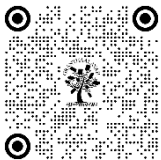


# AI-POWERED INNOVATION IN DEPARTMENTAL STORES: A STUDY OF ITS INFLUENCE ON CUSTOMER EXPERIENCE, EFFICIENCY, AND BUSINESS GROWTH

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## ABSTRACT

Several industries are changing as a result of AI-driven innovation that improves efficiency, sustainability, and decision making. This shift is occurring in East Government, Robotics, workplaces, industry and mobile networks. AI's capacity to automate processes, optimized resources, and stimulate creativity is primarily responsible for these advancements. The retail business has seen a shift thanks to artificial intelligence (AI), which has created new potential for continuous service delivery, service quality improvement, and personalization. This research papers goal is to assess AI powered innovation in department stores and how it affects consumer satisfaction, productivity, and company expansion. The present study used structural equation modelling as its methodology. The study's conclusions showed that the department stores integration has a major effect on customer satisfaction, business expansion, and efficiency.

**Keywords:** Artificial Intelligence, Departmental Store, Structural Equation Modeling

## 1. INTRODUCTION

Traditional marketing has been revolutionized by AI into sophisticated, data-driven strategies. Hypermarkets can improve customer engagement, streamline operations, and offer personalized services with the use of artificial intelligence technology like machine learning and predictive analytics. (Şenyapar, 2024). Additionally, AI enhances client interaction, communication, and service quality, all of which raise customer happiness and brand loyalty. (Kumar et al., 2020) allowing hypermarkets to handle intricate customer preferences more effectively. Additionally, although AI can provide better personalization and service quality, local customer perceptions may also have an impact on trust and happiness with various AI applications. (Gao et al., 2022; Ameen et al., 2021). But this is now understand the importance of customer experience, which strives to provide exceptional value and experience (CX) across the whole customer journey. (Maria et al., 2020). There are several touch points throughout various channels before, during, and following a transaction. By automating procedures and depending on integrated data for productive analysis, artificial intelligence (AI) has fundamentally altered the customer experience strategy. (Neha et al., 2023). This enables businesses to comprehend the preferences of their clients, offer tailored suggestions, and cultivate enduring bonds with them.

Engaging in consumer behaviour involves more than just making purchases. It also involves offering recommendations and being conversant within marketing initiatives, social, emotional, bodily, sensory, and cognitive reactions are all parts of the complex response known as the CX. Together, these affect how satisfied at ease, and a brand is perceived a customer is. The elements are used by marketers to establish unique branding and preserve customer loyalty (Maria, et al. 2020). With the advancement in technology, there is a shift in the behaviour of the consumers, making businesses bound to adopt digitalization and Omni-channel strategies so that it improves customer satisfaction and leads to their contentment with the service provided. The retailers and marketers have the opportunity to increase their brand loyalty and sales by utilising AI-powered data analytics to personalize experiences for individual consumers.

The present study has a lot of importance as it is aimed at exploring how AI-powered innovation in the departmental store enhances customer experiences and how it streamlines operational efficiency, and growth of revenue in business. It provides valuable insights for retailers to strategically implement AI for competitive advantage and sustained customer satisfaction.

## 2. REVIEW OF LITERATURE

- 1) **Patil, D. (2025)** assessed how AI will enhance customisation, predictive analytics and real-time customer engagement in retail and e-commerce. The study mentions that AI heralds a significant improvement in consumer experiences in e-commerce and retail using dynamic pricing, improved inventory management, and customized buying. Predictive analytics assists with demand forecasting and organizational efficiency, and AI-driven recommendation systems increase average order values and conversion rates. Real-time AI-enabled interactions with chatbots and voice assistants enhance customer engagement with reduced operating costs. Moreover, visual AI technology enables virtual try-ons and image-based searches to leverage online shopping. However, ethical issues such as algorithmic equity and data privacy were mentioned as significant barriers.
- 2) **El Abed, M., & Castro-Lopez, A. (2024)** examined how aspects of visual, cognitive, and emotional experience were impacted by artificial intelligence-powered technologies at a related store trial. The results show that AI-powered in-store technologies in linked stores improve aesthetic reactions when they are visited, improve absorption when navigating the flow, and increase the urge to spend.
- 3) **MayankChoubey. (2024)** examined how edge computing is revolutionising AI-enhanced customer experience (CX), highlighting how the combination of these technologies is changing how consumers engage with businesses in a variety of industries. The study showed that edge computing successfully addresses the drawbacks of traditional cloud-based systems, particularly about enhancing data privacy and reducing latency. It highlighted the effectiveness of lightweight AI models made for edge devices and provided real-world examples in sectors including retail, lodging, and IoT-enabled services. Significant obstacles were also identified by the study, such as privacy concerns, integration challenges, and hardware restrictions.
- 4) **Kanapathipillai, K., et al. (2024)** investigated how artificial intelligence (AI) affected the shopping experience at Giant Hypermarkets in Malaysia's Klang Valley. According to the study, seamless service greatly enhanced the customer experience, proving that AI's ability to streamline procedures and reduce user effort raises satisfaction. However, the consumer experience was not greatly impacted by personalisation, service quality, or customer service.
- 5) **Matharoo, S. (2024)** the author conducted this research to understand how generative AI has been impacting the retail development in the current digital era. The outcome of this study indicated that intelligent chatbots that adapt and provide a customised experience, are the most significant impact of generative AI and the reason for enhancement for consumer experience. The optimisation of the individuals and inventory management improves operational efficiency in turn lowering cost and boosting profitability. The author further concluded that an increase in revenue and a decline in operating cost are the most significant financial benefits of generative AI.
- 6) **Gambhir, V., et al. (2024)** the researchers aimed to evaluate the potential of AI and the way it is transforming customer interactions and boosting retail business operational impact. It was seen that AI-driven customisation not only significantly increases customer satisfaction but also helps in boosting the

