

Model analysis of factors affecting customer experience in the implementation of Generation 4.0 retail

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Abstract

The aim of this research is to analyze the model of factors affecting customer experience in the implementation of generation 4.0 retail. This research is applicable in terms of purpose, and descriptive-correlational in terms of method. The statistical population includes customers of the Etaka chain store, and the sample size was determined as 384 people using the Cochran formula, and the simple random sampling method was used. The data collection tool was a researcher-made questionnaire, whose validity was confirmed by experts and its reliability was confirmed through Cronbach's alpha and composite reliability. In order to test the hypotheses and fit the conceptual model, structural equation modeling was used with AMOS software. The fit indices including CFI, GFI, IFI, and RMSEA were within acceptable limits, indicating a proper fit of the model. The research findings showed that technological progress and value creation have a significant impact on customer experience. Human and organizational factors also play an effective role in implementing Retail 4.0. Customer experience, as a key variable, plays a prominent role in improving store performance and strengthening customer relationships. The results indicate that intelligent use of new technologies, empowering human resources, and creating appropriate organizational infrastructure are essential prerequisites for achieving positive customer experience and sustainability in modern retail environments.

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Extended Abstract

Introduction

Along with the industrial revolution, the retail industry has also evolved significantly. First, in relation to Retail 1.0, large stores began to emerge along with mass production using steam power. Accordingly, consumers enjoyed low-cost products in Retail 2.0, and as a result, more shopping malls were opened. Meanwhile, in Retail 3.0, consumers enjoy online shopping globally through the Internet, and therefore, shopping behavior has changed; because now we can buy anything without leaving home. And this evidence shows that Retail 4.0 can make our lives easier and better (Ren et al., 2024).

In general, Retail 4.0 technologies include artificial intelligence, Internet of Things, cloud computing, big data analytics and augmented reality (Vhatkar et al., 2024). Artificial intelligence can replace employees in some routine jobs, while home and office applications can be managed through mobile applications thanks to the Internet of Things. The recorded data is then stored and analyzed in the cloud using self-service kiosks (Bonfer et al., 2022).

When the 4.0 generation was first introduced in the industry in 2010, it also brought the retail industry into the fourth revolution. On the other hand, Retail 4.0 seems to be a new concept for retailers around the world; when Industry 4.0 technologies such as artificial intelligence, Internet of Things, cloud computing, big data analytics, and augmented reality were implemented in the retail industry (Har et al., 2022). The level of adoption of Retail 4.0 is high in developed countries such as the United States, the United Kingdom, and Europe. However, in less developed countries, with low internet access coverage, the adoption of these technologies seems challenging for them. Consumers and businesses are unable to take advantage of the emerging e-commerce opportunities due to persistent bottlenecks and barriers such as costly broadband services, over-reliance on cash, shortage of skilled workers among the people, and government indifference. Therefore, the researcher intends to answer the fundamental question: how is the analysis of the model of factors affecting customer experience in the implementation of Retail 4.0?

Theoretical foundations

Technological advancement and customer experience

Technological advancement is recognized as one of the most important drivers of transformation in the retail industry. New technologies, including online shopping systems, mobile applications, artificial intelligence, the Internet of Things, and big data analytics, enable fast, accurate, and personalized services for customers (Mirzaee Azandariani et al., 2022). In particular, customer familiarity with technology and its ease of use improve the customer experience in interacting with the organization and increase satisfaction and trust (Alexander et al., 2022).

Organizational factors and customer experience

Organizational factors include the organization's culture, processes, structure, and strategies that shape the organization's overall performance. In retail environments, organizations that have a customer-centric culture, design their processes to respond quickly and effectively to customer needs, and have a flexible and innovative structure, and can significantly improve the customer experience (ham et al., 2021).

Effective organizational processes, such as customer relationship management systems and supply chain optimization, increase service quality and reduce customer waiting times. Intra-organizational technology infrastructures, such as integrated data mining systems, enable customer behavior analysis and forecasting of customer needs.

Behera et al., (2024) studied “Changing Customer Engagement with Artificial Intelligence in E-Marketing: An E-Retail Perspective in the Era of Retail 4.0”. The research method is

quantitative. Primary data was collected from 305 e-retail customers and analyzed using structural equations. The results showed that AI-based e-marketing can predict customer desires, provide personalized messages and offers, increase customer engagement with the brand, and enhance the digital shopping experience in Retail 4.0.

