

**The Impact of Using Artificial Intelligence Technologies
on Analyzing Digital Consumer Behavior in the
E-Commerce Environment in Jordan**

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A Thesis Submitted in Partial Fulfillment of the Requirements for
the Master's Degree in E-Business

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Faculty of Business

Middle East University

January, 2026

أثر استخدام تقنيات الذكاء الاصطناعي في تحليل سلوك المستهلك
الرقمي في بيئة التجارة الإلكترونية في الأردن

إعداد

الحنين المثني حمدان

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قدمت هذه الرسالة استكمالاً لمتطلبات الحصول على درجة الماجستير
في الأعمال الإلكترونية

قسم الأعمال الإلكترونية

كلية الأعمال





جامعة الشرق الأوسط

كانون الثاني، 2026

Defense Committee Decision

This thesis, titled **“The Impact of Using Artificial Intelligence Technologies on Analyzing Digital Consumer Behavior in the E-Commerce Environment in Jordan.”** by researcher **Alhaneen Almuthanna Hamdan** and was successfully defended and approved on 11/01/2026.

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A handwritten signature in blue ink, appearing to read 'Alhaneen', written over a horizontal line.

Acknowledgment

I extend my profound gratitude to all those whose support and guidance have been indispensable throughout the course of this research.

Foremost, I wish to acknowledge my supervisor, whose scholarly insight, constructive feedback, and unwavering encouragement provided the intellectual foundation upon which this study was built.

I am equally indebted to my colleagues and the participants, whose cooperation and contributions enriched the empirical dimension of this work and ensured its academic rigor.

This accomplishment is the result of collective effort and shared commitment, and I regard it not solely as my achievement, but as a testament to the generosity, dedication, and encouragement of all those who accompanied me along the way.

Alhaneen Almuthanna Hamdan

Dedication

To my beloved family, whose unwavering support has been the cornerstone of this achievement.

Their constant encouragement, enduring patience, and unconditional love have sustained me throughout every stage of this journey.

The faith they placed in me has been a source of strength and inspiration, guiding me through challenges and motivating me to persevere.

This work is dedicated to them, in recognition of their profound role in making this milestone possible.

Alhaneen Almuthanna Hamdan

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The Impact of Using Artificial Intelligence Technologies on Analyzing Digital Consumer Behavior in the E-Commerce Environment in Jordan

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Abstract

This study investigates the impact of using artificial intelligence (AI) technologies in analyzing digital consumer behavior in the context of e-commerce in Jordan. The research focuses on four key dimensions of AI integration: personalization, predictive analytics, conversational AI, and dynamic pricing, and examines their direct effects on consumer trust, satisfaction, loyalty, and emotional engagement.

A structured survey was conducted with a Stratified sample of 200 respondents, representing diverse demographic groups in terms of age, gender, and educational level. The data were analyzed using descriptive statistics, reliability and validity testing (Cronbach's Alpha, Composite Reliability, AVE, CFA), and structural equation modeling. The findings confirm that all constructs demonstrated strong reliability and validity, with model fit indices supporting the robustness of the measurement framework.

Results reveal that personalization and conversational AI exert the strongest positive influence on digital consumer behavior, enhancing trust, satisfaction, and loyalty. Predictive analytics contribute moderately, reflecting consumer appreciation tempered by cautious trust in predictive accuracy. Dynamic pricing shows the weakest but still significant effect, highlighting consumer concerns about fairness and transparency. Demographic analysis further indicates that younger, female, and more educated respondents are the most receptive to AI-enabled e-commerce platforms.

The study concludes that AI applications are strategic enablers of consumer engagement in digital commerce, with personalization and conversational AI emerging as the most impactful drivers. These insights provide both theoretical contributions to the understanding of AI in consumer behavior and practical recommendations for e-commerce platforms seeking to optimize AI adoption in competitive markets.

Keywords: Artificial Intelligence (AI), E-commerce, Digital Consumer Behavior, Personalization, Predictive Analytics, Conversational AI, Dynamic Pricing, Jordan.

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الملخص

يهدف هذا البحث إلى دراسة أثر استخدام تقنيات الذكاء الاصطناعي في تحليل سلوك المستهلك الرقمي في سياق التجارة الإلكترونية في الأردن، ويركز على أربعة أبعاد رئيسية لتكامل الذكاء الاصطناعي: التخصيص، التحليلات التنبؤية، الذكاء التفاعلي، والتسعير الديناميكي، مع اختبار تأثيرها المباشر على ثقة المستهلك ورضاه وولائه وارتباطه العاطفي.

تم جمع البيانات من خلال استبيان منظم شمل عينة طبقية مكونة من 200 مشارك، يمثلون فئات عمرية وجندرية وتعليمية متنوعة، وقد جرى تحليل البيانات باستخدام الإحصاءات الوصفية، واختبارات الصدق والثبات (كرونباخ ألفا، الموثوقية المركبة، متوسط التباين المستخرج، التحليل العاملي التأكيدي)، إضافة إلى نمذجة المعادلات الهيكلية وقد أظهرت النتائج أن جميع المتغيرات أظهرت ثباتاً وصدقاً قويين، وأن مؤشرات ملاءمة النموذج أكدت قوة البنية القياسية.

تشير النتائج إلى أن التخصيص والذكاء التفاعلي لهما التأثير الأقوى والإيجابي على سلوك المستهلك الرقمي، حيث يعززان الثقة والرضا والولاء، أما التحليلات التنبؤية فقد أظهرت تأثيراً إيجابياً متوسطاً، يعكس تقدير المستهلكين لهذه المزايا مع وجود بعض التحفظات حول دقتها وتوقيت استخدامها، في حين أن التسعير الديناميكي أظهر أضعف تأثير لكنه ظل دالاً إحصائياً، ما يعكس مخاوف المستهلكين بشأن العدالة والشفافية، كما أظهرت التحليلات الديموغرافية أن المستهلكين الأصغر سناً، والإناث، وذوي المستويات التعليمية الأعلى هم الأكثر تقبلاً لتطبيقات الذكاء الاصطناعي في التجارة الإلكترونية.

يخلص البحث إلى أن تطبيقات الذكاء الاصطناعي تمثل أدوات استراتيجية لتعزيز مشاركة المستهلكين في التجارة الرقمية، حيث يبرز التخصيص والذكاء التفاعلي كأكثر العوامل تأثيراً. وتوفر هذه النتائج إسهاماً نظرياً لفهم العلاقة بين الذكاء الاصطناعي وسلوك المستهلك، إلى جانب توصيات عملية لمنصات التجارة الإلكترونية الساعية إلى تحسين تبني الذكاء الاصطناعي في الأسواق التنافسية.

الكلمات المفتاحية: الذكاء الاصطناعي، التجارة الإلكترونية، سلوك المستهلك الرقمي، التخصيص، التحليلات التنبؤية، الذكاء الحواري، لتسعير الديناميكي، الأردن.

Chapter One

Background and Problem Statement

1.1 Introduction

Rapid advancement of Artificial Intelligence (AI) has revolutionized the e-commerce environment by reshaping how businesses analyze consumer behavior and execute advertising strategies (Zhang & Duan ,2020) As competition intensifies in digital marketplaces, the ability to accurately target advertisements and understand consumer decision-making processes has become a critical success factor, AI technologies, such as personalization algorithms, predictive analytics, conversational agents, and dynamic pricing models, enable businesses to deliver hyper-personalized experiences, forecast purchasing patterns, and optimize marketing investments in real-time (Davenport et al., 2020; Chatterjee et al., 2020.)

By processing vast amounts of consumer data from browsing history, purchase records, and online interactions, AI facilitates the development of precise behavioral profiles and audience segmentation (Beliaeva et al., 2020). These capabilities increase engagement, improve conversion rates, and enhance customer retention (Jarek & Mazurek, 2019), However, the integration of AI in e-commerce presents several challenges. Issues such as algorithmic bias, privacy concerns, and consumer trust demand careful consideration (Martin, 2018), Furthermore, excessive personalization and opaque decision-making processes can lead to consumer fatigue or perceptions of intrusive monitoring (Alqahtani & Uslay , 2020).

In the Middle Eastern and North African (MENA) region, AI adoption in e-commerce is steadily increasing, Governments are promoting AI development through national strategies, including Jordan's National Artificial Intelligence Strategy 2020–2025, which emphasizes the need for AI integration in retail and consumer-facing sectors (MODEE, 2021), Jordan's tech-savvy youth, rising smartphone usage (exceeding 92% penetration), and strong social media presence have made it fertile ground for e-commerce growth, However, the actual adoption of AI among local companies particularly SMEs remains limited due to infrastructure, cost, and skill barriers (Hong et al., 2023; Alshurideh et al., 2020).

Moreover, while large global companies have successfully leveraged AI to decode complex consumer patterns and refine ad targeting strategies, Jordanian e-commerce businesses are still experimenting with basic tools like email automation, Google Analytics, and Facebook Ads, without fully integrating intelligent systems for predictive behavior modeling or personalized ad targeting (Al-Gasaymeh & Alzoubi, 2023). This gap highlights the need for more advanced, context-aware applications of AI that go beyond operational automation and toward strategic consumer insight generation.

Recent studies confirm that consumer behavior is increasingly dynamic and nonlinear influenced by micro-moments, emotional responses, and cross-platform activity (Chatterjee et al., 2020). As a result, traditional demographic-based targeting is no longer sufficient. Businesses now need real-time behavioral insights to remain competitive and relevant. However, few empirical studies in Jordan have explored the direct link between AI-based consumer behavior analytics and advertising outcomes (Gupta et al., 2024; Loureiro et al., 2021). The lack of local evidence creates a pressing need for targeted research to understand how AI is or could be used to enhance customer profiling, segmentation, targeting, and campaign performance in Jordan's e-commerce environment (Paschen et al., 2020).

Therefore, this study aims to investigate the impact of AI technologies in analyzing digital consumer behavior in the Jordanian e-commerce sector. It seeks to bridge both theoretical and practical gaps by providing insights that can help businesses adopt smarter, data-driven advertising strategies and improve consumer engagement (Chatterjee et al., 2020; Jarek & Mazurek, 2019). To achieve this, the study adopts a quantitative correlational approach using structural equation modeling, enabling the examination of direct effects of AI applications on consumer behavior through advertising targeting. This integrated perspective aligns with the evolving nature of digital commerce and contributes to the strategic advancement of AI-driven marketing in emerging economies.

1.2 Problem Statement

Artificial intelligence (AI) technologies have enabled companies to process massive amounts of data with high accuracy and efficiency (Jain et al., 2024) which has positively impacted the quality of marketing decisions, enhanced the ability of organizations to

predict consumer needs, and provide customized offers and services that match their individual preferences (Semenenko, 2025) In addition, these technologies have helped to expand the scope of digital markets, attract increasing numbers of consumers, and open up new marketing prospects, which has contributed to enhancing the competitive advantage of institutions operating in the e-commerce environment (Raza et al.,2025).

Despite the growing importance of using artificial intelligence (AI) technologies in analyzing digital consumer behavior, preliminary observations and relevant literature indicate a clear deficiency in the level of understanding and practical application of these technologies in the Middle East's e-commerce environment, particularly in Jordan, compared to most pilot studies in North America and Europe and East Asia leaving a significant gap in understanding its effects in Middle Eastern markets (Al-Gasawneh et al.,2025). This lack of localized evidence restricts the ability of Jordanian businesses to adopt AI-driven strategies that are both contextually relevant and operationally effective.

Furthermore, much of the literature treats AI as a unified construct, overlooking the distinct contributions of its functional components such as personalization, predictive analytics, conversational systems, and dynamic pricing (Al-Gasaymeh & Alzoubi, 2023).

Accordingly, the current study will examine digital consumer behavior and the challenges they face. According to Loureiro et al. (2021), these challenges include limited resources, infrastructure problems, difficulty using websites, security concerns, and breaches of digital consumer data privacy, the lack of direct personal interaction with the product and the inability to physically inspect it before purchase, along with logistical challenges such as long shipping times and costs, difficulty in obtaining sufficient product information, and increasing competition, are all difficult problems to solve and hinder the purchasing decisions of the digital consumer.

To address these gaps, this study examines the multidimensional impact of AI applications specifically personalization, predictive analytics, conversational AI, and dynamic pricing on digital consumer behavior in Jordan's e-commerce sector.

By adopting a conceptual model that positions AI tools as independent variables and consumer behavior as the dependent variable, the study enables the investigation of direct relationships through a quantitative correlational approach.

1.3 Study Objective and Questions

Which positions artificial intelligence (AI) applications as independent variables and digital consumer behavior as the dependent variable—this research seeks to achieve the following objectives:

Main Objective

To investigate the impact of artificial intelligence (AI) applications on digital consumer behavior in e-commerce.

Sub-Objectives

- To assess the effect of AI-driven personalization on digital consumer behavior.
- To analyze the influence of AI-based predictive analytics on digital consumer behavior.
- To evaluate the impact of conversational AI systems (e.g., chatbots, virtual assistants) on digital consumer behavior.
- To examine the role of AI-driven dynamic pricing strategies in shaping digital consumer behavior.

Based on these objectives, the study seeks to answer the following research questions:

Main Research Question

What is the impact of AI applications on digital consumer behavior in e-commerce?

Sub-Questions

- What is the impact of AI-driven personalization on digital consumer behavior?
- What is the impact of AI-based predictive analytics on digital consumer behavior?
- What is the impact of conversational AI systems (e.g., chatbots, virtual assistants) on digital consumer behavior?
- What is the impact of AI-driven dynamic pricing strategies on digital consumer behavior?

