

Transforming Industrial E-commerce Adoption to Achieve Business Success

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Abstract

This research aims to explore the transformation of e-commerce adoption in the industrial sector, identifying barriers to success and opportunities for growth and innovation. Utilizing the Technology Acceptance Model (TAM), we conducted a comprehensive literature review to assess factors influencing e-commerce adoption, focusing on perceived usefulness and ease of use. The research methodology includes a detailed analysis of expert insights and existing literature, targeting the industrial sector's unique challenges. Key factors such as customer service, product selection, and payment options were evaluated for their impact on e-commerce implementation. The study's findings reveal that, despite the potential benefits of increased efficiency, productivity, and profitability, industrial e-commerce faces higher project failure rates compared to retail. This discrepancy highlights the need for tailored strategies to enhance adoption rates within the industrial domain. The research also acknowledges limitations due to the scarcity of specific literature and the focus on only two variables in the conceptual model. Ultimately, this paper provides valuable recommendations for policymakers and business leaders aiming to leverage industrial e-commerce for organizational growth.

Keywords: E-commerce, Digital Transformation, Technology adoption, Industrial sector, Extended Technology Acceptance Model (TAM).

1. INTRODUCTION

E-commerce refers to the buying and selling of goods and services online. It involves conducting commercial transactions through the online platform and can include activities such as online shopping, electronic payments, and online auctions (Tuli et al., 2022). E-commerce has become increasingly popular over the past few decades, with the widespread adoption of digital technologies and the growth of the internet. It offers businesses and consumers a range of benefits, including the ability to access a wider market, increased convenience and flexibility, and lower transaction costs. However, e-commerce also presents challenges such as security and privacy concerns, as well as the need to compete in an increasingly crowded online marketplace (Liu et al., 2022).

E-commerce platforms have revolutionized the way businesses operate, providing unprecedented opportunities for growth and expansion (Sun, 2020). However, despite the widespread adoption of E-commerce platforms by organizations, the industrial sector is still grappling with challenges in fully embracing the benefits of this technology and successfully

adapting based on enterprise size, exporting activity, business sector, awareness of benefits, customers and influence of trading partners (Pickernell et al., 2013). The limited success of E-commerce implementation in this sector can be attributed to several factors, including the complexity of the systems, the lack of technological expertise, and the resistance to change.

The industrial sector has experienced significant growth across the world over the past few decades (Salendu, 2021). This growth has been driven by various factors such as advancements in technology, transportation costs, increased globalization, and changes in government policies (Ibrahim et al., 2021). There have been several major business changes in the industrial sector that have made investing in e-commerce more important. Such as increasing demand for faster and more efficient supply chains (Daneshvar et al., 2020) as customers expect quicker delivery times and lower costs. Another change is the shift towards digitalization and automation, with many industrial businesses implementing new technologies to improve their operations and reduce costs (Wang et al., 2022). E-commerce can help to facilitate this shift by providing an online platform for businesses to manage their inventory, track shipments, and streamline their supply chain processes.

Additionally, the COVID-19 pandemic has accelerated the adoption of e-commerce in many industries, as businesses have had to adapt to remote working and social distancing measures. This has led to a greater reliance on online platforms for purchasing and selling goods (Leskovar et al., 2022). The industrial sectors have been under immense pressure to reduce operational costs and enhance efficiency due to these changes. The adoption of digital technologies has proven to be an optimal solution for achieving high operational performance. Overall, investing in e-commerce can offer industrial businesses benefits such as enhanced efficiency, expanded customer reach, and the ability to adapt to the evolving demands of the marketplace.

The importance and difficulties of e-commerce are apparent, emphasizing the urgent requirement for a scientific assessment of how institutional factors impact the adoption of e-commerce. Such an evaluation would provide valuable guidance for policymaking and business decision-making (Zhu, 2008). In response to these challenges, this research paper proposes a conceptual model for transforming E-commerce adoption and acceptance to achieve business success in the industrial sector. The study draws on the Technology Acceptance Model (TAM) to develop a comprehensive framework that takes into account critical factors affecting the adoption and acceptance of E-commerce platforms. The proposed model provides a roadmap for stakeholders seeking to leverage E-commerce platforms for growth and development in the industrial sector. By identifying the key drivers of E-commerce adoption and acceptance, the research aims to inform policy formation and strategic investments, ultimately leading to sustained success in the use of E-commerce technology in the industrial sector.