Blut et al., (2024) studied "Retail Customers' Ease of Use of Artificial Intelligence-Based Virtual Assistants: A Meta-Analysis". The meta-analysis included 2766 correlations from 244 independent samples. Data analysis showed that price value, social support, and humanization are the main drivers, and the performance of assistants varies depending on their type (intelligent/stupid, voice/text-based, avatar/non-avatar), and negative emotions play a mediating role.

Research Method

This study is applicable in terms of purpose and descriptive-correlational in terms of method. The population of the present study includes customers of the Eteka chain store, the sample size was determined as 384 people based on the Cochran formula, and the sampling method was simple random sampling. The findings from the Cronbach's alpha test are reported. To examine the validity, content validity was used and its validity was confirmed. Then, the reliability of the questionnaire was measured by distributing the questionnaire. In order to test the research hypotheses, structural equation modeling was used in the Amos statistical software platform.

Research findings

The research findings showed that technological advancement, value creation, human and organizational factors each have a positive and significant impact on customer experience and the implementation of Generation 4.0 retail. It was also found that customer experience plays an important role in increasing interaction and effective communication between the store and the customer. Finally, general and market-specific factors also significantly affect the acceptance and success of the implementation of Generation 4.0 retail.

Conclusion and Discussion

The present study showed that the success of the implementation of Generation 4.0 retail is the result of the interaction and combination of several key factors. Technological advancement and the use of digital tools improve the shopping experience of customers, while providing real value increases their satisfaction and loyalty. Employee competence and skills, service quality and effective customer interaction play an important role in the success of digital stores, and appropriate organizational management and efficient internal processes facilitate the implementation of digital transformation. In addition, adaptation to market conditions, customer behavior and the socio-economic environment is a determining factor in the acceptance and success of Generation 4.0 retail. Overall, positive customer experience, value creation and market alignment form the focal point of any successful strategy in Generation 4.0 stores. The present study showed that technological advancement directly improves customer experience. Easy access to new technologies and ease of use of digital tools increase customer satisfaction and convenience in shopping. This finding is consistent with the studies of Akbari et al. (2022) and Roustaei et al. (2023). Value creation is also a critical factor affecting customer experience. When customers receive real value from products and services, their satisfaction increases and their willingness to repurchase and loyalty is formed. The findings are consistent with the research of Mirzaee Azandariani & Arya (2022) and Akbari et al. (2022), which shows that creating a positive customer

experience is not possible without providing tangible value. Therefore, stores should focus on enhancing the value provided to customers at all stages of the purchase process.

Organizational factors have an important impact on the adoption and implementation of Generation 4.0 retail. Organizational culture, internal processes, and technology infrastructure are among the factors that facilitate the success of implementation. This finding is consistent with the studies of Aldrighetti et al. (2023) and Hoyer et al. (2020), which show that success in digital transformation is not achieved by focusing only on technology, but also by effectively managing human resources and organizational processes. Human factors also have a significant impact on the implementation of 4.0 retail. Employee empowerment and technology-related skills improve service quality and customer engagement. These results are consistent with the research of Behera et al. (2024) and Roustaei Gholpaygani et al. (2023), which shows that employee training and empowerment are crucial for the success of digital stores. Customer experience, as a key phenomenon, has a direct impact on the success of 4.0 retail implementation. A positive customer experience increases satisfaction, loyalty, and repurchase motivation; and encourages customers to interact more with the store. These findings are consistent with the results of Blut et al. (2024) and Behera et al. (2024), and show that customer experience is the focal point of any successful strategy in 4.0 stores. Market-related and general factors are also influential. Attention to customer behavior, changing tastes, social acceptance, laws and regulations, and economic conditions can ensure the success of stores. The findings are consistent with the research of Vhatkar et al. (2024) and Roustaei et al. (2023) and show that the successful implementation of generation 4.0 stores requires compatibility with environmental conditions and market needs.

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Conflicts of Interest

The authors declare that they have no financial or non-financial, personal, professional, or institutional conflicts of interest relevant to this work.

Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

AI Use Statement

The authors declare that no generative artificial intelligence (AI) or AI-assisted technologies were used in the preparation, writing, or editing of this manuscript.

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Ethics Approval

All procedures performed in this study were conducted in accordance with the ethical standards of the responsible institutional and national research committee.