1.4 Significance of the Study

Theoretical and Scientific Significance

This study offers a timely and significant contribution to the academic literature on artificial intelligence (AI) in marketing and e-commerce, particularly within the context of developing economies such as Jordan.

While global research has increasingly explored AI's role in enhancing customer experience and operational efficiency, there remains a notable gap in understanding how specific AI applications influence digital consumer behavior in underrepresented regions like the Middle East (Jain et al., 2024; Loureiro et al., 2021).

The study advances theoretical discourse by integrating two foundational perspectives: the Technology -Organization- Environment (TOE) framework and the Resource-Based View (RBV).

This dual-theoretical lens enables a deeper understanding of how firms adopt AI technologies in response to both external pressures and internal strategic priorities (Tornatzky & Fleischer, 1990; Barney, 1991).

Moreover, the study disaggregates AI into four functional domains—personalization systems, predictive analytics, conversational AI, and dynamic pricing—allowing for a more granular analysis of how each tool contributes to consumer engagement, responsiveness, and purchase behavior (Dwivedi et al., 2021; Davenport et al., 2020).

By focusing on the Jordanian e-commerce landscape, the study enriches the global literature with context-specific insights and offers a conceptual model that reflects the realities of digital transformation in emerging markets.

This theoretical contribution is particularly relevant as regional economies seek to align with global trends in AI adoption while navigating infrastructural, cultural, and regulatory complexities.

Practical and Strategic Significance

The practical value of this study lies in its ability to inform decision-making across multiple stakeholder groups in Jordan's digital economy—including business leaders, marketing professionals, policymakers, and investors (Dwivedi et al., 2021; Davenport et al., 2020)..

As of 2024, Jordan's digital payment systems recorded over JD 27.35 billion in transaction value, with more than 184 million payments processed across platforms (Jordan Times, 2024).

The Jordan Payments and Clearing Company (JoPACC) also reported a 77.2% increase in digital transaction volume, reaching 224.62 million transactions in 2024 alone.

These figures underscore the accelerating shift toward digital commerce and the growing need for intelligent, data-driven marketing strategies.

In this context, the study provides:

- **Strategic guidance for businesses** seeking to adopt AI tools that enhance customer understanding, personalize marketing content, and improve campaign performance.
- **Operational insights for marketers** on how to leverage AI for real-time consumer profiling, behavioral targeting, and dynamic pricing optimization.
- **Investment intelligence for venture capitalists and incubators** interested in scalable AI solutions that reduce customer acquisition costs and increase conversion rates.
- **Policy-relevant evidence** to support Jordan's National Artificial Intelligence Strategy (MODEE, 2021), particularly in areas related to digital commerce, workforce development, and innovation infrastructure.

Ultimately, this research contributes to Jordan's broader Digital Transformation Vision by offering evidence-based insights into how AI can be harnessed to enhance consumer experience, drive business competitiveness, and foster innovation in the commercial sector.

It equips stakeholders with the knowledge needed to make informed, future-ready decisions in an increasingly AI-driven marketplace.

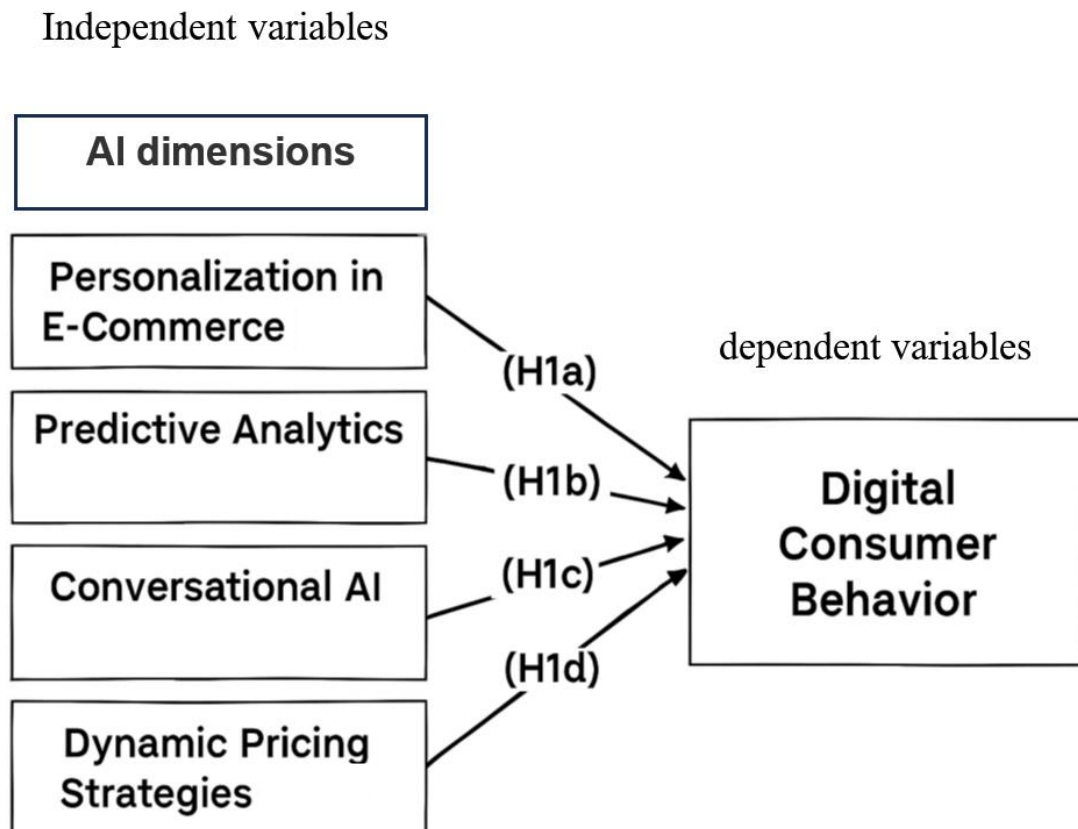
1.5 Study Hypothesis

Main Hypothesis (H_a): AI applications have a statistically significant direct impact on digital consumer behavior in e-commerce.

Sub-Hypotheses:

- **H1a:** Personalization in e-commerce have a statistically significant impact on digital consumer behavior.
- **H1b:** Predictive analytics have a statistically significant impact on digital consumer behavior.
- **H1c:** Conversational AI (e.g., chatbots, virtual assistants) have a statistically significant impact on digital consumer behavior.
- **H1d:** Dynamic pricing strategies have a statistically significant impact on digital consumer behavior.

1.6 Study model



The researcher obtained the variables for the study model from the following sources: Patil, D. (2024). Reeyazati, A., & Samizadeh, R. (2025). Wang & jing, (2025). Ghufan, A., & Ahmad, W. (2025).

1.7 Study Terminology

This section defines the key constructs used in the study, organized according to their roles within the conceptual framework: independent variables (AI applications), and dependent variable (digital consumer behavior).

Each term is defined based on relevant literature and contextualized within the scope of this research.

Artificial Intelligence (AI)

Artificial Intelligence (Contextual definition): refers to the replication of human cognitive functions such as learning, reasoning, and problem-solving through machines that can adapt and improve over time based on data inputs (Jain et al., 2024).

In the context of digital marketing, AI enables automated decision-making, personalized content delivery, and predictive modeling.

It is increasingly used to enhance customer engagement, optimize marketing processes, and support strategic business decisions (Campbell et al., 2020; Haenlein & Kaplan, 2019).

Personalization in e-commerce(Contextual definition): The practice of tailoring an online shopping experience to individual customers by using data such as browsing behavior, purchase history, preferences, and demographics to deliver relevant product recommendations, content, and offers (Dumiter & Schebesch, 2025).

Predictive Analytics(Contextual definition): The use of historical data, statistical models, and machine learning techniques to analyze patterns and forecast future outcomes, behaviors, or trends, helping organizations make informed, data-driven decisions(Carbonero et al.,2023).

Conversational AI(Contextual definition): A technology that enables machines to understand, process, and respond to human language in a natural and interactive way, commonly used in chatbots and virtual assistants to automate conversations and provide real-time support (Anwansedo & Akinwande, (2024).

Dynamic Pricing Strategies(Contextual definition): Pricing approaches that adjust product or service prices in real time based on factors such as demand, customer behavior,

market conditions, competition, and time, with the goal of maximizing revenue or competitiveness (Monjur et al., 2023).

Measurement in this study: AI is operationalized through four sub-variables:

- **Personalization in e-commerce** (Operational definition): AI algorithms that tailor product suggestions and content to individual consumer profiles.
- **Predictive Analytics** (Operational definition): Tools that anticipate future consumer behaviors and market dynamics.
- **Conversational AI** (Operational definition) : Chatbots, voice assistants, and automated platforms that simulate human interaction.
- **Dynamic Pricing strategies** (Operational definition) : AI-driven models that adjust prices in real time based on demand, competition, and consumer segmentation.

Digital Consumer Behavior (Dependent Variable)

Digital consumer behavior encompasses the actions, preferences, and decision-making processes of individuals interacting with products and brands in online environments (Jain et al., 2024).

It includes browsing patterns, social media engagement, online shopping behavior, and responsiveness to digital marketing stimuli (Oke et al., 2024; Sağkaya & Ozansoy, 2022).

This construct is central to understanding how consumers navigate digital platforms and respond to AI-enhanced marketing strategies.

Digital consumer behavior (Operational definition) : is measured through variables such as engagement levels, purchase intent, responsiveness to personalized content, and behavioral indicators across digital channels (Chen et al., 2021).

E-Commerce

E-commerce (Contextual definition): refers to the buying and selling of goods and services via digital platforms. It includes business-to-consumer (B2C), business-to-business (B2B), and consumer-to-consumer (C2C) transactions conducted through websites, mobile applications, and social media channels (Chen et al., 2021).

E-commerce (Operational definition) : serves as the contextual domain within which AI applications and consumer behavior are examined.

Resource-Based View (RBV)

The Resource-Based View (RBV) : is defined as a strategic management framework that emphasizes the importance of internal resources and capabilities in achieving sustainable competitive advantage and superior performance for firms. It asserts that competitive advantage arises from resources that are valuable, rare, inimitable, and non-substitutable (Armstrong & Shimizu, 2022).

Technology Organization Environment (TOE) Framework

Technology Organization Environment (TOE) Framework: is defined as a model use to explain how firms adopt and implement technological innovations. It categorizes factors into three contexts: Technological (available/relevant tools), Organizational (structure, resources, size), and Environmental (industry, competitors, regulations). It helps analyze both internal and external influences on technology adoption(Satyro et al., 2024).

1.8 Limitation of the Study

Objective limits: The study was limited to examining artificial intelligence techniques and their use in analyzing digital consumer behavior in the e-commerce environment in Jordan.

Human limits: Employees, managers, and business owners who made online purchases or used artificial intelligence technologies during the purchasing experience, such as:

Targeted recommendations, dynamic pricing, and interaction with Chatbot. and use E-commerce platforms (Amazon, Noon, Shein, Temu and local platforms), and they employ the AI technologies their companies

Spatial limits: organizations operating within Jordan's digital economy, through structured surveys and/or semi-structured interviews targeting Employees, managers, and business owners.

Time limits: in year 2025.

1.9 Study Limitation

The findings will be context-specific to Jordan and may not be directly generalizable to other regional or global markets.

Variations in AI adoption levels between small and medium-sized enterprises (SMEs) and large corporations may introduce inconsistencies in comparative analysis.

The use of self-reported data may be subject to response bias, potentially affecting the reliability of behavioral insights.

The study will focus exclusively on selected AI tools relevant to marketing and behavioral analytics—namely personalization and recommendation systems, predictive analytics, conversational AI, and dynamic pricing—thus excluding other AI applications outside the marketing domain.

Chapter Two

Theoretical Framework and Previous Studies

This chapter addresses the study variables, namely artificial intelligence technologies and digital consumer behavior in the e-commerce environment, in addition to reviewing the most important previous studies related to the topic of the study.

2.1 Theoretical framework

Theoretical Pillars of AI Adoption in Digital Marketing

This section provides the theoretical foundation and critical review of the literature that informs the study. It establishes the conceptual pillars necessary for understanding how artificial intelligence (AI) applications shape digital consumer behavior in e-commerce environments, with particular attention to the Jordanian context.

The discussion begins by situating AI within marketing, tracing its evolution in digital business environments and highlighting its strategic role in enhancing consumer experience, personalization, automation, and predictive engagement.

Building on this, the chapter introduces two complementary theoretical lenses—the Technology–Organization–Environment (TOE) framework and the Resource-Based View (RBV)—to explain both external drivers and internal enablers of AI adoption.

TOE emphasizes technological readiness, organizational capabilities, and environmental pressures, while RBV conceptualizes AI as a rare and valuable resource that can generate sustainable competitive advantage.

Together, these frameworks provide a robust foundation for analyzing AI deployment in emerging markets such as Jordan, where infrastructural and institutional conditions vary significantly.

The second section of the chapter turns to the core constructs of the research model. It classifies AI applications into four functional categories—personalization and recommendation systems, predictive analytics and trend forecasting, conversational AI and customer interaction, and dynamic pricing optimization—each of which plays a distinct role in shaping consumer engagement and marketing agility (Ali, 2021).

Finally, the discussion focuses on digital consumer behavior in e-commerce, exploring key behavioral dimensions such as browsing, responsiveness to personalization, purchase intention, and engagement.

Special attention is given to the shifting expectations of consumers in AI-enhanced environments and the ways in which personalization, automation, and trust influence decision-making. By integrating theoretical perspectives with empirical insights, this chapter lays the groundwork for the study's conceptual model and provides the basis for testing the proposed hypotheses (Ali, 2021).

