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RESEARCH PAPER

Artificial Intelligence and E-Commerce: An Empirical Investigation of Daraz Pakistan

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ABSTRACT

Artificial intelligence plays a vital role in the growth of the E-commerce industry. The e-commerce industry uses several artificial intelligence tools to promote its businesses. This study aims to examine the impact of artificial intelligence on the E-commerce activities of Daraz Pakistan. Primary data was gathered from 423 full-time customers and managerial-level employees of the Daraz throughout Pakistan. The data was gathered through convenience sampling. The gathered data was analyzed via SmartPLS. According to this study's findings, different artificial intelligence-based tools, such as chatbots, personal shopping assistance, easy search, fraud detection, and supply chain management, significantly impact Daraz's e-commerce activities. Furthermore, this study also recommends that Daraz increase the usage of artificial intelligence-based applications in their business activities to enhance further and reshape the business model to increase Daraz's profitability.

Introduction

Artificial Intelligence (AI) is a transformative force that has permeated various industries, bringing about significant advancements in efficiency, decision-making, and customer experience. In the realm of E-commerce, where technology plays a pivotal role, AI has emerged as a game-changer, reshaping the landscape of online retail (Ahmad et al., 2021). One notable player in the E-commerce industry is Daraz, a leading online marketplace in South Asia. This article delves into the essence of artificial intelligence, exploring its multifaceted role in the E-commerce sector and focusing on its applications and impact within Daraz. At its core, AI refers to developing computer systems capable of performing tasks that typically require human intelligence (Ahmad, et al., 2021). This encompasses a broad spectrum of capabilities, including learning, reasoning, problem-solving, perception, and language understanding (Bawack et al., 2022). AI systems are designed to analyze data, recognize patterns, and make informed decisions, often surpassing human capabilities in speed and accuracy. There are two primary types of AI: Narrow AI and General AI. Narrow AI, also known as Weak AI, is designed to perform specific tasks, such as speech recognition or image classification (Peng, et al., 2023).

On the other hand, General AI, or Strong AI, is a hypothetical form of artificial intelligence that can understand, learn, and apply knowledge across diverse domains, akin

to human intelligence (Marjerison, et al., 2022). The E-commerce industry, characterized by intense competition and dynamic consumer preferences, has embraced AI to enhance various aspects of the online shopping experience. The applications of AI in E-commerce are diverse and encompass several key areas (Dong, et al., 2023).

AI algorithms analyze vast customer data to understand individual preferences and behaviors. This information is then utilized to offer personalized product recommendations, tailored marketing messages, and customized user interfaces (Fedorko et, al., 2022). In the context of Daraz, AI-driven personalization ensures that users are presented with a curated selection of products, increasing the likelihood of successful conversions. Recommendation engines powered by AI play a crucial role in guiding customers toward relevant products based on their browsing history, purchase patterns, and preferences (Liu et al., 2022). These engines leverage machine learning algorithms to continuously improve accuracy and relevance, contributing to increased sales and customer satisfaction. Chatbots and Virtual Assistants: AI-driven virtual assistants enhance customer service by responding instantly to inquiries, addressing common issues, and guiding users through purchasing (Fonseka, et al., 2022). Daraz, like many other e-commerce platforms, employs chatbots to streamline customer interactions, provide real-time assistance, and improve overall user satisfaction. AI algorithms excel in identifying patterns associated with fraudulent activities. These algorithms detect and prevent fraudulent transactions in the E-commerce sector, protecting customers and the platform. Security measures powered by AI build trust among users and safeguard sensitive information (Alshammari, et al., 2023).

