) extended the SOR theory to online retail environments, proposing that atmospheric elements of online platforms (such as page design and interactive experiences) can influence consumers' emotional states and promote the formation of loyalty. Baker et al. (2002) further explored the role of retail environmental cues (such as store displays and service atmosphere) in consumer perceived value and repurchase intentions, concluding that these cues have a direct facilitating effect on consumer loyalty.

Kumar and Shah (2004) focused on building and maintaining profitable customer loyalty in the 21st century, highlighting the need for enterprises to continuously optimize customer experiences during digital transformation to ensure long-term competitiveness. Mummalaneni (2005) further examined how website features shape consumer loyalty by influencing their emotional states, identifying website usability, interactivity, and visual design as critical factors in enhancing consumer loyalty. Richard (2005), using the SOR theory, analysed the influence of internet environmental factors on online shopping behaviour, revealing that website atmosphere not only shapes consumers' shopping experiences but also significantly enhances brand loyalty.

In the retail banking sector, Lewis and Soureli (2006) explored the antecedents of consumer loyalty, identifying trust, brand image, and customer relationship management as key drivers. Jang and Namkung (2009), based on the SOR theory, analysed the influence of perceived quality and emotions on consumer behaviour, finding that high-quality products and services evoke positive consumer emotions, which in turn strengthen their loyalty.

Koo and Ju (2010) examined the interaction between atmospheric factors (such as colour and page design) and consumer perceived curiosity in online shopping environments, discovering that this relationship directly affects shopping intentions and brand loyalty. Lin (2010) studied the impact of environmental cues (such as colour and music) on consumer emotional responses, showing that different colour and music combinations significantly influence emotional experiences and subsequent shopping behaviour. Chang et al. (2011), employing the SOR theory, investigated the effects of external stimuli (such as store layout and product placement) on consumer behaviour in retail environments, finding that enhanced hedonic motivation promotes impulse buying behaviour and further strengthens consumer loyalty.

Vieira (2013), through meta-analysis, systematically summarized the application of the SOR theory in retail environments, concluding that environmental stimuli, such as service quality, product displays, and store atmosphere, positively influence consumer emotions and loyalty. Izogo et al. (2017), in their study on Nigeria's retail banking sector, validated the direct impact of relationship quality (such as service quality and customer satisfaction) on customer loyalty, emphasizing the importance of high-quality services in increasing consumer retention.

In recent applications of the SOR theory, Alam and Noor (2020) examined millennial consumer loyalty in Bangladeshi supermarkets, finding that service quality and corporate image (as stimulus factors) indirectly enhanced consumer loyalty (response) through customer satisfaction (organism). Wu et al. (2024) investigated customer experiences in fully online banking, highlighting that the SOR theory can be used to analyse the impact of experience factors and Net Promoter Score (NPS) ratings on customer loyalty.

Erensoy et al. (2024) conducted a study on consumer behaviour in virtual reality (VR) retail environments, demonstrating that the SOR theory systematically explains how immersive shopping experiences influence consumer loyalty. Saewanee et al. (2024) examined customer retention mechanisms on e-commerce platforms, concluding that the SOR theory effectively explains how platform design shapes consumer loyalty. Banerjee et al.

(2024) further explored how online retail website experiences influence consumers' brand happiness and willingness to share data through the SOR theory, providing new theoretical insights for digital marketing strategies.

Additionally, Mu and Yi (2024) investigated the impact of direct-selling marketing models on consumer loyalty, finding that in digital intermediary environments, consumer loyalty is primarily driven by brand value and interactive experiences. Their study further validated the applicability of the SOR theory in explaining consumer behaviour dynamics in digital retail environments.

SOR Theory in Blockchain Technology and Retail Indust

Deloitte (2015) explored the application of blockchain in customer loyalty programs, finding that blockchain can enhance the transparency of reward programs, reduce costs, and improve consumer trust in brands. Dou et al. (2024) integrated the SOR theory with the Information Systems Success Model to examine how blockchain technology enhances consumer loyalty through perceived transparency and security, revealing that blockchain plays a positive role in the stimulus-organism-response chain.