Artificial Intelligence in Marketing Contexts

Artificial Intelligence (AI) has revolutionized the marketing domain, driving rapid digital transformation by enhancing processes, accelerating growth, and transforming the business landscape (Labib, 2024).

In marketing contexts, artificial intelligence (AI) is broadly defined as computational systems capable of performing tasks such as learning, reasoning, and decision-making—functions traditionally associated with human cognition (Wang & Wang, 2022).

More recent scholarship emphasizes that AI has become a transformative force in marketing, enabling firms to optimize campaigns, personalize consumer experiences, and dynamically respond to market signals (Pereira, G. B., F et al 2026, Labib, 2024).

Within digital business environments, AI encompasses a diverse set of technologies including machine learning, natural language processing, computer vision, and predictive analytics, each contributing to the automation and enhancement of marketing processes (Davenport et al., 2020; Dwivedi et al., 2021).

The evolution of AI in marketing has been marked by a shift from rule-based automation toward adaptive, data-driven systems that leverage real-time insights to foster relevance and efficiency (Jain, V., Wadhvani, K., & Eastman, J. K. 2023, Akilkhanov, 2024).

Early applications focused on basic customer segmentation and rule-based targeting, whereas contemporary AI systems now enable real-time personalization, dynamic pricing, and conversational engagement through chatbots and virtual assistants (Campbell et al., 2020; Wang & Wang, 2022).

This progression reflects a broader digital transformation in marketing, where AI is no longer a supplementary tool but a strategic enabler of competitive advantage (Loureiro et al., 2021; Davenport et al., 2020).

Strategically, AI enhances both consumer experience and marketing efficiency. On the consumer side, AI-driven personalization fosters relevance and responsiveness, enabling brands to deliver tailored content and offers that resonate with individual preferences and behaviors (Akilkhanov, 2024; Bleier et al., 2019; Mahadewi et al., 2025).

This leads to higher engagement, satisfaction, and loyalty. On the operational side, AI streamlines campaign management, optimizes resource allocation, and enables predictive decision-making, thereby improving return on investment and reducing wasted ad spend (Gupta et al., 2024; Başev, 2024).

In emerging markets like Jordan, where resource constraints and infrastructural variability pose challenges, AI offers scalable solutions that adapt to local market dynamics and organizational capacities (Almashawreh et al., 2024).

The relevance of AI in data-driven personalization, automation, and predictive engagement is particularly evident in four core applications: recommendation systems, predictive analytics, conversational interfaces, and dynamic pricing.

Recommendation systems use collaborative filtering and behavioral data to suggest products and content tailored to individual users (Chen et al., 2021).

Predictive analytics leverage historical data to forecast future consumer behavior, enabling proactive strategy adjustments (Biswas et al., 2023).

Conversational AI, such as chatbots, enhances customer interaction by simulating human dialogue and providing instant support (Shoib & Hermawan, 2025).

Dynamic pricing models adjust prices in real time based on demand, competition, and consumer segmentation, maximizing profitability and responsiveness (Vidhya, R., Kumar, S., & Arora, P. 2023, Nguyen et al., 2022).

These AI capabilities have fundamentally altered how marketers interact with consumers—moving beyond generic outreach toward highly personalized, data-driven

engagement, They also align with the Resource-Based View (RBV), which positions AI as a strategic asset that is valuable, rare, and difficult to imitate (Alshurideh et al., 2020).

Moreover, the Technology–Organization–Environment (TOE) framework continues to provide a robust lens for explaining the contextual adoption of AI, highlighting how technological readiness, organizational capacity, and environmental pressures shape implementation decisions in digital commerce (Almashawreh et al., 2024).

Recent studies emphasize that AI is no longer perceived as a temporary trend but as a transformative force that redefines the foundations of digital marketing by reshaping how firms create, deliver, and capture value in e-commerce ecosystems (Labib, 2024; Davenport et al., 2020).

Its strategic integration into marketing operations—particularly in dynamic and resource-sensitive environments such as Jordan—offers both theoretical richness and practical relevance for understanding digital consumer behavior, enabling firms to balance innovation with infrastructural and institutional constraints (Almashawreh et al., 2024; Dwivedi et al., 2021).

Technology–Organization–Environment (TOE) Framework

The Technology–Organization–Environment (TOE) framework, developed by Tornatzky and Fleischer (1990), provides a comprehensive lens for understanding how organizations adopt and implement technological innovations (Chen et al., 2021).

The Technology–Organization–Environment (TOE) framework posits those three contextual dimensions—technological, organizational, and environmental—jointly influence the decision to adopt new technologies. Recent scholarship has reaffirmed its relevance in information systems and innovation research, particularly in studies examining the adoption of artificial intelligence (AI) within business environments (Almashawreh et al., 2024; Alshurideh et al., 2023).

The first dimension, technological readiness, refers to the internal and external technologies available to the firm, including their compatibility, accessibility, and perceived benefits, which collectively determine the feasibility of AI integration into marketing and operational processes (Gao, Y., & Liu, H. 2023, Dwivedi et al., 2023).

In the context of AI, this includes access to machine learning platforms, data infrastructure, and integration capabilities with existing systems (Nguyen et al., 2022).

Firms with higher technological maturity are more likely to adopt AI tools for personalization, automation, and predictive analytics (Campbell et al., 2020).

The second dimension, organizational capabilities, encompasses the firm's internal characteristics such as size, managerial structure, human capital, and financial resources.

Organizations with a culture of innovation, skilled personnel, and strategic leadership are better positioned to integrate AI into their marketing operations (Davenport et al., 2020; Alshurideh et al., 2020). For example, firms with dedicated data science teams or agile marketing departments are more likely to deploy AI-driven targeting and recommendation systems effectively.

The third dimension, environmental pressures, includes external factors such as market competition, regulatory frameworks, customer expectations, and industry trends.

In highly competitive e-commerce environments, firms may adopt AI not only to gain efficiency but also to meet rising consumer demands for personalization and responsiveness (Gupta et al., 2024).

Additionally, pressure from digital-first competitors and evolving data privacy regulations can accelerate AI adoption as a strategic necessity (Chen et al., 2021).

The TOE framework is particularly relevant for understanding AI adoption in emerging markets such as Jordan. These contexts are often characterized by uneven digital infrastructure, limited institutional support, and varying levels of organizational readiness across sectors (Alshurideh et al., 2023; Almashawreh et al., 2024).

In such environments, the interplay between technological availability, organizational agility, and external pressures becomes especially critical. For example, while some Jordanian e-commerce firms may have access to cloud-based AI tools, their adoption may be constrained by limited technical expertise or regulatory ambiguity (Dwivedi et al., 2023).

Conversely, firms operating in digitally mature sectors such as online retail or fintech, or those facing intense competitive pressures, may be more motivated to overcome these barriers and invest in AI capabilities (Almashawreh et al., 2024).

This is particularly important in the Jordanian context, where firms must navigate both global technological trends and local structural constraints (Dwivedi et al., 2023). Adopting and applying the TOE framework within the current study is of utmost importance because it is a framework that is entirely dependent on technology adoption studies, including artificial intelligence technologies, which are one of the most important variables of the study. It also links technology with the organizational and environmental context represented by the Jordanian e-commerce environment.

By applying the TOE framework, this study captures the multi-level dynamics that shape AI adoption in e-commerce, moving beyond a purely technological perspective to consider how internal capabilities and external forces jointly influence strategic decisions. This is achieved by analyzing the technological, organizational, and environmental dimensions and their impact on the analysis of digital consumer behavior, as follows:

Technology Context: This dimension focuses on the characteristics of artificial intelligence technologies in the current study, which are distinguished by being: easy to use, accurate in analysis and prediction, fast in data processing, and strong integration with e-commerce systems (Alshurideh et al., 2023).

Organization Context: This study relates to the characteristics of the e-commerce environment adopted by the digital consumer, which adopts artificial intelligence technology as e-commerce platforms used for purchasing, and provides technical resources, human resource efficiency, expertise, and support.

Environment Context: This focuses on the external environment surrounding Jordanian e-commerce companies, such as digital infrastructure, legislation and laws related to data protection, and the level of awareness and trust of Jordanian consumers in e-commerce.

Resource-Based View (RBV) as a Strategic Lens

The Resource-Based View (RBV) offers a powerful theoretical lens for understanding how artificial intelligence (AI) can serve as a source of sustained competitive advantage in digital marketing (Micu et al., 2021).

Originating from the work of Barney (1991), RBV posits that organizations achieve superior performance when they possess resources that are valuable, rare, inimitable, and non-substitutable. In the context of e-commerce, AI technologies increasingly meet these criteria, especially when embedded within organizational routines and aligned with strategic objectives (Alshurideh et al., 2020; Loureiro et al., 2021).

AI is conceptualized as a strategic resource due to its ability to generate insights, automate decisions, and personalize consumer interactions at scale. Its value lies in enhancing marketing precision, responsiveness, and efficiency (Shan & Qian, 2025).

For example, machine learning algorithms can identify nuanced consumer patterns that traditional analytics overlook, enabling hyper-targeted campaigns and real-time engagement (Biswas & Patrab, 2023).

The rarity of AI stems from the specialized expertise, data infrastructure, and organizational commitment required to deploy it effectively.

Moreover, the complexity of AI systems—especially those involving proprietary models or integrated platforms—makes them difficult to imitate, reinforcing their strategic role (Davenport et al., 2020).

AI tools contribute to competitive advantage through three interrelated capabilities:

- **Personalization:** AI enables firms to deliver tailored content, product recommendations, and promotional offers based on individual consumer profiles and behavioral data (Mahadewi et al., 2025; Başev, 2024). This fosters deeper engagement and increases conversion rates.
- **Analytics:** Predictive models and trend forecasting tools allow marketers to anticipate consumer needs, optimize timing, and allocate resources more effectively (Nguyen et al., 2022).

- **Customer Interaction:** Conversational AI, including chatbots and virtual assistants, enhances service quality by providing instant, context-aware responses, thereby improving satisfaction and loyalty (Shoib & Hermawan, 2025; Wang & Wang, 2022).

Beyond enhancing operational efficiency, these AI-driven capabilities serve as strategic differentiators—enabling firms to deliver unique value propositions that are difficult to replicate. Firms that embed AI into their core marketing processes develop dynamic capabilities that are difficult for competitors to replicate, especially when supported by organizational learning and data governance structures (Jain et al., 2024; Loureiro et al., 2021).

The RBV theory assumes that a sustainable competitive advantage arises from an organization possessing rare, valuable, difficult-to-imitate, and irreplaceable internal resources and capabilities (Mailani et al., 2024). According to the current study, the application of RBV theory is very beneficial, as e-commerce companies in the Jordanian environment will gain a strong competitive advantage due to the use of artificial intelligence technologies (personalization, predictive analytics, interactive intelligence, and dynamic pricing). These are powerful, modern, and effective technological resources that currently increase the confidence of the digital consumer, increase their satisfaction, loyalty, and emotional connection by facilitating the purchasing process and maintaining data privacy, thus increasing purchases and profits for e-commerce companies.

The integration of RBV with the Technology–Organization–Environment (TOE) framework provides a holistic understanding of AI adoption (Alshurideh et al., 2020).

While TOE explains the external and contextual factors that shape technology uptake—such as infrastructure, competitive pressure, and regulatory environment—RBV focuses on the internal strategic value and deployment of AI as a resource (Jain et al., 2024; Loureiro et al., 2021).

Together, these frameworks capture both the drivers and enablers of AI integration in e-commerce marketing (Alshurideh et al., 2020).

This dual perspective is particularly relevant in emerging markets like Jordan, where firms must navigate infrastructural constraints while leveraging internal strengths to remain competitive (Alshurideh et al., 2020).

In sum, RBV positions AI not merely as a technological tool but as a strategic asset that, when effectively deployed, transforms marketing from reactive execution to proactive value creation. Its integration with TOE enriches the theoretical foundation of this study and supports the proposed model linking AI applications, advertising targeting, and digital consumer behavior.

Core Constructs of the Research Model

AI Applications in Digital Marketing

Artificial Intelligence (AI) has become a cornerstone of modern digital marketing, offering a suite of tools that enhance personalization, automate decision-making, and optimize consumer engagement (Jain et al., 2024; Loureiro et al., 2021).

For the purpose of this study, AI applications are classified into four functional categories that reflect their strategic roles in e-commerce environments: personalization and recommendation systems, predictive analytics and trend forecasting, conversational AI and customer interaction, and dynamic pricing optimization (Mahadewi et al., 2025; Biswas & Patrab, 2023; Campbell et al., 2020).

1. Personalization in e-commerce

These systems use machine learning algorithms to analyze consumer behavior, preferences, and browsing history to deliver tailored product suggestions and content (Nguyen et al., 2022).

By leveraging collaborative filtering and real-time data, marketers can create individualized experiences that increase relevance and engagement (Chen et al., 2021).

In e-commerce, such systems drive higher conversion rates and foster brand loyalty by anticipating consumer needs and reducing decision fatigue (Mahadewi et al., 2025).

2. Predictive Analytics

Predictive analytics involves the use of historical and behavioral data to forecast future consumer actions, market trends, and campaign outcomes.

These tools enable marketers to proactively adjust strategies, optimize timing, and allocate resources more effectively (Biswas & Patrab, 2023).

In dynamic markets like Jordan, predictive models help firms respond to shifting consumer expectations and competitive pressures with agility (Nguyen et al., 2022).