AI optimizes inventory management by predicting demand patterns, minimizing overstock or stockouts, and enhancing supply chain efficiency. Daraz benefits from AI-driven inventory management systems that ensure the availability of popular products, reducing the likelihood of lost sales due to inventory issues. Visual Search: Visual search capabilities, facilitated by AI, enable users to search for products using images rather than text. This feature is particularly useful in the fashion and home decor categories (Song, et al., 2023). Daraz's integration of visual search enhances the user experience by simplifying the search process and making it more intuitive. AI algorithms analyze market conditions, competitor pricing, and customer behaviour to adjust prices dynamically (Acharya, et al., 2023). This dynamic pricing strategy allows E-commerce platforms like Daraz to remain competitive and optimize revenue by responding swiftly to market fluctuations. As a prominent player in the South Asian e-commerce market, Daraz has strategically integrated AI across various facets of its platform to stay ahead in the competitive landscape (C. Li et al., 2023). This study aims to examine the impact of artificial intelligence on the E-commerce activities of Daraz Pakistan. This study also wants to find different artificial intelligence-based tools, such as chatbots, personal shopping assistance, easy search, fraud detection, and supply chain management, on Daraz's e-commerce activities (Lin et al., 2023).

Literature Review

The e-commerce industry has transformed by integrating artificial intelligence (AI) technologies. Daraz, a prominent online marketplace, stands at the forefront of this revolution, leveraging AI-based tools to enhance various facets of its operations (Khan, et al., 2022). This essay delves into the profound impact of AI tools, including chatbots, personal shopping assistance, easy search functionalities, fraud detection mechanisms, and supply chain management, on Daraz's e-commerce activities. Chatbots represent a fundamental aspect of AI integration in E-commerce, providing instant and automated customer support (Afroz Lari, et al., 2022). Daraz has strategically implemented chatbots

to streamline communication, offer real-time assistance, and create a seamless user shopping experience. Chatbots on Daraz engage with users in real-time, responding to queries, guiding them through the platform, and providing information about products and services. This instant interaction significantly improves the overall user experience, reducing response times and enhancing customer satisfaction. Unlike human support agents, chatbots operate 24/7 without the need for breaks or shifts (Thandekkattu & Kalaiarasi, 2022). This round-the-clock availability ensures Daraz customers can access assistance whenever required, irrespective of time zones or holidays. Daraz's chatbots are crucial in providing order-tracking information and updates. Users can inquire about the status of their orders, expected delivery times, and any other relevant information through the chatbot interface, contributing to transparency in the E-commerce process (Irshad et al., 2023). Chatbots use AI algorithms to analyze user preferences, browsing history, and purchase behaviour to offer personalized product recommendations. This assists users in discovering relevant products and contributes to increased sales for Daraz. Issue Resolution and Returns: Chatbots are equipped to handle common issues, address customer concerns, and guide users through the returns process. By automating these tasks, Daraz ensures a more efficient and streamlined resolution process, improving customer satisfaction (Abou Houran, et al., 2023). In essence, Daraz's integration of chatbots exemplifies how AI is harnessed to provide dynamic and responsive customer support, ultimately contributing to a positive and efficient shopping environment (Pallathadka, et al., 2023). Tailoring the E-commerce Experience The concept of personal shopping assistance powered by AI has revolutionized how users navigate and engage with E-commerce platforms. Daraz's implementation of personalized shopping assistance tools adds a layer of customization to the user experience, making it more intuitive and tailored to individual preferences. AI algorithms analyze user data, including past purchases, browsing history, and interactions with the platform, to generate personalized product recommendations. This personalization facilitates a more enjoyable shopping experience and increases the likelihood of successful conversions for Daraz (Wang et al., 2023). Some E-commerce platforms, including Daraz, integrate AI-powered virtual stylists. These tools assist users in putting together outfits, suggesting complementary items based on their style preferences, and providing fashion advice. This feature enhances the engagement level of users and positions Daraz as a comprehensive fashion destination (Hasan & Rizvi, 2022). AI-driven tools can help users make informed decisions about sizing and fit. By analyzing data on previous purchases, returns, and user-provided feedback, Daraz's AI can offer accurate size recommendations, reducing the likelihood of returns due to size issues. Personal shopping assistance tools also analyze user behaviour in real time. This analysis includes factors such as dwell time on product pages, click-through rates, and interactions with recommendations (Peng et al., 2023). Daraz can leverage this information to continuously refine and improve its algorithms, ensuring that the personalization features align with evolving user preferences. Daraz's commitment to personal shopping assistance through AI enriches the user experience and positions the platform as a dynamic and customer-centric E-commerce destination. Navigating the Digital Marketplace In a vast digital marketplace like Daraz, efficient search functionalities are crucial for users to quickly find the products they need. AI-powered search tools enhance the search experience by providing intuitive and accurate results, contributing to a more seamless and user-friendly E-commerce platform. Visual Search: Daraz integrates visual search capabilities powered by AI like other forward-thinking E-commerce platforms (Luo, 2022). This allows users to search for products using images rather than text. By analyzing visual features and patterns, the AI system can identify and recommend similar products, simplifying the search process and making it more intuitive. Natural Language Processing, a subset of AI, enables Daraz to understand and interpret user queries in natural language. Users can conversationally input search queries, and the AI system can generate relevant