sales in retail setup. The authors are of the opinion and the findings also demonstrates how critical AI-driven customisation is to increasing the loyalty of the customer and generating revenue in the retail sector.

### 3. OBJECTIVES OF THE STUDY

- 1) To evaluate AI-powered Innovation in Departmental Stores and its influence on customer experience, efficiency, and business growth.
- 2) To suggest measures for effective implementation of AI in departmental stores

### 4. HYPOTHESIS

H<sub>1</sub>: The integration in departmental store significantly enhances customer experience.

H<sub>2</sub>: The integration in departmental store significantly enhances efficiency.

H<sub>3</sub>: The integration in departmental store significantly enhances business growth.

### 5. RESEARCH METHODOLOGY

Aspect	Details
Sample Size	180 Customers of Departmental Store (Minimum necessary sample size: 173)
Sample Size Determination	According to A prior Sample Size Calculator for SEM; Effect Size = 0.3, Statistical Power = 0.9, Number of Latent Variables = 4, Number of Observable Variables = 20, Probability Level = 0.05
Sampling Method	Non-random purposive sampling
Data Gathering Methods	Primary and secondary data
Analytical Method	Structural Equation Model (SEM)
Analytical Tool	SMART PLS

### 6. DATA ANALYSIS AND INTERPRETATION

**Table No: 1 Reliability and validity**

Construct	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Integration in Departmental Store	0.793	0.795	0.565
Customer Experience	0.901	0.901	0.646
Efficiency	0.893	0.891	0.580
Business Growth	0.910	0.908	0.624

According to the criteria recommended by Hair et al. 2013, if all the values of Cronbach's Alpha and Composite Reliability is > 0.70, and Average Variance Extracted (AVE) > 0.05, it can be concluded that the constructs have sufficient reliability and convergent validity.