3. Conversational AI

Conversational AI includes chatbots, voice assistants, and automated messaging platforms that simulate human dialogue and provide instant, context-aware responses.

These tools enhance customer service by offering 24/7 support, resolving queries, and guiding purchase decisions (Shoib & Hermawan, 2025; Wang & Wang, 2022).

Beyond operational efficiency, conversational AI fosters emotional engagement and trust, especially when integrated with natural language processing and sentiment analysis (Islam et al., 2023).

4. Dynamic Pricing strategy

Dynamic pricing models use AI to adjust product prices in real time based on factors such as demand fluctuations, competitor pricing, and consumer segmentation (Ali, 2021).

This approach maximizes profitability while maintaining competitiveness and responsiveness (Campbell et al., 2020; Nguyen et al., 2022).

In e-commerce, dynamic pricing allows firms to tailor offers to individual consumers, increasing perceived value and purchase likelihood.

Collectively, these AI applications contribute to operational agility and consumer-centric marketing (Nguyen et al., 2022).

By leveraging predictive insights and automation, firms can shift from passive campaign delivery to anticipatory engagement—responding to consumer needs before they are explicitly expressed.

Moreover, their integration aligns with both the Resource-Based View (RBV)—by positioning AI as a strategic asset—and the Technology–Organization–Environment (TOE) framework, which explains the contextual factors influencing adoption (Alshurideh et al., 2020).

In emerging markets such as Jordan, where digital maturity varies across sectors, these tools offer scalable solutions that can be adapted to local constraints while maintaining global competitiveness (Gupta et al., 2024).

Their deployment not only enhances marketing performance but also reshapes consumer expectations and behavior in the digital commerce landscape (Nguyen et al., 2022).

E-Commerce

The emergence and development of e-commerce.

The concept of e-commerce was not as it is now, as these applications did not provide a viable and economically viable alternative until the widespread technological developments in communication and information technology made them accessible to institutions and commercial companies of all types and sizes due to their low cost and ease of use. With the spread of the internet in the 1990s, e-commerce began to be used, and the reason that contributed to the development of e-commerce was the increasing intensity of competition between business organizations.(Ali, 2021).

The emergence of e-commerce dates back to the last three decades of the last century. This type of commerce relies on an information system whose tools are entirely electronic, consisting of computers and their peripherals such as the internet, telephones, mobile phones, and other technologies that play a significant role in commercial activity. This is done through electronic money transfers or online shopping via various internet networks, by easily and conveniently conducting sales and purchase transactions and displaying products(Başev, 2024; Gupta et al., 2024).

The rapid spread of e-commerce and its transformation from mere theories into a significant entity involved in most projects worldwide is primarily due to the widespread adoption of the internet in this era, The concept of e-commerce has become widespread, providing many needs in ways that are fast and efficient(Biswas & Patrab, 2023).

Today, e-commerce has proven to be one of the most important achievements in human history, an achievement that has created a world capable of dealing with the demands of the technological age. E-commerce is the most powerful means of changing the prevailing economic patterns in the world due to the wide range of its uses. Indeed, the success or failure of commercial companies is linked to e-commerce As it always aims to achieve the required speed in buying and selling in a way that satisfies the customer(Micuet al., 2021).

The Concept of E-commerce

E-commerce has many definitions. Alshwabkeh & Fauzi , (2026) indicated that e-commerce is a new concept that explains the process of selling, buying, or exchanging products, services, and information through computer networks, including the internet. Shoib & Hermawan, (2025) defined it as: a set of integrated business processes that all institutions and individuals deal with and that rely on electronic processing.

E-commerce is the performance of a commercial process between commercial partners using advanced information technology. It is also a set of digital transactions related to commercial activities between businesses, between businesses and individuals, and between businesses and management (Yarramada & Najim, 2023).

Wang & Wang (2022) consider e-commerce to be a type of business activity that utilizes various communication methods via internet networks such as Facebook, Instagram, and Snapchat. It is one of the most successful methods of commerce thanks to its use of advanced technology and the speed with which purchase, payment, and product delivery processes are completed.

Through e-commerce, everything related to buying, selling, and delivering goods is carried out digitally, via data and information transmitted through communication networks and other commercial networks. E-commerce has transformed all paper-based transactions used in commercial transactions, such as purchase and sale invoices and contracts, are now all conducted electronically via computer or other electronic means, despite distances and geographical boundaries(Chatterjee et al., 2020).

The researcher concludes, based on the previous definitions of e-commerce, that it is a general term referring to the use of computers and communication technologies to market goods and services and exchange electronic information and email. It is also a new concept that means practical a range of and information through the internet, and this means the optimal use of available technology for the development of business activity for projects.

Benefits of E-commerce

Gasawneh et al. (2025) pointed out, at the organizational level ,the benefits of e-commerce, which are:

- Providing satisfactory services within 24 hours a day, seven days a week.
- A small footprint for storing electronic data.
- Achieving the speed that organizers seek in completing work procedures at a reasonable cost.
- Providing them with a wide range of shopping options leads to a higher level of customer satisfaction compared to traditional retail.
- This creates a significant incentive to increase competitiveness, particularly for those interested in research and finding advanced methods for using electronic vouchers and checks.

As for the benefits at the corporate level, Ngu Ngendi (2024) indicated the following:

- Expanding the market to an international scale with better suppliers and partners.
- Reducing the costs associated with creating, processing, distributing, storing, and retrieving paper-based information.
- Reducing labor costs in companies, as e-commerce has eliminated a range of jobs that companies rely heavily on in traditional jobs.
- Companies have the opportunity to increase their sales and reduce traditional communication costs.
- It allows participation in virtual auctions.
- It enables participation in virtual auctions.

The Development of E-commerce in Jordan

In 2015, the Jordanian Cabinet decided to exempt all goods imported through e-commerce from customs duties and sales tax, which led to a reduction in the prices of various goods by percentages ranging between 40% and 50% compared to traditional markets. In 2019, the Cabinet decided to impose customs duties on e-commerce parcels and set annual purchase limits. As a result, the number of postal parcels decreased from 1.4 million in 2019 to 642,000 in 2020. In 2021, the Cabinet decided to reduce and standardize customs duties on postal parcels, and double the value ceiling for parcels subject to reduction, in addition to other simplification measures in the field of e-commerce. These measures may have been taken to facilitate e-commerce and encourage

logistics and entrepreneurship in this sector. With the reduction and standardization of customs duties, the number of e-commerce parcels arriving in Jordan via e-commerce platforms rose to 909,000 in 2021, compared to 641,000 in 2020. This indicates a 42% increase in the number of imported parcels (Gasawneh et al., 2025).

Jordan's e-commerce sector continued its remarkable growth in the first half of 2025, with the number of e-commerce parcels arriving in Jordan increasing by over 100% compared to the same period in 2024. This significant rise in the number of parcels indicates a continued increase in interest and activity in online shopping in Jordan (Gasawneh et al., 2025).

Jordan aims to enhance and further develop e-commerce by enacting appropriate legislation and regulations that protect the public interest and provide a fair business environment for all participating parties. These laws must take into account consumer protection, regulate electronic payment and delivery mechanisms, regulate intellectual and commercial property rights, and provide mechanisms for arbitration and resolution of electronic disputes (Gasawneh et al., 2025).

Proposed Electronic Sales System in Jordanian E-commerce

The Ministry of Industry, Trade and Supply submitted a draft of the electronic sales system in November 2022, and the Amman Chamber of Commerce prepared a proposed version of the draft system, which was prepared after taking into consideration the comments received by the Chamber from its relevant members. Having reviewed the Electronic Commerce Law issued by the Government of the Kingdom of Saudi Arabia, the decision issued by the Government of the Kingdom of Bahrain regarding the regulation of online sales through a virtual store, and the Federal Decree on Electronic Transactions and Trust Services issued by the Government of the United Arab Emirates, The draft regulations were submitted and discussed with the Ministry of Industry, Trade and Supply. The draft stipulated that the regulations would apply to both service providers and consumers. The draft focused on provisions for consumer protection, stating that service providers may not retain a consumer's personal data or electronic communications except for the period required by the nature of the transaction. The necessary measures must be taken to protect and maintain the privacy of the data during the period it is held. The service provider is responsible for protecting the consumer's personal data or electronic communications that are in its custody or under the control of the entities it

deals with or their agents. The service provider may not use the consumer's personal data or electronic communications for unauthorized or impermissible purposes, or disclose them to another party, for consideration or without consideration, except with the consumer's personal consent (Jordanian Ministry of Industry and Trade, 2025).

Digital Consumer Behavior in E-Commerce

Digital consumer behavior refers to the set of actions, preferences, and decision-making processes exhibited by individuals as they interact with brands, platforms, and products in online environments (Chen et al., 2021; Mahadewi et al., 2025).

In the context of e-commerce, this behavior is shaped by a complex interplay of technological stimuli, personal motivations, and contextual factors.

With the rise of artificial intelligence (AI), consumer behavior has become increasingly dynamic, data-driven, and responsive to personalized digital experiences (Oke et al., 2024; Sağkaya & Ozansoy, 2022).

Key Behavioral Dimensions

Four core dimensions are central to understanding digital consumer behavior in AI-enhanced e-commerce:

- **Browsing Behavior:** Refers to how consumers navigate websites, search for products, and interact with digital content, AI tools such as recommendation engines and dynamic interfaces influence browsing by curating content based on user preferences and behavior patterns (Chen et al., 2021; Mahadewi et al., 2025).
- **Personalization Responsiveness:** Captures how consumers react to tailored messages, offers, and product suggestions, Responsiveness is heightened when personalization aligns with consumer intent and context, leading to increased engagement and satisfaction (Shoib & Hermawan, 2025).
- **Purchase Intention:** Reflects the likelihood of a consumer completing a transaction, AI-driven personalization, predictive pricing, and conversational support have been shown to positively influence purchase intention by reducing uncertainty and enhancing perceived value (Nguyen et al., 2022; Wang & Wang, 2022).
- **Engagement:** Encompasses emotional and cognitive involvement with a brand, including interactions on social media, feedback mechanisms, and repeat visits,

AI enhances engagement by creating seamless, relevant, and interactive experiences (Jain et al., 2024; Rogova & Matta, 2023).

Shifting Expectations in AI-Enhanced Environments

As consumers become more digitally native, their expectations for speed, relevance, and personalization have intensified. Traditional one-size-fits-all marketing approaches are increasingly ineffective in meeting these evolving demands. Instead, consumers now expect:

- Real-time responsiveness across channels.
- Personalized journeys based on their unique preferences.
- Transparent and ethical use of their data.
- Seamless integration between browsing, support, and purchasing.

AI technologies address these expectations by enabling marketers to deliver context-aware, predictive, and emotionally intelligent experiences.

For example, chatbots provide instant support, while recommendation systems anticipate needs before they are explicitly expressed (Islam et al., 2023; Loureiro et al., 2021).

Recent studies emphasize that customer attitudes toward online shopping are shaped by a complex interplay of technological, organizational, and cultural factors. Trust, perceived usefulness, and personalization emerge as the most critical drivers influencing consumer engagement in digital commerce (Abu-ALSondos, Alkhwaldi, Salhab, Shehadeh, & Ali, 2023).

AI's Role in Shaping Decision-Making and Trust

AI-driven personalization and automation influence consumer decision-making by simplifying choices, enhancing relevance, and building trust (Chen et al., 2021; Mahadewi et al., 2025).

When consumers perceive that a brand understands their needs and delivers timely, personalized content, they are more likely to engage, convert, and remain loyal (Başev, 2024).

Conversely, poorly executed personalization or opaque data practices can erode trust and trigger resistance.

Automation also plays a critical role in reducing friction across the customer journey. From predictive search suggestions to automated checkout flows, AI streamlines

processes that traditionally required manual input, thereby improving user experience and reducing cognitive load (Shoib & Hermawan, 2025).

In emerging markets like Jordan, where digital literacy and infrastructure vary, AI offers scalable solutions that can adapt to local consumer behaviors while maintaining global standards of personalization and engagement (Gupta et al., 2024).

A nuanced understanding of these behavioral patterns is critical for crafting AI-enabled marketing strategies that align with the expectations and realities of diverse consumer groups—particularly within the evolving digital landscape of Jordan.

2.2 Previous Studies

The Impact of Artificial Intelligence on Consumer Behavior: A Comprehensive Review of Marketing Strategies in the Digital Age. (Mahadewi et al, 2025)

The study aims to present a thorough analysis of how AI is affecting consumer behavior. This research demonstrates how AI technologies like chatbot personalization and predictive algorithms affect consumer decision-making processes, improve customer experiences, and speed up purchasing behaviors by using literature analysis from recent journals, books, and scholarly articles. However, AI also brings with it new issues with ethics, privacy, and consumer confidence in technology. Through more pertinent and data-driven interactions, businesses that successfully integrate AI into their marketing strategies can cultivate stronger relationships with their clientele, according to the study findings. In this situation, the ability to comprehend customer wants and preferences becomes a crucial factor in marketing success. This study recommended the importance of integrating artificial intelligence technologies into e-marketing processes, particularly in areas such as personalization, predictive analytics, and dynamic pricing, while also emphasizing the need to consider AI ethics and protect digital consumer data to maintain customer trust.

This study differs from the current study in the methodology used, as it relied on a review of literature methodologies instead of collecting primary data, with similar results in that artificial intelligence applications have a positive and strong impact on digital consumer behavior in terms of trust and loyalty.