results (W. Li et al., 2023). NLP contributes to a more user-friendly and accessible search experience, especially for users who may not be familiar with specific product names or categories. AutoComplete and Suggestions: AI algorithms analyze user search patterns and provide real-time suggestions as users type in the search bar. This auto-complete feature enhances the speed of the search process and helps users discover relevant products even before completing their queries. AI-based search tools are designed to recognize user intent (Chen, et al., 2022). By understanding the context of a search query, Daraz's AI can generate results that align with what the user is looking for, even if the search terms are not explicitly mentioned. Incorporating easy search functionalities powered by AI at Daraz showcases the platform's commitment to providing a user-friendly and efficient browsing experience (Ahmad, et al., 2023). These tools not only simplify the search process but also contribute to increased user engagement and satisfaction. Safeguarding Transactions and User Trust As E-commerce platforms facilitate many transactions daily, ensuring the security of these transactions is paramount. AI-driven fraud detection mechanisms are crucial in identifying and preventing fraudulent activities, safeguarding both the platform and its users. AI algorithms analyze transaction patterns and user behaviour to identify anomalies that may indicate fraudulent activity. Unusual patterns, such as multiple high-value transactions from the same account in a short time frame, trigger alerts for further investigation. Some advanced fraud detection systems employ behavioral biometrics, analyzing unique patterns in user behaviour, such as typing speed, mouse movements, and navigation patterns. This adds an extra layer of security by identifying irregularities that may indicate fraudulent access. Machine learning algorithms for fraud detection are adaptive and continuously learn from new data. As the AI system encounters new types of fraud, it adapts its detection mechanisms to stay ahead of emerging threats, making it a robust and evolving defense against malicious activities (Ni, et al., 2023). AI contributes to the development of secure authentication and verification processes. This includes multi-factor authentication, biometric verification, and other advanced methods that ensure the legitimacy of users and transactions on the Daraz platform. AI-based fraud detection tools create profiles of both users and transactions. These profiles include information about user behaviour, transaction history, and typical patterns. Deviations from these profiles can trigger alerts, enabling Daraz to investigate and mitigate potential fraud. By integrating advanced fraud detection mechanisms powered by AI, Daraz establishes a secure E-commerce environment (Cheng, et al., 2023).

H_1: There is a significant impact of Chatbots on the E-commerce activities of Daraz

H_2: There is a significant impact of Personal Shopping Assistance on the E-commerce activities of Daraz

H_3: There is a significant impact of Easy Search of E-commerce activities of Daraz

H_4: There is a significant impact of Fraud Detection of E-commerce activities of Daraz

H_5: There is a significant impact of Supply Chain Management on the E-commerce activities of Daraz

Material and Methods

This study used A quantitative approach to address the issue in question. A deductive-based rational method was used to find the conclusion of the solution. Primary data was gathered from 423 full-time customers and managerial-level employees of the Daraz throughout Pakistan. The data was gathered through convenience sampling. Data

was collected via a closed-ended questionnaire comprising several pre-adopted scales from different reliable studies. The gathered data was analyzed via SmartPLS.