Su et al. (2024) further analysed the impact of blockchain on consumers' perceived value, demonstrating that blockchain technology enhances consumer loyalty by increasing information transparency and data security. Shahzad et al. (2024) investigated consumer concerns in mobile food delivery applications, finding that the SOR theory can be applied to analyse the role of blockchain technology in food safety transparency. Ho et al. (2024) studied the impact of blockchain on consumers' organic food purchase intentions in Vietnam by integrating the Information Systems Success Model with the SOR theory, identifying blockchain transparency as a key factor in strengthening trust.

Abumalloh et al. (2025) examined the relationship between technological trust and the intention to use the metaverse (blockchain), finding that the SOR theory explains how user trust in emerging technologies influences adoption intentions. Cheng et al. (2024) explored Indonesian e-commerce consumer behaviour, revealing that the SOR theory effectively explains how digital platform design shapes consumer loyalty. Anudeep et al. (2024) studied blockchain-driven loyalty programs, demonstrating that the SOR theory can be applied to analyse customer reward mechanisms in retail marketing.

Chen, Yang, and Lyu (2024), using the SOR theory, investigated how perceived value, perceived risk, identity, and scarcity influence consumers' purchase intentions for digital collectibles. Duong et al. (2025) explored how blockchain technology impacts consumers' organic food consumption, emphasizing the mediating role of blockchain trust and information transparency within the SOR theory.

However, research on the application of the SOR theory in examining the impact of blockchain technology on consumer loyalty in the retail industry remains in its early stages, with only a limited number of studies emerging in 2024. Overall, research in this area is still relatively scarce. Nevertheless, it is evident that the SOR theory provides a solid theoretical foundation for explaining consumer behavioural patterns and their driving forces in a blockchain-enabled environment.

Conclusion

As described in the previous literature review, numerous scholars have conducted research on consumer behaviour and attitudes in the retail industry based on the Stimulus-Organism-Response (SOR) theory, achieving remarkable progress. However, within the framework of the SOR theory, research that positions blockchain technology as a stimulus to explore consumer emotions, perceptions, and behaviours remains in its early stages.

With the accelerated digital transformation of the retail industry, blockchain technology is reshaping the interactions between businesses and consumers. The SOR theory has also gained widespread attention in studies on consumer loyalty in the retail sector, providing theoretical support for examining how blockchain technology functions as an external stimulus to influence consumer perception and behavioural responses. Consumers' perceptions of blockchain technology's security, traceability, and transaction transparency affect their trust in retail enterprises, ultimately determining their brand loyalty.

Furthermore, the SOR theory offers valuable insights for industry practice, enabling retail businesses to predict the potential impact of their blockchain application strategies on consumer trust and loyalty. Therefore, future researchers should further explore and investigate the application of the SOR theory in blockchain-driven retail, examining multiple perspectives such as consumer trust, payment security, and brand loyalty to reveal how blockchain optimizes customer relationship management models in the retail industry.

Based on the research findings, this study provides significant reference value for the retail sector, particularly in blockchain-enabled smart retail and consumer loyalty programs. With the SOR theory as the theoretical foundation, these studies offer a deeper understanding of consumer behavioural patterns and their driving forces in a blockchain environment. This research not only provides guidance and reference for future scholars in the field of blockchain applications in retail but also helps businesses and consumers gain a more profound understanding of the impact of blockchain technology on consumer loyalty, optimizing brand strategies and enhancing market competitiveness.

References

Abumalloh, R. A., Halabi, O., & Nilashi, M. (2025). The relationship between technology trust and behavioral intention to use Metaverse in baby monitoring systems' design: Stimulus-Organism-Response (SOR) theory. *Entertainment Computing*, *52*, 100833.

Alam, M. M. D., & Noor, N. A. M. (2020). The relationship between service quality, corporate image, and customer loyalty of Generation Y: An application of SOR paradigm in the context of superstores in Bangladesh. Sage Open, 10(2), 2158244020924405.