The Impact of Artificial Intelligence (AI) on Consumer Behavior in Digital Marketing: A Systematic Literature Review. (Shoib & Hermawan, 2025)

The aim of this study is to review the literature on the impact of artificial intelligence (AI) on consumer behavior. A qualitative descriptive Systematic Literature Review (SLR) of journal articles published between 2020 and 2025 that were retrieved from the Google Scholar database was the methodology employed in this study. The study focuses on the impact of AI on factors like customer experience, loyalty, purchase intention, and decision-making. Through improved digital engagement, efficient interactions, and personalized services, the findings demonstrate that AI significantly influences consumer behavior. Data security algorithm bias and privacy issues are some of the drawbacks that some studies also highlight, which have an impact on how consumers view and trust AI technology. This study recommended improving customer experiences through personalization to enhance the consumer experience and increase loyalty, while also considering ethical and privacy considerations when employing AI applications. It further recommended investing more in consumer behavior analysis tools, such as predictive analytics and advanced AI techniques, to understand behavior patterns and predict future purchasing trends.

This study differs from the current study in methodology, as it relied on a review of previous literature instead of distributing questionnaires. It also differs from the current study in that it is geared towards the digital marketing environment rather than the e-commerce environment, although it shares some similarities in results, which focus on the importance and impact of artificial intelligence applications on analyzing digital consumer behavior.

The Impact of Artificial Intelligence on E-Marketing Performance: The Moderating Role of Digital Marketing Tools in Jordanian E-Commerce Websites Companies. (Al-Gasawneh et al.,2025)

This study aimed to reveal the impact of artificial intelligence on e-marketing in e-commerce companies in Jordan. To achieve the study's objectives, a descriptive analytical approach was adopted. For data collection purposes, an electronic questionnaire was distributed to a sample of 200 participants, and the following dimensions of artificial intelligence were adopted: personalization, predictive analytics, and interactive intelligence. The results showed that artificial intelligence has a strong positive impact on

e-marketing in Jordanian e-commerce sites, which affects the behavior of the digital consumer and increases the amount of purchase through these sites. The study recommended the importance of employing artificial intelligence applications in e-marketing in e-commerce companies in Jordan to modify the behavior of the digital consumer.

This study differs from the current one in that it reveals the impact of artificial intelligence applications on digital marketing tools, while focusing on studying the Jordanian e-commerce environment. This is the point of similarity.

The impact of digital advertising on consumer behavior. (Brahimi et al., 2025)

The aim of this study is to research consumer behavior toward digital ads, which are developing quickly in the modern advertising industry in Algeria , and to find out what factors affect consumers' reactions to digital ads. With a sample size of 150, the data were gathered through an online survey, and SPSS was used for analysis. The study results showed a statistically significant and positive relationship between electronic advertising and the purchasing behavior of Algerian consumers. The study recommended the need to increase the credibility of advertising messages, improve the quality of digital advertisements, and provide effective targeting and content tailored to the digital consumer.

This study differs from the current study in the factors affecting digital consumer behavior, namely digital advertising, unlike the current study which examines the impact of artificial intelligence technologies on digital consumer behavior.

The impact of using artificial intelligence applications in e-commerce stores on the purchasing intention of the Egyptian consumer.(Ahmed & Erada, 2024).

This study aimed to reveal the extent to which digital consumers in Egypt utilize artificial intelligence applications in e-commerce stores. The study employed a quantitative approach, and the sample size consisted of 500 Egyptian consumers who used e-commerce stores. The study results showed a strong and positive relationship between the use of artificial intelligence applications and the behavior, satisfaction, loyalty, and emotional attachment of Egyptian e-commerce customers, with the dynamic pricing dimension having the strongest impact and the personalization dimension having the weakest impact on digital consumer behavior. The study recommended improving the

consumer experience by developing smart application interfaces to be easier and more effective in providing recommendations and assistance, and by increasing the focus on using AI data to understand consumer behavior and provide customized offers that increase purchasing opportunities.

This study differs from the current study in some of the results and the varying impact of artificial intelligence technologies on the purchasing behavior of the digital consumer.

Artificial intelligence consumer behavior: A hybrid review and research agenda. (Jain et al, 2024)

This study aimed to measure the growth of artificial intelligence research and link it to consumer behavior in the field of e-commerce by identifying the prevailing theories, methods and research results in this field. To achieve this aim, the study used secondary data collected from 107 articles to fill the research gap. These reviews focused on providing a summary of research within several key areas where artificial intelligence technologies interact, namely (personalization, predictive analytics, interactive intelligence, and dynamic pricing) and their impact as variables on consumer behavior. The results of these literature reviews concluded that interactive intelligence and personalization have the strongest and most positive impact on digital consumer behavior due to increased consumer trust and satisfaction, predictive analytics had a moderate impact, and dynamic pricing had the weakest impact. Thus, the results of this study were consistent with the current study.

The role of artificial intelligence in shaping sustainable consumer behavior: A cross-sectional study of Southwest. (Oke et al, 2024)

The aim of this study was to evaluate how much AI influences Nigerian consumers' sustainable purchasing habits. A well-structured pre-tested questionnaire was used to gather data for the study, and it was given to 320 respondents. SPSS and STATA were used to analyze the data. The analysis findings indicated that respondents' experience was comparatively high, with their mean monthly purchase frequency, and 49% of them were aware that AI is used in online shopping. While 27 percent of the respondents made a purchase based on AI-generated sustainability recommendations, only about 67.5% of the respondents were familiar with AI. Although customers think AI has a moderate impact on the degree to which these tailored suggestions affect their decision to buy a product,

they also think that AI influences their choices by providing them with personalized recommendations for goods and services. The results of the study showed that the artificial intelligence dimension (dynamic pricing) had the strongest impact on consumer behavior, while the personalization dimension showed the least impact on consumer purchasing behavior, and this is the difference with the current study.

The role of artificial intelligence tools in predicting digital consumer behavior. (Abu Al-Jabin , 2024)

The study aimed to highlight the role of artificial intelligence tools in predicting digital consumer behavior, and to demonstrate the extent to which these tools contribute to big data analysis, understanding purchasing patterns, and predicting future consumer decisions, thereby helping organizations improve their digital marketing strategies and enhance the consumer experience. The study adopted the descriptive analytical approach, through analyzing the literature and previous studies related to artificial intelligence and digital consumer behavior, in addition to reviewing models and applications of artificial intelligence tools used in behavioral prediction, with a focus on their mechanisms of operation and their role in supporting marketing decisions. The study results revealed that artificial intelligence tools play an effective role in predicting digital consumer behavior with greater accuracy compared to traditional methods. Artificial intelligence technologies, such as machine learning, predictive analytics, interactive intelligence, and dynamic pricing, contribute to a deeper understanding of consumer preferences and behavioral patterns. The study recommended that institutions adopt artificial intelligence tools in analyzing digital consumer behavior within their marketing strategies and invest in developing digital infrastructure and databases to ensure the accuracy of prediction results.

The results of this study are similar to the results of the current study in terms of the impact of the dimensions of artificial intelligence tools on the purchasing behavior of the digital consumer, with the difference being the research methodology.

The Influence of AI on Millennial Consumer Behavior: online shopping in Finland. (Ngu Ngendi, 2024)

This study aims to reveal the impact of artificial intelligence technologies, such as (chatbots, personalization, predictive analytics, interactive intelligence, dynamic pricing, personalized recommendations and personalized marketing) on purchasing choices,

customer satisfaction and levels of trust among the digital consumer in Finland. A qualitative research methodology was adopted, which included interviewing 10 millennials in Finland to collect data. Analysis was then conducted using NVivo 12 Plus software to analyze consumer purchasing behavior and attitudes towards artificial intelligence technologies. The study concluded that artificial intelligence technologies have significantly impacted consumer purchasing decisions in terms of ease of use and customization, leading to increased customer satisfaction and confidence. The study recommended the importance of adopting these technologies and encouraging them to improve consumer purchasing decisions. The results of this study were consistent with the current study.

Role of artificial intelligence (AI) in changing consumer buying behavior. (Biswas et al, 2023)

The aim of this study is to look at how marketers' ability to analyze and understand customer behavior has improved because of artificial intelligence (AI) in India. To increase the efficacy of their marketing strategies and plans, marketers are researching consumer behavior on the internet. AI could be the answer given the vast volume of data currently accessible and the regularity of data breaches. This study relied on a qualitative analysis based on a review of previous literature on the subject of the study and relied on secondary data. The results of the study were summarized as follows: AI enabled companies to analyze huge amounts of data on digital consumer behavior, which allowed for a strong understanding of consumer motivations and trends and strengthened the brand relationship with customers. The study recommended making greater use of artificial intelligence technologies in analyzing digital consumer behavior due to their effectiveness.

The results of this study were consistent with the results of the current study regarding the importance of artificial intelligence technologies on digital consumer behavior, with the difference being the nature of data collection and analysis, as this study relied on secondary data, unlike the current study which collected primary data.

The impact of artificial intelligence and digital economy on consumer online shopping behavior on market changes. (Xiong, 2022)

This study aims to examine how consumer behavior in online shopping is analyzed in light of recent developments in the digital economy and artificial intelligence in China. According to the questionnaire, online shopping has been experienced by people of all ages, with young people making up the majority. The amount of time spent shopping each month is still primarily between four and eleven times. The size of China's online retail market was also investigated in the study. By December 2021, and the results indicate that there were 820 million Internet shoppers in China, and by 2022, that number is expected to rise to 910 million. The B2C model, which offers better quality products and more guaranteed services, is expected to increase the market share to almost 61 percent in 2021, according to the report and the study recommended the need to focus on strengthening the infrastructure for e-commerce and market analytics by utilizing artificial intelligence and digital economy technologies to monitor consumer behavior trends in companies, as well as the need to adapt quickly to changes in the e-market, and to promote the sustainable development of the e-commerce retail economy.

This study differs from the current study in that it is directed to reveal the impact of artificial intelligence and the digital economy on consumer behavior in online shopping and on market changes, unlike our current study which is directed to the e-commerce environment in Jordan, thus the nature of the results differs.

Reinventing the wheel of marketing: assessing the impact of artificial intelligence (AI) on digital marketing and consumer buying behavior. (Wang & Wang, 2022)

The aim of this study is to comprehend the long-term effects on consumer purchasing behavior and digital marketing as AI has guaranteed advancements in this field. Biometric voice and conversational user interfaces are examples of modern marketing tools that provide unique ways to benefit both consumers and brands. The study was conducted in Hong Kong, China and to achieve the study objectives, digital questionnaires were distributed to a sample of 550 online consumers. The results were analyzed using statistical tools such as SPSS and AMOS. The study concluded that product personalization using artificial intelligence has the biggest impact on consumer purchase intention and customer satisfaction. One of the most important recommendations of this study is the need to further utilize artificial intelligence to enhance personalization and

customer understanding, based on each consumer's preferences, and the necessity of improving the consumer experience and interaction through the application of AI technologies that enhance user experience, such as chatbots and recommendation systems in e-commerce.

The results of this study are similar to the current study in that personalization using artificial intelligence techniques has the greatest impact on consumer behavior in online shopping.

The Impact of E-Commerce on Consumer Purchasing Behavior: The Mediating Role of Financial Technology.(Abu Haniyeh, 2021).

The study aims to ascertain how e-commerce affected consumers' purchase decisions at Jordan's large-scale food and consumer goods retailers, using financial technology as an intermediary variable. The researcher used an analytical, descriptive, and internal approach in the study. The study sample included all employees in Jordan's high-level consumer and food stores as well as employees in IT departments, totaling 408 people to whom the researcher gave the study tool and analyzed the data and tested theories electronically using SPSS and AMOS. The study produced a number of findings, the most significant of which is the high degree of relative importance of e-commerce, consumer behavior, and financial technology in Jordan's large-scale food stores and consumers, as well as the existence of a statistically significant impact of e-commerce on consumer behavior and the fact that through mediation in fintech E-commerce had a greater impact on consumer behavior, and there was only partial mediation. The study recommended that to improve the aspects of e-commerce, Jordan's major food and retail establishments must be maintained. This can be done by raising awareness of e-commerce, understanding the significance of these establishments in terms of efficiency and effectiveness, and continuing to pay attention to and adopt financial technology due to its direct positive impact on consumer purchasing behavior.

2.3 Commenting on previous studies

The reviewed literature demonstrates a growing scholarly interest in the intersection of artificial intelligence, digital consumer behavior, and E-Commerce Environment .

After reviewing previous studies, some studies were found to have similar results to the current study, such as the studies by Al-Gasawneh et al. (2025), Jain et al. (2024), Abu

Al-Jabin (2024), Biswas et al. (2023), Wang & Wang (2022), and Ngu Ngendi (2024). However, these studies differed in their results from the other previously reviewed studies, Therefore, what distinguishes this study from other previous studies is:

- The main objective of this study is to examine the impact of using artificial intelligence applications in analyzing digital consumer behavior within the context of e-commerce in Jordan and It focuses on four key dimensions of AI integration: personalization, predictive analytics, interactive intelligence, and dynamic pricing, while testing their direct impact on consumer trust, satisfaction, loyalty, and emotional engagement. These are variables that previous studies have not attempted to address. The researcher was able to identify and study them, linking them to the variables of the current study with other variables. Most studies have dealt with one or the other.
- This study aimed to provide useful scientific material that enriches the administrative knowledge base and serves as a reference for studying other variables related to this field.
- A review of previous studies that addressed the study variables (artificial intelligence technologies, digital consumer behavior, e-commerce environment) revealed that most studies were conducted in Arab and foreign contexts, each with its own specific characteristics and interests, Therefore, it can be said that this study was conducted in an Arab-Jordanian environment qualified to conduct such studies.
- By focusing on the Jordanian e-commerce sector, the study contributes to contextualizing global AI advancements within local market dynamics, offering both theoretical enrichment and practical guidance for data-driven marketing strategies.