This study primarily aims to review the current literature on the adoption of e-commerce in the industrial sector and devise a technology acceptance model (TAM) to facilitate the adoption and continual expansion of e-commerce technology. The paper's structure is as follows: (1) offers a review of relevant literature and accentuates the review's principal findings. (2) explores and constructs an extended TAM model. (3) concludes the paper and outlines prospects for future research.

2. LITERATURE REVIEW

In this section, we will assess the current literature on e-commerce adoption within the industrial sector, as well as examine the technology acceptance model (TAM).

2.1 Adoption of E-commerce in the Industrial Sector

A comprehensive literature search was conducted to identify research on the adoption of e-commerce platforms in industrial sectors. The search utilized academic databases such as Proquest Central, Emerald, and ScienceDirect. The findings indicate that there are limited studies available on e-commerce adoption in the industrial sector. Li et al., (2020) investigated the critical factors that affect consumers' willingness to adopt vegetable e-commerce, their behavior, and the alignment between their willingness and actions and the study identified three variables: perceived usefulness, perception of logistics service quality, and the distance to the nearest vegetable market. Other studies tend to overlook the industry and instead center their focus on small companies SMEs (Peiris et al., 2015; Gengatharen, 2008; Sharma et al., 2004; Abdel Nasser, 2012; Walker et al., 2016). The majority of these studies are concerned with how companies can optimize their adoption of e-commerce for generating revenue, improving business efficiency, and streamlining processes, rather than focusing on the acceptance and adoption of e-commerce by customers.

Peiris et al., (2015) investigated the impact of various factors on e-commerce adoption by consumers in Sri Lanka, The study focused on analyzing consumer buying behavior and found that all six hypotheses, including perceived usefulness and perceived ease of use, were supported by the results. Gengatharen (2008) also explored the cultural perspective of the success and failure of regional internet community portals in promoting e-commerce adoption by SMEs, According to the study's findings, an individual's perception of usefulness and personal benefits are the most critical factors in accepting technology from a cultural standpoint. In addition, Hong and Zhu (2006) explored strategies for firms to effectively position themselves while adopting e-commerce to generate revenue. Fawzy et al., (2018) investigated Malaysian attitudes and behaviors regarding online shopping or e-commerce. The study concluded that the level of education is linked to the adoption and acceptance of e-commerce websites. Furthermore, the study highlighted the significance of the physical appearance of online platforms and how well they are optimized for search engines in determining the success and revenue generation of e-commerce. Kwun et al., (2010) investigated the factors that impacted the perceived strategic value of e-commerce among small businesses. The findings indicated that perceptions of the strategic value of e-commerce by small businesses were influenced by organization compatibility, entrepreneurial mindset, and industry competitiveness. Sharma et al., (2004) aimed to gain a better understanding of the factors that impeded SMEs' adoption of e-commerce in Asia, particularly in relation to the business environment of SMEs. The research identified significant hindering factors in e-commerce adoption. Abdel Nasser (2012) identified hindering factors in the adoption of e-commerce, with technical barriers being the most significant, followed by legal and regulatory barriers. Additionally, the findings highlighted that the lack of Internet security was the highest barrier inhibiting the implementation of e-commerce in SMEs. Looi (2005) investigated the impact of various factors on the adoption of e-commerce among small and medium enterprises. The research findings revealed that competitive pressure was the most critical factor, followed by IT knowledge, relative advantage, security, and government support. Walker et al., (2016) utilized logistic regression to examine the adoption and non-adoption factors of 230 SMEs. The findings indicated that compatibility and organizational readiness, decision and operational aids, and external pressure were significant factors in determining e-commerce adoption. An all-encompassing model was developed to explain the adoption of business-to-business e-commerce, utilizing five business factors: external environment, organizational context, technology context, decision-maker's characteristics, and organizational learning. The research findings revealed that price intensity and perceived barriers had a negative impact on the adoption decision.