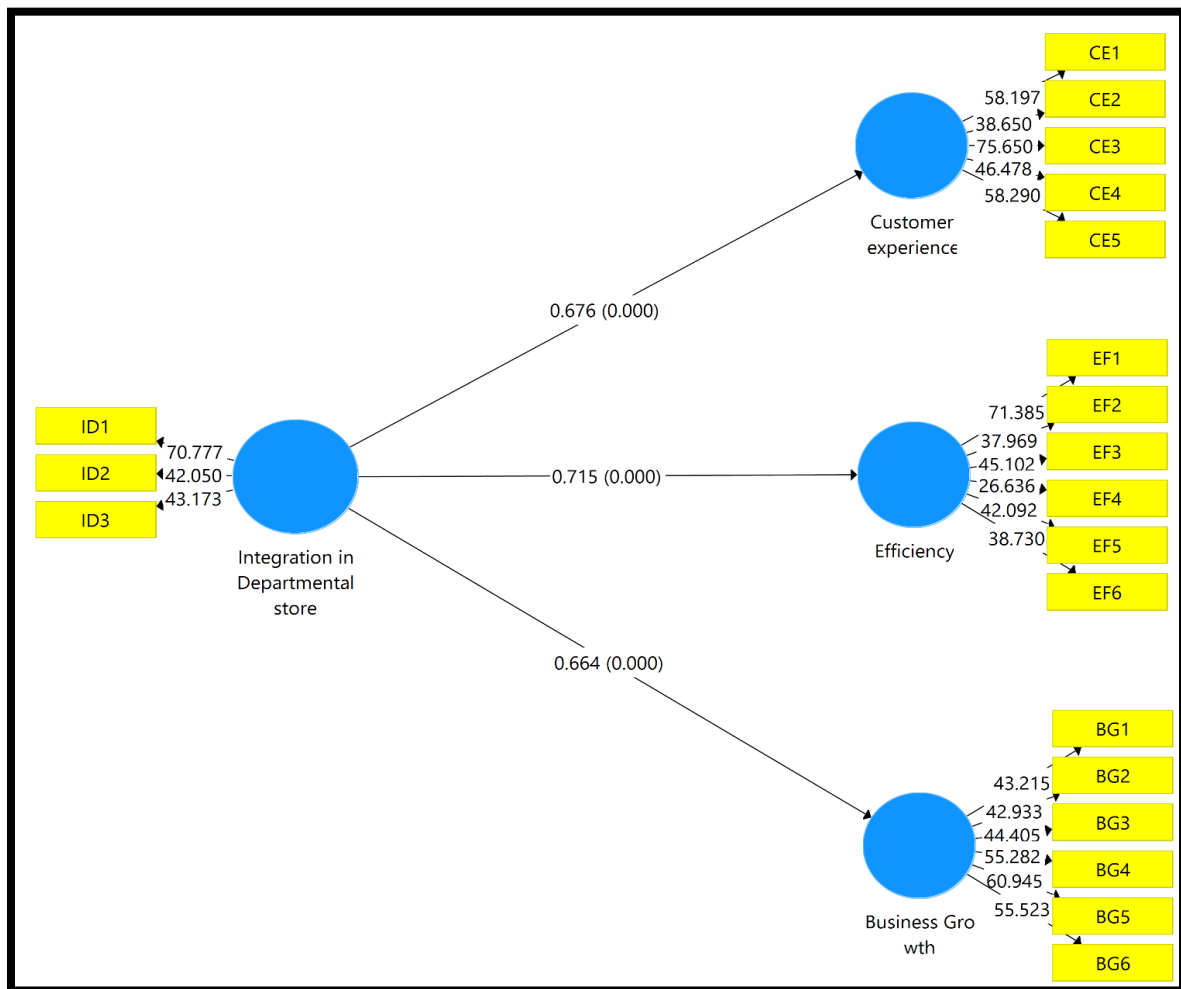
**Table No. 2: Discriminant validity**

Construct	Business Growth	Customer Experience	Efficiency	Integration in Departmental Store
Business Growth	0.790			
Customer Experience	0.782	0.804		
Efficiency	0.786	0.777	0.761	

Integration in Departmental Store	0.777	0.794	0.742	0.751
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The Fornell-Lacker Criterion (1981) states that the square root of AVE for each construct must be higher than its correlating constructs. Hence, when the constructs exhibit sufficient discriminant validity, then it can be concluded that they are conceptually distinct for each other.

**Figure No: 1 SEM model**



**Table No: 3 Hypothesis testing**

Construct	Beta Coefficient	T-Statistics	P-Values
Integration in Departmental Store → Business Growth	0.664	22.065	0.000
Integration in Department Store → Customer Experience	0.676	21.290	0.000
Integration in Departmental Store → Efficiency	0.715	28.455	0.000

P (value) < level of significance 5%, thus  $H_0$  is rejected and  $H_1$  is accepted in all the cases indicating significant impact of integration in departmental store on business growth, customer experience, and efficiency.

## 7. CONCLUSION

The study concludes that the integration of AI in department stores plays an important role in driving corporate development, improving customer experiences as well as increasing operational efficiency. Several AI-driven advancements such as “personalized recommendation systems, dynamic pricing, intelligent chatbots, and automated inventory management” have hugely transformed the conventional retail sector. All these technologies tend to enhance operational efficiency and reduce human labour whilst also providing customers with an unhindered personalized

shopping experiences, resulting in increased customer satisfaction and loyalty. Furthermore, AI tends to enhance decision-making of the customers by providing them with data-driven insights, enabling organizations to promptly address the current market trends and preferences of the consumers. It won't be wrong to state that AI is not just an innovative technology but a strategic enabler that adds heavily to the overall performance and the competitiveness of departmental stores. Thus, with effective integration and adoption of AI is a necessity to keep up with the modern world aiming at attaining sustainable growth overtime and customer-centric development.

## 8. SUGGESTIONS

- Departmental stores can invest in AI-powered solutions that enhance customer satisfaction and loyalty, such as chatbots, and recommendation engines that improve the interaction with the customers.
- The data-privacy protocols must also be enhanced to foster customer confidence in the departmental stores.
- The stores should be regularly evaluated and enhanced by the latest AI technologies to remain relevant in the industry and always be on top of their game.
- One of the key features for any retail business is the customer feedback system it should be connected with AI technologies to enhance service delivery continually.
- The departmental stores can also implement AI-powered solutions in the inventory and demand forecasting systems to enhance operational efficiency.
- And lastly, it is very necessary that the departmental store is consistently trained for the proficient use of AI technology.

## CONFLICT OF INTERESTS

None.

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