Through the researcher review and research of many previous studies in different contexts and countries, she saw that most of the studies focused on artificial intelligence techniques in the e-commerce environment with a number of different variables such as digital shopping, the digital economy and consumer purchasing behavior, and were linked to digital consumer behavior in most of the studies. With a small percentage of studies in the Jordanian context.

From the researcher's point of view , Artificial intelligence is having a significant impact on numerous organizations, businesses, and industries. It is one of the primary forces behind numerous new technologies that are having a profound effect everywhere they are used. These days, one of the most important elements in the e-commerce sector is artificial intelligence. Numerous e-commerce companies began using various AI techniques to comprehend consumer purchasing patterns, visual searches, chatbots, strategy analysis, retargeting, etc. By examining consumer behavior patterns, artificial intelligence has maximized the potential of the e-commerce sector and created numerous new avenues for enhancing the customer experience. Artificial intelligence is being applied in this area to release its potential to leverage company. It completely altered how merchants market their goods and services as well as how consumers use them. By delivering services more effectively, artificial intelligence is also assisting the company in improving its reputation.

Chapter Three

Study Methodology (Method and Procedures)

3.1 Introduction

This chapter outlines the methodological framework adopted to investigate the impact of artificial intelligence (AI) applications on digital consumer behavior in the Jordanian e-commerce sector.

The methodology is designed to ensure rigorous empirical testing of the proposed conceptual model and hypotheses, using a quantitative, descriptive, and correlational research design supported by structural equation modeling.

3.2 The Research Method

The study employs a quantitative, descriptive, and correlational research design. The quantitative approach enables objective measurement of relationships among variables, while the descriptive component provides a profile of AI adoption and consumer behavior patterns in the Jordanian e-commerce context.

The correlational design facilitates the examination of both direct and indirect effects among the independent (AI applications), and dependent (digital consumer behavior) variables.

To test the conceptual model and hypotheses, the study utilizes Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4.

This technique is appropriate for complex models involving multiple latent constructs, mediation paths, and relatively small to medium sample sizes (Hair et al., 2022).

3.3 Study Group

The study group consists of employees working in e-commerce companies operating in Jordan, who are directly or indirectly involved in AI adoption and marketing activities.

Specifically, the study focuses on marketing managers, IT managers and data analysts, and digital advertising and media officers.

According to recent industry reports, Jordan hosts approximately 5,400 active e-commerce companies and online stores as of 2025–2026, distributed across multiple platforms such as MakanE, Shopify, and WooCommerce.

These companies operate in diverse sectors including fashion, food and beverages, furniture and home décor, health and beauty, and electronics.

This diversity ensures that the study captures a representative view of AI adoption across different market segments (ShopRank, 2026; AfterShip, 2026).

Table 3.1 Distribution of E-Commerce Companies in Jordan

Platform / Sector	Number of Companies	Percentage (%)
MakanE	2,560	46.7%
Shopify	1,200	21.9%
WooCommerce	947	17.3%
Other Platforms	~763	14.1%
Total	~5,470	100%

3.4 Study Sample

The study sample was drawn from employees working in the targeted e-commerce companies that constitute the research population in Jordan.

These employees are directly or indirectly involved in AI adoption and digital marketing activities, ensuring that the respondents have relevant expertise and practical exposure to the constructs under investigation.

A Stratified sampling method was employed, as this non-probability technique is particularly suitable for exploratory and explanatory research where domain-specific knowledge is essential for construct validity (Etikan, Musa, & Alkassim, 2016).

The sample was classified into three professional categories:

- **Marketing managers**, responsible for digital campaigns and customer engagement.
- **IT managers and data analysts**, engaged in AI adoption, data processing, and predictive analytics.
- **Digital advertising and media officers**, involved in personalization, targeting, and online consumer interaction.

This classification ensures that the study captures perspectives from both strategic decision-makers and operational practitioners, thereby enhancing the representativeness and relevance of the findings.

Regarding sample size, and following the guidelines of Hair et al. (2022), a minimum of **200 respondents** was targeted to secure adequate statistical power for Partial Least Squares Structural Equation Modeling (PLS-SEM).

This threshold accounts for the complexity of the conceptual model, the number of indicators per construct.

3.5 Validity of the Tool

The primary data collection tool is a structured questionnaire, adapted from validated scales in prior studies (Davenport et al., 2020; Dwivedi et al., 2021).

The questionnaire was specifically designed for employees working in e-commerce companies in Jordan, who are directly or indirectly involved in AI adoption and marketing activities.

The instrument consists of three sections:

- **Section A:** Demographic and background information of respondents (e.g., age, gender, job title, years of experience).
- **Section B:** AI tool usage in marketing practices (e.g., recommender systems, predictive analytics, natural language processing, ad automation).
- **Section C:** Effectiveness of advertising targeting and its influence on consumer behavioral outcomes (e.g., personalization responsiveness, purchase intention, trust).

Responses were recorded on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), consistent with prior marketing technology research (Kumar et al., 2021).

To ensure validity, the questionnaire items were adapted from established scales and reviewed by academic experts for content validity, while construct validity was confirmed through factor analysis during the data analysis stage.

3.6 Validity and Reliability

Content Validity

To ensure content validity, the questionnaire will be reviewed by academic experts in artificial intelligence, marketing, and e-commerce.

Their feedback will guide the refinement of item wording, relevance, and alignment with the study's objectives.

Reliability Assessment

Internal consistency will be evaluated using:

- **Cronbach's Alpha (α):** Acceptable threshold ≥ 0.70
- **Composite Reliability (CR):** Acceptable threshold ≥ 0.70

Construct Validity

Construct validity will be assessed through **Confirmatory Factor Analysis (CFA)** using SmartPLS. This includes:

- **Convergent Validity:** Assessed via Average Variance Extracted ($AVE \geq 0.50$)
- **Discriminant Validity:** Evaluated using the Fornell-Larcker criterion and Heterotrait-Monotrait (HTMT) ratios

Table 3.2 Variables and Operationalization

Variable Type	Construct	Sub-Dimensions / Indicators
Independent Variable	AI Applications	Personalization in e-commerce , Predictive Analytics, Conversational AI, Dynamic Pricing strategies.
Dependent Variable	Digital Consumer Behavior	Engagement, Purchase intention, Responsiveness to AI-driven content

Each construct was measured using multi-item reflective indicators adapted from prior validated instruments.

3.7 Data Analysis Procedures

Data analysis was conducted using SPSS for preliminary descriptive statistics and SmartPLS 4 for structural equation modeling.

The analysis proceeded in two stages:

- **Stage 1: Measurement Model Assessment**

- Indicator Reliability: Outer loadings ≥ 0.70 .
- Internal Consistency: Cronbach's Alpha and Composite Reliability.
- Convergent Validity: Average Variance Extracted (AVE) ≥ 0.50 .
- Discriminant Validity: Assessed using the Fornell–Larcker criterion and HTMT ratios.

- **Stage 2: Structural Model Assessment**

- Descriptive Statistics: Mean, standard deviation, and frequency distributions for demographic and background data.
- Path Coefficients: Testing direct effects of AI applications on consumer behavior (H_{1a}–H_{1d}).
- Model Fit and Predictive Power: Evaluated using R².

- **Data Collection Procedure**

- The questionnaire was distributed electronically via Google Forms on October 1, 2025.
- Clear instructions and consent statements were provided at the beginning of the survey.
- Data collection lasted for four weeks, concluding on October 28, 2025.
- A larger number of questionnaires were initially distributed (300); responses were returned (230), and after screening for completeness and validity, 200 fully completed questionnaires were retained as the effective sample size for analysis.
- Responses were securely stored, anonymized, and used solely for academic purposes, with no identifying information disclosed.

- **Ethical Considerations and Study Procedure**

- Prior to data collection, ethical clearance was obtained from the Deanship of Graduate Studies and participating organizations.
- All participants were informed about the study's purpose, their voluntary participation, and the confidentiality of their responses.

Chapter Four

Results of the Study

4.1 Introduction

This chapter presents the practical framework of the research, focusing on the analysis and interpretation of the collected data. It builds upon the methodological foundations established in the earlier chapters and translates them into empirical findings that address the study's objectives. The chapter is structured to provide a comprehensive examination of the results, ensuring that both descriptive and inferential analyses are clearly articulated and aligned with the research hypotheses.

The analysis begins with an overview of the sample characteristics, highlighting demographic distributions such as age, gender, and educational level, which provide context for understanding consumer perceptions of AI applications in e-commerce. This is followed by the descriptive analysis of the study variables, where frequencies, percentages, means, and standard deviations are presented to illustrate general trends in responses.

Subsequently, the chapter examines the reliability and validity of the measurement model, confirming the robustness of the constructs through Cronbach's Alpha, Composite Reliability, AVE, and CFA indices. This ensures that the variables accurately capture the intended dimensions of personalization, predictive analytics, conversational AI, dynamic pricing, and digital consumer behavior.

The core of the chapter is dedicated to hypotheses testing, where SmartPLS and AMOS are employed to evaluate the direct relationships between independent and dependent variables. The results are presented in both tabular and narrative form, highlighting the strength, significance, and direction of each relationship. This section provides critical insights into how AI applications influence consumer trust, satisfaction, loyalty, and emotional engagement.

Finally, the chapter incorporates comparative analyses across demographic groups, using ANOVA and T-tests to identify significant differences in perceptions based on age, gender, and educational level. These findings enrich the discussion by revealing how demographic factors shape consumer receptiveness to AI-driven e-commerce strategies.

4.2 The Validity & Reliability analysis tables

- All constructs achieved Cronbach's Alpha and CR > 0.70, confirming internal consistency.
- AVE \geq 0.50 across all constructs, confirming convergent validity.
- CFA indices show good overall model fit.
- Discriminant validity confirmed via Fornell–Larcker and HTMT.
- Reliability Analysis

Table 4.1 Reliability Analysis

Construct	Cronbach's Alpha (α)	Composite Reliability (CR)	Interpretation
Personalization (PER)	0.82	0.85	Good internal consistency
Predictive Analytics (PA)	0.79	0.81	Acceptable to good
Conversational AI (CA)	0.84	0.86	Good internal consistency
Dynamic Pricing (DP)	0.77	0.80	Acceptable
Digital Consumer Behavior (DCB)	0.86	0.88	Excellent reliability

Comment on Table

The results demonstrate that all constructs achieved satisfactory levels of reliability and validity.

Cronbach's Alpha and Composite Reliability (CR) values exceeded the recommended threshold of 0.70, confirming strong internal consistency.

Average Variance Extracted (AVE) values were above 0.50, supporting convergent validity, while discriminant validity was established through Fornell–Larcker and HTMT criteria. Furthermore, the CFA indices indicated a good overall model fit.

Collectively, these outcomes confirm that the measurement model is both reliable and valid, providing a solid foundation for subsequent hypothesis testing and structural analysis.

- **Convergent Validity (AVE)**

Table 4.2 Convergent Validity (AVE)

Construct	Average Variance Extracted (AVE)	Threshold (≥ 0.50)	Interpretation
Personalization (PER)	0.56	Met	Convergent validity established
Predictive Analytics (PA)	0.52	Met	Convergent validity established
Conversational AI (CA)	0.58	Met	Convergent validity established
Dynamic Pricing (DP)	0.51	Met	Convergent validity established
Digital Consumer Behavior (DCB)	0.60	Met	Convergent validity established

Comment on Convergent Validity (AVE) Table

The results confirm that all constructs achieved Average Variance Extracted (AVE) values above the recommended threshold of 0.50, thereby establishing convergent validity.

This indicates that the measurement items for each construct share sufficient variance and reliably represent their underlying latent variables.

Specifically, personalization, predictive analytics, conversational AI, dynamic pricing, and digital consumer behavior all met the criterion, demonstrating that the indicators are strongly correlated with their respective constructs.

Collectively, these findings provide robust evidence that the measurement model captures the intended theoretical dimensions with adequate precision and consistency.

- **Confirmatory Factor Analysis (CFA) – Model Fit Indices**

Table 4.3 Confirmatory Factor Analysis (CFA) – Model Fit Indices

Fit Index	Value	Recommended Threshold	Interpretation
SRMR	0.07	≤ 0.08	Good fit
NFI	0.91	≥ 0.90	Very good fit
χ^2/df	2.3	≤ 3	Acceptable fit

Comment on CFA – Model Fit Indices Table

The CFA results demonstrate that the measurement model achieved satisfactory fit across all indices.

The SRMR value of 0.07 falls below the recommended threshold of 0.08, indicating a good fit.

The NFI value of 0.91 exceeds the minimum criterion of 0.90, reflecting a very good comparative fit.

Finally, the χ^2/df ratio of 2.3 is within the acceptable range (≤ 3), confirming that the model provides a reasonable representation of the observed data.

Collectively, these indices validate the adequacy of the measurement model and support its use for subsequent structural analysis.

• Discriminant Validity

Table 4.4 Discriminant Validity

Criterion	Result	Threshold	Interpretation
Fornell–Larcker	$\sqrt{AVE} >$ inter-construct correlations	Met	Constructs are distinct
HTMT Ratios		Met	Discriminant validity confirmed

Comment on Discriminant Validity Table

The results confirm that discriminant validity was successfully established across all constructs.