Masarweh et al., (2016) explored the barriers to e-commerce adoption in Jordan, and the major findings revealed that despite the increasing trend towards online shopping, the adoption rate remains low due to several barriers. These include weak infrastructure throughout the country, except for the capital city, societal trends and culture, and low levels of educational and computer literacy. An analysis was performed by Hayati, I., & Andrawina (2019) to examine the various factors that influence the adoption of e-commerce. The study identified four external dimensions, including the institutional environment, socio-cultural environment, economic environment, and technology environment. In addition, there were five internal dimensions that were found to impact e-commerce adoption, which were managerial demography, corporate strategy, company capabilities, company size, and company knowledge management. Andrew and Tham (2022) carried out a research with the aim of investigating the main factors that encourage small and medium-sized enterprises (SMEs) in the retail and food and beverage industry to adopt e-commerce. The study's results indicate that the most significant challenges that SMEs face in adopting e-commerce are organizational barriers, followed by environmental barriers. The findings suggest that having young leaders plays a crucial role in promoting the adoption of e-commerce by SMEs. Moreover, the study highlights that technology is not the only factor that determines the success of e-commerce adoption.

The study conducted by Al-Bakri and Katsioloudes (2015) aimed to investigate the impact of internal and external organizational factors on the adoption of electronic commerce (e-commerce) systems by small and medium-sized enterprises (SMEs) in Jordan. The study revealed that the adoption of e-commerce systems by SMEs is influenced by various internal and external organizational factors, such as readiness, strategy, managers' perceptions, and external pressure from trading partners. A new model for e-commerce innovation and adoption was developed by Sabah et al. (2015), which takes into consideration different stages of e-commerce adoption, including interactive, non-interactive, and stabilized phases. The model also encompasses various factors, such as technological, organizational, and environmental aspects. In their research, Haryanti and Subriadi (2020) categorized the stages of technology acceptance in e-commerce to identify the factors that will drive the adoption of e-commerce in the future. The study highlights the significance of the technological dimension in addressing human concerns as a crucial factor in technology acceptance.

The evolution of the e-commerce industry is an essential factor in determining the drivers of community acceptance. Trust is identified as a crucial factor during the initial introduction of e-commerce. On the other hand, user experience as a part of the technological dimension is found to be a key factor in the determination phase of e-commerce, based on its market. Merhi (2022) investigated the significant drivers of e-commerce adoption at the national level, beyond individual and organizational levels. The presented model includes technological, governmental, cultural factors, and social trust as antecedents of e-commerce adoption. The study indicated that connectivity and technological effectiveness have a direct impact on e-commerce. Furthermore, the legal environment and connectivity have an influence on social trust, which, in turn, affects uncertainty avoidance.

Jahongir and Shin (2014) analyzed the factors that impact the adoption of e-commerce by SMEs in Uzbekistan. They consolidated these factors and determined their level of influence on e-commerce adoption. The study categorized these factors into three enterprise contexts: technological, organizational, and environmental, based on previous research. The research model proposed enterprise context factors that have been found to be influential in earlier studies on e-commerce adoption. The research findings revealed a positive relationship between some of these three context factors and the perceived benefits of e-commerce adoption. Li and Xie (2012) identified ten factors that influence a firm's adoption of e-commerce. The study revealed that four

factors were particularly important, namely managerial attitudes, external pressures, corporate strategies, and technology strengths of the firm.

Previous studies have primarily focused on either retail e-commerce or e-commerce as a general concept, with no attention paid to the industrial sector. The products or services offered, target customers, and transactional nature differ between e-commerce in the retail sector and e-commerce in the industrial sector. To the best of our knowledge, there have been limited studies that specifically concentrate on the industrial sector, and this study is one of the few that address this topic. Li, B. (2020) conducted a study that analyzed the impact of e-commerce on industrial manufacturing in the context of big data and proposed ways for manufacturing and industrial companies to enhance their use of e-commerce. The study discovered that 81.08% of surveyed enterprises viewed e-commerce as a valuable communication platform that can expand their sales market. The study advocates for the creation of tactics to encourage the adoption of e-commerce within the industrial sector.

In general, even though online transactions are common to both retail and industrial e-commerce, they vary in terms of their intended audience, products offered, transaction volumes, and sales timelines. E-commerce in the industrial sector and the retail sector differ in the types of products or services they offer. Retail e-commerce commonly involves the selling of consumer goods, such as electronics, clothing, and home appliances (Seo, 2002). In contrast, industrial e-commerce primarily entails the selling of raw materials, machinery, and equipment that are utilized in the manufacturing or construction industry (Shen and Ren, 2021). The majority of these studies have focused primarily on the factors that affect the effective implementation of e-commerce, particularly during the pre-implementation and implementation stages of the e-commerce life cycle. However, there has been a lack of research and documentation regarding what happened during the e-commerce adoption stage and how decisions were made for such a complex investment in the industrial sector.