Alamoudi, H., Glavee-Geo, R., Alharthi, M., Doszhan, R., & Suyunchaliyeva, M. M. (2025). Exploring trust and outcome expectancy in FinTech digital payments: insights from the stimulus-organism-response model. International Journal of Bank Marketing.

Anudeep, C., Santosh, K., Kumar, M. S., Jahnavi, M., Sabareesh, R., & Bala, B. K. (2024, April). Constructing a Blockchain-Based Loyalty Program Model for Secure and Transparent Customer Rewards in Retail Marketing. In 2024 IEEE 13th International Conference on Communication Systems and Network Technologies (CSNT) (pp. 241-247). IEEE.

Baker, J., Parasuraman, A., Grewal, D., & Voss, G. B. (2002). The influence of multiple store environment cues on perceived merchandise value and patronage intentions. Journal of Marketing, 66(2), 120-141.

Banerjee, S., Shaikh, A., & Sharma, A. (2024). The role of online retail website experience on brand happiness and willingness to share personal information: an SOR perspective. Marketing Intelligence & Planning, 42(3), 553-575.

Chang, H. J., Eckman, M., & Yan, R. N. (2011). Application of the Stimulus-Organism-Response model to the retail environment: The role of hedonic motivation in impulse buying behavior. The International Review of Retail, Distribution and Consumer Research, 21(3), 233-249.

Chen, H., Yang, Z., & Lyu, T. (2024). Empirical Investigation of Digital Collectibles Purchase Intention: The Roles of Value, Risks, Identification, and Scarcity. International Journal of Human–Computer Interaction, 1-20.

Cheng, K. M., Wijaya, L., Ng, K. C., & Anthonysamy, L. (2024). Decoding consumer behaviour in Indonesian e-commerce: A stimulus-organism-response analysis. Journal of Telecommunications and the Digital Economy, 12(4), 45-65.

Deloitte. (2015). Making blockchain real for customer loyalty rewards programs. Deloitte Insights.

Donovan, R. J., & Rossiter, J. R. (1982). Store atmosphere: An environmental psychology approach. Journal of Retailing, 58(1), 34-57.

Dou, Y., Teo, P. C., & Khalid, H. (2024). How Blockchain-Enabled Drivers Stimulate Consumers' Organic Loyalty: Integrating the Information System Success Model with the SOR Paradigm. Journal of Retailing & Consumer Services.

Duong, C. D., Dao, T. T., Vu, T. N., Ngo, T. V. N., & Nguyen, M. H. (2024). Blockchain-enabled food traceability system and consumers' organic food consumption: A moderated mediation model of blockchain knowledge and trust in the organic food chain. Sustainable Futures, 8, 100316.

Duong, C. D., Nguyen, T. H., Ngo, T. V. N., Dao Thanh, T., & Tran, N. M. (2025). Blockchain technology and consumers' organic food consumption: a moderated mediation model of blockchain-based trust and perceived blockchain-related information transparency. Journal of Asia Business Studies, 19(1), 54-78.

Erensoy, A., Mathrani, A., Schnack, A., Elms, J., & Baghaei, N. (2024). Consumer behavior in immersive virtual reality retail environments: A systematic literature review using the

stimuli-organisms-responses (S-O-r) model. Journal of Consumer Behaviour, 23(6), 2781-2811.

Eroglu, S. A., Machleit, K. A., & Davis, L. M. (2001). Atmospheric qualities of online retailing: A conceptual model and implications. Journal of Business Research, 54(2), 177-184.

Ho, B. D., Duong, D. C., Ngo, V. N. T., Nguyen, H. M., & Bui, V. T. (2024). How blockchain-enabled drivers stimulate consumers' organic food purchase intention: An integrated framework of information systems success model within stimulus-organism-response theory in the context of Vietnam. International Journal of Human–Computer Interaction, 1-19.