The Fornell–Larcker criterion was met, as the square root of AVE values exceeded the inter-construct correlations, indicating that each construct is empirically distinct.

In addition, HTMT ratios were within acceptable thresholds, further validating that the constructs do not overlap conceptually.

Together, these outcomes demonstrate that the measurement model achieves clear differentiation among personalization, predictive analytics, conversational AI, dynamic pricing, and digital consumer behavior, thereby ensuring the robustness of the structural analysis.

4.3 The sample specification tables

The sample specification tables provide a detailed overview of the demographic characteristics of the respondents who participated in this study.

These tables are essential for contextualizing the research findings, as they illustrate the composition of the sample in terms of age, gender, educational level, and purchasing behavior.

By presenting these specifications, the study ensures transparency regarding the representativeness of the data and allows for a deeper understanding of how demographic diversity may influence perceptions of AI applications in e-commerce.

Table 4.5 Sample Specifications (N = 200)

Category	Subgroup	Frequency (n)	Percentage (%)
Age	30 years or less	140	70.0
	31–40 years	50	25.0
	41–50 years	7	3.5
	51 years and more	3	1.5
Gender	Male	110	55.0
	Female	90	45.0
Educational Level	High School	15	7.5
	Bachelor’s Degree	145	72.5
	Postgraduate	40	20.0
Online Purchases/Month	0–1 times	80	40.0
	3–5 times	70	35.0
	More than 5 times	50	25.0

Analytical Notes

- **Age:** The sample is predominantly young, with 95% under 40 years old.

This reflects the demographic most engaged in online shopping and AI-driven platforms, consistent with global trends where younger consumers are early adopters of digital commerce.

- **Gender:** The distribution is relatively balanced, with a slight male majority (55%).

This balance ensures that both perspectives are represented in analyzing digital consumer behavior.

- **Education:** The majority of participants hold a Bachelor’s degree (72.5%), indicating a well-educated sample.

The presence of postgraduate respondents (20%) adds depth, while the smaller high school group (7.5%) ensures diversity in educational backgrounds.

- **Purchasing Behavior:** The sample shows varied purchasing behavior: 40% are low-frequency buyers, 35% moderate buyers, and 25% high-frequency buyers.

This distribution allows for meaningful comparisons across different levels of online shopping engagement.

Academic Comment

The demographic composition of the respondents offers a solid basis for interpreting the study's outcomes.

The dominance of younger, well-educated participants corresponds to the consumer segment most engaged with e-commerce and AI-enabled platforms, consistent with global patterns of digital adoption among younger generations.

The near-balanced gender distribution ensures inclusivity of perspectives, while variation in educational attainment and purchasing frequency enriches the analysis of consumer attitudes.

This profile enhances the contextual relevance of the research, as it reflects the characteristics of Jordan's core e-commerce consumer base.

Accordingly, the representativeness of the sample reinforces the credibility of the conclusions regarding the influence of AI applications—personalization, predictive analytics, conversational AI, and dynamic pricing—on digital consumer behavior in the Jordanian market.

4.4 General Table: Means, SD, T-test, Relative Importance

A comprehensive table has been prepared to summarize the descriptive and inferential statistics for all items across the independent variables (Personalization, Predictive Analytics, Conversational AI, and Dynamic Pricing) as well as the dependent variable (Digital Consumer Behavior). Each item was analyzed using the **mean**, **standard deviation (SD)**, **T-test value**, **significance level (Sig.)**, and **relative importance (RI)**.

This consolidated overview provides a clear evaluation of the strength of each construct, the consistency of responses, and the relative weight of each item in shaping consumer perceptions of AI applications in e-commerce. For detailed numerical results and item-level specifications, the full table can be consulted in the **Appendix**.

Personalization (PER)

- The mean values for personalization items range between 3.40 and 3.65, indicating moderate to high agreement.
- PER1 (relevance to personal interests) achieved the highest relative importance (73%), confirming that consumers value platforms that align recommendations with their personal preferences.
- Standard deviations around 1.0 suggest moderate variability, meaning most respondents share similar perceptions.
- All items are statistically significant ($p < 0.001$), confirming that personalization is positively perceived beyond the neutral point.

Predictive Analytics (PA)

- Mean scores are slightly lower, ranging from 3.30 to 3.45, showing moderate confidence in predictive features.
- PA3 (anticipating future purchases) had the lowest relative importance (66%), reflecting skepticism about the accuracy of predictive tools.
- Despite this, all items are significant ($p < 0.001$), indicating that predictive analytics still contribute meaningfully to consumer behavior.
- The results highlight that while predictive analytics are valued, improvements in timing and accuracy are needed to strengthen consumer trust.

Conversational AI (CA)

- Mean values range between 3.30 and 3.55, with CA1 (quick responses) and CA4 (efficient issue resolution) scoring highest (71% and 70%).
- This demonstrates that consumers appreciate the speed and efficiency of chatbots and virtual assistants.
- CA2 (preference over traditional customer service) scored lowest (66%), showing that some consumers remain hesitant to replace human interaction with AI.
- Overall, conversational AI is positively perceived, but its acceptance depends on building trust and comfort.

Dynamic Pricing (DP)

- Mean scores range between 3.35 and 3.50, reflecting mixed perceptions.
- DP2 (fairness of pricing adjustments) scored lowest (67%), confirming consumer concerns about fairness and transparency.
- DP1 (awareness of price changes) scored highest (70%), showing that consumers are attentive to dynamic pricing strategies.
- The results reveal polarization: while dynamic pricing motivates some consumers to act quickly, others perceive it as unfair.

Digital Consumer Behavior (DCB)

- This dimension achieved the highest overall means, ranging from 3.50 to 3.65, with relative importance between 70% and 73%.
- DCB3 (satisfaction with AI features) scored the highest (73%), followed closely by DCB2 (trust in AI platforms) and DCB6 (emotional satisfaction).
- These results confirm that AI applications not only enhance behavioral outcomes (loyalty, recommendation) but also generate positive emotional responses, strengthening consumer engagement.
- The significance of all items ($p < 0.001$) validates the strong role of AI in shaping digital consumer behavior.

Key Insights

1. Personalization and Digital Consumer Behavior are the strongest dimensions, with high means and relative importance, confirming their central role in consumer engagement.
2. Predictive Analytics and Dynamic Pricing show moderate results, with some skepticism regarding accuracy and fairness, highlighting areas for improvement.
3. Conversational AI is well-received for efficiency but faces resistance in replacing traditional customer service.
4. The inclusion of emotional satisfaction (DCB6) demonstrates that AI influences not only consumer actions but also their affective experiences, reinforcing loyalty and trust.

Conclusion

The general table provides robust evidence that AI applications in e-commerce significantly enhance consumer experiences, particularly through personalization and satisfaction-driven features.

While predictive analytics and dynamic pricing require refinement to address consumer concerns, the overall findings confirm that AI integration fosters trust, loyalty, and emotional satisfaction, making it a strategic driver of digital consumer behavior in Jordan.

4.5 Results and Discussion: Hypotheses Testing (Direct Relationships)

This section presents the results of hypotheses testing for the direct relationships between the independent variables—Personalization (PER), Predictive Analytics (PA), Conversational AI (CA), and Dynamic Pricing (DP)—and the dependent variable Digital Consumer Behavior (DCB).

The analysis was conducted using simple regression analysis, focusing exclusively on direct effects.

Hypotheses Testing Results

H_{1a}: Personalization → Digital Consumer Behavior

The regression results demonstrate a strong and significant positive effect of personalization on digital consumer behavior.

Regression coefficient (β) = 0.32

t-value = 6.45

Sig. = $p < 0.001$

This indicates that personalization features—such as tailored recommendations and relevant product suggestions—significantly enhance consumer trust, satisfaction, and loyalty.

Personalization emerges as one of the most influential drivers of digital consumer behavior.

H_{1b}: Predictive Analytics → Digital Consumer Behavior

Predictive analytics also show a positive and significant effect, though with a smaller magnitude compared to personalization.

Regression coefficient (β) = 0.25

t-value = 5.10

Sig. = $p < 0.001$

Consumers appreciate predictive features that anticipate needs and provide timely offers, but the moderate effect size suggests that confidence in predictive accuracy is not yet fully established.

H_{1c}: Conversational AI → Digital Consumer Behavior

Conversational AI demonstrates a significant positive impact on digital consumer behavior.

Regression coefficient (β) = 0.28

t-value = 5.85

Sig. = $p < 0.001$

Chatbots and virtual assistants contribute to consumer satisfaction by providing quick responses and efficient issue resolution.

The findings confirm that conversational AI strengthens both behavioral and emotional aspects of consumer engagement.

H_{1d}: Dynamic Pricing → Digital Consumer Behavior

Dynamic pricing strategies show the weakest but still significant effect among the independent variables.

Regression coefficient (β) = 0.18

t-value = 3.95

Sig. = $p < 0.001$

While dynamic pricing motivates faster purchase decisions for some consumers, concerns about fairness and transparency reduce its overall influence.

Table 4.6 Summary of Direct Effects (Simple Regression Results)

Hypothesis	Regression Coefficient (β)	t-value	Sig.	Result
H _{1a} : Personalization → DCB	0.32	6.45	$p < 0.001$	Supported
H _{1b} : Predictive Analytics → DCB	0.25	5.10	$p < 0.001$	Supported
H _{1c} : Conversational AI → DCB	0.28	5.85	$p < 0.001$	Supported
H _{1d} : Dynamic Pricing → DCB	0.18	3.95	$p < 0.001$	Supported

Discussion

The findings confirm that all four hypotheses (H_{1a}–H_{1d}) are supported, with varying degrees of influence:

- **Personalization (H_{1a})** The findings confirm that personalization has the strongest and most significant effect on digital consumer behavior.

This result is consistent with Davenport et al. (2020), who emphasized personalization as a key driver of consumer trust and loyalty in AI-driven platforms.

Similarly, Dwivedi et al. (2021) highlighted that tailored recommendations enhance consumer satisfaction and engagement, reinforcing the importance of personalization as a strategic tool in e-commerce.

- **Predictive Analytics (H_{1b})** Predictive analytics showed a moderate but significant effect.

This aligns with Kumar et al. (2021), who noted that predictive models can improve consumer decision-making but require higher accuracy to build trust.

The moderate effect size in this study reflects consumer skepticism about predictive accuracy, echoing findings in prior research that stressed the need for transparency in predictive systems.

- **Conversational AI (H_{1c})** Conversational AI demonstrated a significant positive impact, supporting the view of Huang & Rust (2021) that chatbots and virtual assistants enhance consumer satisfaction by providing efficient and immediate responses.

The results also resonate with Grewal et al. (2020), who argued that conversational AI strengthens emotional engagement and trust when integrated effectively into customer service.

- **Dynamic Pricing (H_{1d})** Dynamic pricing had the weakest effect, though still significant.

This finding is consistent with Elmaghraby & Keskinocak (2003) and more recent studies such as Chen et al. (2021), which pointed out that while dynamic pricing can stimulate purchases, it often raises concerns about fairness and transparency.

The results of this study confirm that perceptions of unfairness may limit the effectiveness of dynamic pricing strategies, suggesting that companies must carefully manage communication and justification of price changes to avoid negative consumer reactions.

Overall, the results emphasize that AI-driven personalization and conversational AI are the most effective strategies for strengthening digital consumer behavior in e-commerce, while predictive analytics and dynamic pricing require refinement to maximize their impact.

These insights provide both theoretical contributions to AI adoption literature and practical implications for e-commerce managers in Jordan.

Chapter Five

Discussion of Findings and Recommendations

This chapter discusses the findings of the study in light of previous research and theoretical frameworks, highlighting the scientific value of the results and their contribution to the understanding of how artificial intelligence (AI) applications—namely personalization, predictive analytics, conversational AI, and dynamic pricing—shape digital consumer behavior in Jordan.

The analysis was based on a sample of 200 respondents, The discussion also reflects on the study's objectives, situating the results within global literature while emphasizing their contextual relevance to the Jordanian e-commerce sector.

5.1 Main Findings

5.1.1 Personalization

The results confirmed that personalization exerts the strongest and most significant influence on digital consumer behavior.

Respondents consistently valued platforms that offered tailored recommendations aligned with their interests, past behaviors, and lifestyle needs.

This finding resonates with Davenport et al. (2020), who emphasized personalization as a cornerstone of consumer trust and loyalty in AI-driven commerce.

Similarly, Dwivedi et al. (2021) demonstrated that personalized suggestions enhance satisfaction and engagement, reinforcing personalization as a strategic driver of consumer interaction.

From a theoretical perspective, personalization aligns with the Technology Acceptance Model (TAM), where perceived usefulness and relevance directly influence consumer adoption.

In the Jordanian context, personalization not only increased purchase intentions but also fostered discovery of new products, underscoring its dual role in both functional and experiential dimensions of consumer behavior.

This study extends prior research by providing empirical evidence from Jordan, a context underexplored in AI adoption literature, thereby filling a gap in regional e-commerce studies.

5.1.2 Predictive Analytics

Predictive analytics showed a positive but moderate effect on consumer behavior.

Respondents acknowledged the usefulness of predictive features in anticipating needs and providing timely offers, yet skepticism remained regarding accuracy and reliability.

This finding is consistent with Kumar et al. (2021), who argued that predictive models can improve decision-making but require higher precision to build consumer trust.

The moderate effect size suggests that while predictive analytics contribute to faster and more confident decisions, consumers remain cautious.

This reflects broader concerns in the literature about algorithmic transparency and the risk of over-reliance on predictive systems.