The adoption of e-commerce poses several challenges, Such as Technological Infrastructure including a secure and reliable network, hardware, software, and skilled IT personnel (Li, 2022), Security and Privacy Concerns including data breaches, identity theft, and fraud (Saeed, 2023), Efficient and reliable logistics and delivery networks (Nel and Badenhorst, 2020). The unequal distribution of access to digital technology (Jaković et al., 2021), and privacy regulation (Zhu, 2020). This deficiency is highlighted in the limited exploration of e-commerce adoption in the literature. Therefore, A comprehensive approach that involves collaboration between stakeholders, including government, industry, and consumers, is required to address these challenges and encourage the adoption of e-commerce while ensuring its long-term sustainability. this study aims to focus on the adoption stage of the e-commerce life cycle and develop a theoretical model that can be used to determine e-commerce adoption in the industrial sector. The ultimate goal is to improve the success rate of e-commerce platforms in this sector.

2.2 TAM Adoption of e-Commerce Platforms

Numerous research studies have been conducted to comprehend user acceptance of information technology. To examine the acceptance of a technology, several well-established frameworks, theories, and theoretical models have been employed. Over the last two decades, certain theoretical models have dominated the theoretical foundation of information technology acceptance. Among these, the technology acceptance model (TAM) (Davis and Venkatesh, 1996) has been the most widely used to discuss the acceptance and usage of technology, as depicted in Figure 1.

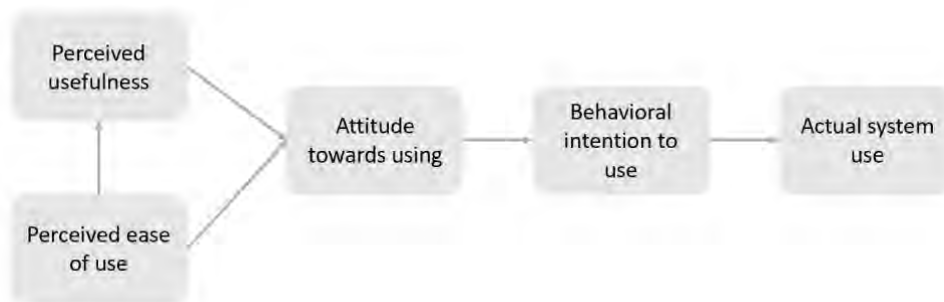


Figure 1. Technology Acceptance Model (Davis and Venkatesh, 1996)

The Technology Acceptance Model (TAM) is a theoretical framework that explains the process of technology adoption and how users perceive and accept it. It was developed to understand the adoption and use of information technology (Davis and Venkatesh, 1996) including e-commerce platforms. Researchers have attempted to expand the TAM model by introducing new variables and analyzing their impact on Perceived ease of use (PEOU) and Perceived usefulness (PU), aiming to identify the boundary conditions.

For example, Albarghouthi et al., (2020) explored four factors (Top Management support, user training, subjective norms, and computer self-efficacy) that could affect PEOU and PU in ERP adoption. Agarwal and Prasad (1999) explored five factors (Role in relation to technology, training, prior experiences, job position, and level of education as external factors that could affect PEOU and PU. In the context of ERP, Sternad et al. (2011) classified the factors influencing PEOU and PU as either individual, organizational, or technological variables.

The TAM model has been criticized for its broad framework, which does not provide specific guidance for any particular industry. Consequently, Anjum (2023) has discussed the TAM model and its applications in various domains, particularly in the post-COVID-19 era. The paper highlights the significant impact of the pandemic on technology adoption, transforming the way people live, communicate, conduct business, and thrive. The study identifies potential areas for future research, given technological advancements and increased global technology penetration. Advanced technology adoption models should be explored to account for the ever-changing environment, with a focus on potential application areas such as e-commerce, cloud computing, IoT, artificial intelligence, blockchain, virtual and augmented reality, machine learning, and deep learning techniques. Therefore, researchers should investigate other factors influencing user acceptance, as well as PEOU and PU.