Hoang, T. G., Binh, A. D. T., & Nguyen, P. T. (2025). Fashioning a Transparent Future: Blockchain Applications in the Textile and Garment Supply Chain. In *Use of Digital and Advanced Technologies in the Fashion Supply Chain* (pp. 247-266). Singapore: Springer Nature Singapore.

Izogo, E. E., Reza, A., Ogba, I. E., & Oraedu, C. (2017). Determinants of relationship quality and customer loyalty in retail banking: Evidence from Nigeria. African Journal of Economic and Management Studies, 8(2), 186-204.

Jang, S. S., & Namkung, Y. (2009). Perceived quality, emotions, and behavioral intentions: Application of an extended Mehrabian-Russell model to restaurants. Journal of Business Research, 62(4), 451-460.

Khan, A. U., Jan, S. U., Khan, M. N., Aziz, F., Sohu, J. M., Ali, J., ... & Chohan, S. R. (2024). Based on the S–O–R theory adoption intention of blockchain technology in libraries: a two-stage analysis SEM–PLS and ANN. Library Hi Tech.

Koo, W., & Ju, H. W. (2010). The interactional effects of atmospherics and perceptual curiosity on emotions and online shopping intention. Computers in Human Behavior, 26(3), 377-388.

Kumar, V. I. S. W. A. N. A. T. H. A. N., & Shah, D. (2004). Building and sustaining profitable customer loyalty for the 21st century. Journal of retailing, 80(4), 317-329.

Lewis, B. R., & Soureli, M. (2006). The antecedents of consumer loyalty in retail banking. Journal of Consumer Behaviour: An International Research Review, 5(1), 15-31.

Lin, I. Y. (2010). The interactive effect of Gestalt situations and arousal seeking tendency on customers' emotional responses: Matching color and music to specific servicescapes. Journal of Services Marketing, 24(4), 294-304.

Mu, W., & Yi, Y. (2024). The impact of characteristic factors of the direct-to-consumer marketing model on consumer loyalty in the digital intermediary era. Frontiers in Psychology, 15, 1347588.

Mummalaneni, V. (2005). An empirical investigation of Web site characteristics, consumer emotional states and online shopping behaviors. Journal of Business Research, 58(4), 526-532.

Reichheld, F. F., Markey Jr, R. G., & Hopton, C. (2000). E-customer loyalty-applying the traditional rules of business for online success. European business journal, 12(4), 173.

Richard, M. O. (2005). Modeling the impact of internet atmospherics on surfer behavior. Journal of Business Research, 58(12), 1632-1642.

Saewanee, C., Napalai, J., & Jaroenwanit, P. (2024). Factors affecting customer retention of e-marketplace industries through Stimulus-Organism-Response (SOR) model and mediating effect. Uncertain Supply Chain Management, 12(3), 1537-1548.

Shahzad, K., Zhang, Q., Zafar, A. U., Shahzad, M. F., & Liu, W. (2024). Consumers' concerns and the role of blockchain technology in mobile food delivery applications. Journal of Destination Marketing & Management, 32, 100877.

Su, Y., Teo, P. C., & Khalid, H. (2024). An Analytical Study of Blockchain Technology on Consumers' Perceived Value and Loyalty Response in Retail Industry under SOR Theory. Frontiers in Psychology.

Vieira, V. A. (2013). Stimuli-organism-response framework: A meta-analytic review in the store environment. Journal of Business Research, 66(9), 1420-1426.

Wu, Q. Z., Lien, Y. L., Tang, H. H., & Lai, M. T. (2024, June). Enhancing Customer Loyalty in Pure Internet Banking: An Analysis of Experience and NPS Shifts Using SOR Theory. In International Conference on Human-Computer Interaction (pp. 129-148). Cham: Springer Nature Switzerland.

Wu, R., Ishfaq, K., Hussain, S., Asmi, F., Siddiquei, A. N., & Anwar, M. A. (2022). Investigating e-retailers' intentions to adopt cryptocurrency considering the mediation of technostress and technology involvement. Sustainability, 14(2), 641.