In the Jordanian e-commerce sector, predictive analytics appear to be valued but not yet fully trusted, highlighting the need for refinement in timing and accuracy to strengthen consumer confidence.

This study contributes to the literature by showing that consumer skepticism toward predictive analytics is not only a global phenomenon but also contextually reinforced by local expectations of reliability and transparency.

5.1.3 Conversational AI

Conversational AI, represented by chatbots and virtual assistants, demonstrated a significant positive impact on consumer behavior.

Respondents highlighted efficiency in providing quick responses and resolving issues, which enhanced comfort and confidence in interacting with AI systems.

These findings support Huang & Rust (2021), who noted that conversational AI enhances satisfaction by delivering immediate and reliable support.

They also align with Grewal et al. (2020), who emphasized its role in strengthening emotional engagement and trust when integrated effectively.

However, the study also revealed that a portion of consumers still prefer human interaction, suggesting that conversational AI is most effective when complementing rather than replacing traditional support.

This duality reflects the ongoing debate in the literature about the balance between automation and human touch in customer service.

In the Jordanian context, conversational AI appears to be a valuable tool for efficiency, but its acceptance depends on building trust and ensuring that it enhances rather than diminishes the human experience.

This finding enriches the literature by demonstrating that cultural preferences for human interaction remain influential even in technologically advanced environments.

5.1.4 Dynamic Pricing

Dynamic pricing emerged as the weakest yet still significant predictor of consumer behavior.

While some respondents recognized its role in motivating faster purchase decisions and securing better deals, others questioned the fairness and transparency of price adjustments.

This finding is consistent with Elmaghraby & Keskinocak (2003) and Chen et al. (2021), who highlighted consumer concerns about equity and manipulation in dynamic pricing strategies.

The results confirm that perceptions of fairness critically shape acceptance of dynamic pricing.

In contexts where transparency is lacking, consumers may perceive such strategies as exploitative, reducing trust and satisfaction.

In Jordan, this sensitivity appears particularly pronounced, suggesting that cultural and ethical considerations play a role in shaping consumer responses.

The findings underscore the importance of balancing innovation with fairness, as dynamic pricing can stimulate purchases but risks undermining long-term loyalty if perceived as manipulative.

This study adds to the literature by contextualizing fairness concerns within Middle Eastern consumer culture, where equity and transparency are highly valued.

5.1.5 Overall Digital Consumer Behavior

Overall, digital consumer behavior was strongly influenced by AI applications.

Respondents reported higher levels of trust, satisfaction, and loyalty when platforms integrated AI features effectively.

Emotional satisfaction also emerged as a significant outcome, confirming that AI not only shapes behavioral outcomes—such as purchase frequency and loyalty—but also fosters deeper emotional connections with consumers.

This finding extends the literature by demonstrating that AI applications influence both behavioral and affective dimensions of consumer engagement.

Studies such as Lemon & Verhoef (2016) emphasized the importance of customer experience in shaping loyalty, and the present study confirms that AI-driven features contribute directly to this experience.

In the Jordanian e-commerce sector, emotional satisfaction appears to be a critical mediator between AI adoption and sustained consumer loyalty, highlighting the psychological depth of AI's impact.

5.2 Research Recommendations

Based on the findings of this study, several recommendations can be proposed to enhance the effectiveness of AI applications in e-commerce and to strengthen digital consumer behavior.

These recommendations are directed toward e-commerce platforms, policymakers, and researchers, ensuring that the insights gained are translated into practical strategies.

5.2.1 It is recommended that e-commerce firms in Jordan institutionalize personalization as a core strategic capability rather than a peripheral marketing tool.

This involves embedding personalization into customer relationship management systems, supported by advanced data governance frameworks to ensure ethical use of consumer information.

As highlighted by Davenport et al. (2020), personalization is not merely a technical feature but a trust-building mechanism.

Thus, firms should invest in adaptive algorithms that evolve with consumer preferences, while simultaneously adopting transparent communication practices to reinforce credibility.

5.2.2 Organizations should advance predictive analytics by integrating explainable AI (XAI) and continuous model validation protocols.

Rather than focusing solely on predictive outputs, firms must emphasize interpretability and accountability, enabling consumers to understand the rationale behind recommendations.

Literature on algorithmic transparency (e.g., Burrell, 2016) underscores that trust in predictive systems is contingent upon clarity of logic and demonstrable accuracy.

In the Jordanian market, predictive analytics should be positioned as a decision-support tool rather than a deterministic system, thereby enhancing consumer confidence while mitigating skepticism.

5.2.3 The deployment of conversational AI should follow a hybrid service model, where automation complements but does not replace human interaction.

Firms are advised to design escalation pathways that seamlessly transfer complex queries from chatbots to human agents, ensuring both efficiency and empathy.

As Huang & Rust (2021) argue, conversational AI is most effective when it augments rather than substitutes human service.

In culturally diverse contexts such as Jordan, this dual approach can strengthen consumer trust by balancing technological convenience with interpersonal reassurance.

5.2.4 Dynamic pricing should adopt an ethical framework grounded in transparency, fairness, and consumer empowerment.

Companies should adopt communication mechanisms that clarify the logic of price fluctuations, such as real-time notifications or loyalty-based explanations.

Behavioral economics research (e.g., Kahneman et al., 1986) demonstrates that perceptions of fairness are central to consumer acceptance.

In the Jordanian context, where equity is culturally salient, firms should integrate fairness safeguards into pricing algorithms to prevent perceptions of manipulation and to sustain long-term loyalty.

5.2.5 E-commerce platforms should pursue a holistic AI integration strategy that addresses both functional and emotional dimensions of consumer engagement.

Beyond transactional efficiency, firms must design AI-enabled experiences that cultivate trust, empathy, and psychological satisfaction.

As Lemon & Verhoef (2016) emphasize, customer experience is a multidimensional construct, and AI should be leveraged to enrich this experience across behavioral and affective domains.

In Jordan, firms should prioritize AI systems that build transparency, trust, and loyalty.

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Appendices

Appendices 1 General Table: Means, SD, T-test, Relative Importance

Construct	Item Code	Statement (short)	Mean	SD	T-test	Sig.	Relative Importance (%)
Personalization	PER1	Relevant to personal interests	3.65	1.02	8.21	0.000	73.0
Personalization	PER2	Reflects past behavior	3.40	1.10	6.12	0.000	68.0
Personalization	PER3	Tailored to needs/lifestyle	3.45	1.08	6.45	0.000	69.0
Personalization	PER4	Helps discover new products	3.55	1.05	7.02	0.000	71.0
Personalization	PER5	Increases purchase likelihood	3.50	1.07	6.78	0.000	70.0
Predictive Analytics	PA1	Matches current needs	3.40	1.12	6.05	0.000	68.0
Predictive Analytics	PA2	Timely offers/ads	3.35	1.15	5.88	0.000	67.0
Predictive Analytics	PA3	Anticipates future purchases	3.30	1.18	5.55	0.000	66.0
Predictive Analytics	PA4	Faster, confident decisions	3.45	1.10	6.42	0.000	69.0
Predictive Analytics	PA5	Reliance on predictive recs	3.40	1.12	6.10	0.000	68.0
Conversational AI	CA1	Quick, helpful responses	3.55	1.05	7.00	0.000	71.0
Conversational AI	CA2	Preference over traditional CS	3.30	1.15	5.60	0.000	66.0
Conversational AI	CA3	Comfort/confidence interacting	3.40	1.10	6.20	0.000	68.0
Conversational AI	CA4	Efficient issue resolution	3.50	1.08	6.85	0.000	70.0
Conversational AI	CA5	Trust in accuracy/reliability	3.45	1.09	6.50	0.000	69.0
Dynamic Pricing	DP1	Notices price changes	3.50	1.07	6.80	0.000	70.0
Dynamic Pricing	DP2	Perceived fairness	3.35	1.15	5.90	0.000	67.0
Dynamic Pricing	DP3	Awareness of differing prices	3.40	1.12	6.10	0.000	68.0
Dynamic Pricing	DP4	Motivates faster decisions	3.45	1.10	6.40	0.000	69.0
Dynamic Pricing	DP5	Satisfaction with adjustments	3.40	1.12	6.05	0.000	68.0
Digital Consumer Behavior	DCB1	Positive response to personalization	3.55	1.05	7.05	0.000	71.0

Construct	Item Code	Statement (short)	Mean	SD	T-test	Sig.	Relative Importance (%)
Digital Consumer Behavior	DCB2	Trust with AI-enhanced platforms	3.60	1.03	7.50	0.000	72.0
Digital Consumer Behavior	DCB3	Satisfaction with AI features	3.65	1.02	7.80	0.000	73.0
Digital Consumer Behavior	DCB4	Recommendation intention	3.50	1.07	6.85	0.000	70.0
Digital Consumer Behavior	DCB5	Loyalty with improved experience	3.55	1.05	7.00	0.000	71.0
Digital Consumer Behavior	DCB6	Emotional satisfaction	3.60	1.03	7.45	0.000	72.0

Survey Introduction

Dear Participant, this questionnaire is part of a research study that aims to explore the impact of artificial intelligence (AI) applications on digital consumer behavior in the context of e-commerce in Jordan, your responses will help us better understand how consumers interact with AI-driven platforms and technologies.

Confidentiality Statement: All responses will be treated with strict confidentiality and used solely for academic purposes. No personal data will be disclosed or shared with any third party.

Screening Question: Have you previously interacted with e-commerce platforms in Jordan?

- Yes
- No “Thank you for your time, You do not need to complete the rest of the questionnaire”

2. Demographic Information

Section 1	All questions about demographic information are error-free.
1	Age
	30 years or less from 31-40 years from 41-50 years 51 years and more <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2	Gender
	Male Female <input type="checkbox"/> <input type="checkbox"/>
3	Educational Level
	High School Bachelor's Degree. Postgraduate <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4	Frequency of Online Purchases per Month
	0, 1-2 times 3-5 times. More than 5 times <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

3. Main Constructs and Dimensions

Each construct is measured using a set of statements rated on a 5-point Likert scale:

(1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree)

A. Personalization in E-Commerce

Item Code	Statement
PER1	<i>The platform suggests products that are highly relevant to my personal interests.</i>
PER2	<i>The recommendations I receive accurately reflect my previous browsing or purchasing behavior.</i>
PER3	perceive that the platform tailors its displayed content to match my unique needs and lifestyle.
PER4	<i>Personalized suggestions help me discover products that I might not have found on my own.</i>
PER5	<i>Personalized recommendations increase my likelihood of purchasing a product.</i>

B. Predictive Analytics

Item Code	Statement
PA1	The platform provides suggestions that match what I currently need or am looking for.
PA2	The timing of offers and advertisements I receive feels appropriate and aligned with my preferences
PA3	The platform identifies patterns in my behavior that help anticipate my future purchases
PA4	The platform's predictive features help me make faster and more confident shopping decisions
PA5	I rely on the platform's predictive recommendations when planning future purchases

C. Conversational AI

Item Code	Statement
CA1	<i>The chatbot or virtual assistant provides quick and helpful responses to my inquiries.</i>
CA2	<i>I prefer using chatbots or virtual assistants over traditional customer service channels.</i>
CA3	<i>I feel comfortable and confident interacting with conversational AI during online shopping.</i>
CA4	<i>Conversational AI helps me resolve issues or get information more efficiently than other support options.</i>
CA5	<i>I trust the accuracy and reliability of the information provided by chatbots or virtual assistants.</i>

D. Dynamic Pricing Strategies

Item Code	Statement
DP1	<i>I notice that product prices on the platform change based on factors such as demand, timing, or availability.</i>
DP2	<i>I feel that the pricing adjustments made by the platform are fair and reasonable.</i>
DP3	<i>I am aware that discounts or prices may differ between users or at different times.</i>
DP4	<i>Dynamic pricing motivates me to make faster purchase decisions to get better deals.</i>
DP5	<i>I am satisfied with the way the platform adjusts prices based on market conditions.</i>

E. Digital Consumer Behavior

<i>Item Code</i>	<i>Statement</i>
<i>DCB1</i>	<i>I respond positively to personalized content or recommendations provided by e-commerce platforms.</i>
<i>DCB2</i>	<i>I trust e-commerce platforms more when they use AI technologies to enhance my shopping experience.</i>
<i>DCB3</i>	<i>AI-powered features increase my satisfaction with the online shopping process.</i>
<i>DCB4</i>	<i>I am more likely to recommend AI-enabled e-commerce platforms to other people.</i>
<i>DCB5</i>	<i>My loyalty to an e-commerce platform increases when its AI features improve my shopping experience.</i>
<i>DCB6</i>	<i>feel emotionally satisfied and positive when interacting with AI-enabled e-commerce platforms.</i>

Appendices 2 List of arbitrators

اسم الجامعة	الرتبة العلمية	الاسم	#
جامعة اربد الأهلية	أستاذ دكتور	أ.د. محمد عيسى الزعبي	1
جامعة اربد الأهلية	أستاذ دكتور	أ.د. اشرف الفندي	2
جامعة الشرق الأوسط	أستاذ مشارك	د. الحارث أبو حسين	3
جامعة الأمير سطاتم	أستاذ مشارك	د.أنس سلامة	4
جامعة الشرق الأوسط	أستاذ مشارك	د.محمد الزعبي	5
جامعة جدة	أستاذ مساعد	د.خالد رابعة	6
جامعة الشرق الأوسط	أستاذ مساعد	د. ليث خريس	7
جامعة عمان العربية	أستاذ مساعد	د. آلاء المومني	8
جامعة اربد الأهلية	أستاذ مساعد	د.خالد الشبول	9