Results and Discussion

Measurement Model

While using an approach based on the SmartPLS, it is necessary to validate the measurement model of the study before moving towards the structural model to test its hypothesis. The measurement model includes the reliability and validity of the scales. Two common tests were used: the item's and construct reliability. While the tests used for the validity are also called convergent and discriminant validity.

Reliability of the Scales

Regarding reliability, there are two common tests in the SmartPLS named items and construct reliability. The measure used for the item's reliability is called outer loading, while the measure used for the construct reliability is called Cronbach alpha. The threshold value for both measures is 0.7 or above. The table of reliability below shows that all the construct and items have Cronbach's and outer loading values greater than the threshold values, respectively, representing that all the items and construct of the model are significant.

Table 1
Reliability

Constructs	Items	Outer loadings	Cronbach Alpha
E-Commerce	EC1	0.743	0.788
	EC2	0.741	
	EC3	0.863	
	EC4	0.884	
	EC5	0.711	
Chatbots	C1	0.832	0.787
	C2	0.732	
	C3	0.812	
	C4	0.771	
Personal Shopping Assistance	P1	0.722	0.825
	P2	0.921	
	P3	0.832	
Easy Search	E1	0.733	0.776
	E2	0.723	
	E3	0.871	
Fraud Detection	F1	0.912	0.835
	F2	0.812	
	F3	0.781	
Supply chain Management	S1	0.771	0.747
	S2	0.715	
	S3	0.771	
	S4	0.732	

Two common types of validity in the SmartPLS are convergent and discriminant. The measure used for the convergent validity is called AVE, while the measure used for the discriminant validity is named HTMT values. The threshold value for the AVE is 0.5 or above, while the threshold value for the HTMT values is 0.85 or below. Both validity

tables show that all the validity values are significant within the threshold range. This shows that all the constructs have achieved their validity.

Table 2
Validity

Constructs	AVE	HTMT
E-Commerce	0.511	0.734
Chatbots	0.631	0.324
Personal Shopping Assistance	0.563	0.456
Easy Search	0.591	0.376
Fraud Detection	0.551	0.691
Supply chain Management	0.528	0.771

Structural Model

The structural model includes the relationship among the variables of the model. The structural model generally includes the regression analysis, R-square, and other collective variables' effects.

Regression Analysis

Regression analysis defies the cause-and-effect relationship between the model's variables. The regression analysis table below shows the relationship between the model's variables. Two common measures are used for the regression significance of a relationship between variables named p and t values. The threshold value for the p value is 0.05 or less, and the threshold value for the t value is 1.96 or above. The regression table shows that all the variables' relationships have p values less than 0.05 and t values greater than 1.96, indicating that all the hypothesized relationships are statically significant.

Table 3
Regression Analysis

Relationships	Beta	T-Value	P-Value	Results
Chatbots >>> E-Commerce	0.121	5.764	0.000	Supported
Personal Shopping Assistance >>> E-Commerce	0.231	7.342	0.000	Supported
Easy Search >>> E-Commerce	0.211	8.412	0.000	Supported
Fraud Detection >>> E-Commerce	0.151	11.412	0.000	Supported
Supply chain Management >>> E-Commerce	0.357	19.222	0.000	Supported

Conclusion

Artificial intelligence plays a vital role in the growth of the E-commerce industry. The e-commerce industry uses several artificial intelligence tools to promote its businesses. This study aims to examine the impact of artificial intelligence on the E-commerce activities of Daraz Pakistan. According to this study, different artificial intelligence-based tools, such as chatbots, personal shopping assistance, easy search, fraud detection, and supply chain management, significantly impact Daraz's e-commerce activities.

Recommendations

Furthermore, this study also recommends that Daraz increase the usage of artificial intelligence-based applications in their business activities to enhance further and reshape the business model to increase Daraz's profitability.

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