Klopping and McKinney (2004) applied the TAM to forecast online shopping behavior in the context of e-commerce, which included the intention to shop online and actual purchases. They made two minor adjustments to the traditional application of TAM. First, perceived ease of use is not linked to perceived usefulness. Second, perceived usefulness is directly linked to actual use. D'souza et al. (2021) utilized the Technology Acceptance Model (TAM) to validate the readiness of consumers to adopt e-commerce for purchasing. The findings revealed that consumers' behavioral intentions are the driving force behind their actual utilization of e-commerce. In this regard, behavioral intention has a significant and positive impact on the actual adoption of e-commerce. TAM offers valuable insights into the determinants of user acceptance and adoption of e-commerce platforms, including PEOU and PU. Nevertheless, the assessment of PEOU and PU remains vague.

2.3 Research Model Development

The industrial business sector operates differently from the retail business and has its own set of unique user requirements. Therefore, there may be specific factors related to technology and customer experience that need to be given special attention in this context. Amidst the COVID-19 pandemic, technology played a vital role in keeping people connected, facilitating education, providing medical assistance, conducting business, facilitating governance, fostering innovation, and more. Consequently, it is imperative to conduct a thorough investigation of technology adoption and acceptance, particularly in the post-COVID-19 era (Anjum, 2023). A frequently asked question among researchers, technocrats, developers, and others is, "What motivates individuals to embrace novel technologies?" Finding an answer to this question can aid in the development of more effective strategies for creating, assessing, and anticipating user reactions to emerging technologies (D'souza et al., 2021)

2.3.1 Perceived Usefulness Variables

Based on the literature review, these factors have the potential to shape a user's perception of an e-commerce platform's usefulness, thereby influencing their decision to adopt and utilize the platform. These factors have the potential to affect the key construct of perceived usefulness in the Technology Acceptance Model (TAM) from an e-commerce perspective.

Product selection: The user's perception of an e-commerce platform's usefulness can be impacted by the range and diversity of products it offers. An e-commerce platform that provides a broad selection of products that cater to the user's requirements is more likely to be viewed as advantageous (Stanley Frederick et al., 2018). Product selection and Product availability refer to the likelihood of having goods in inventory when a consumer places an order. Therefore, In e-commerce adoption, a platform that provides a diverse selection of products that cater to the user's needs is more likely to be perceived as beneficial. When it comes to the adoption and acceptance of technology among customers, various factors come into play, including personal preferences, convenience, availability, and expectations related to performance and effort (Anjum, 2023). From an ERP adoption perspective, Accessing information at any time and from any location can also enhance ERP adoption by streamlining business processes and increasing user acceptance (Gill et al., 2011). Concerning this matter, Hypothesis 1 was formulated:

Hypothesis 1: The Product selection will positively influence a consumer's willingness to adopt e-commerce.

Price and value: The perceived usefulness of an e-commerce platform can be influenced by the pricing of the products offered. Users are more likely to perceive an e-commerce platform as useful if they can find products at a competitive price or if they perceive that the value of the products justifies the price. According to the research conducted by Kaur and Arora (2023), perceived benefits and price value have a positive influence on behavioral intention. Sharma et al. (2019) conducted a study that examined the positive impact of perceived risk and price on the most relevant online shopping behavior and Web interactivity. They found that discount pricing was crucial in motivating customers to engage in online shopping. The adoption decision of Business-to-business e-commerce is negatively impacted by price intensity and perceived barriers, as reported by Gorla et al., (2017). Considering the overall logistic costs, Han and Li (2021) conducted a study on e-commerce poverty alleviation and discovered that offline prices were at least 10% higher than online prices. Additionally, they reported that e-commerce retail platforms reduced costs by more than \$2.1 billion in 2015 and over \$2.8 billion in 2016 in specific areas. The present study hypothesizes that price and value will have a favorable impact on a consumer's inclination to embrace e-commerce, as outlined in Hypothesis 2.

Hypothesis 2: Price and Value will positively influence a consumer's willingness to adopt e-commerce.

Convenience and accessibility: A user's perception of usefulness can be influenced by the convenience and accessibility of an e-commerce platform. A platform that offers easy navigation, a user-friendly interface, and fast and reliable delivery can be perceived as more useful. Audrey et al., (2022) discussed the role of quality perceptions and perceived ubiquity in adoption intention of online and digital mobile knowledge management systems and proposed a new integrated model based on TAM, The results showed that Service Quality plays a vital role in increasing the perception of online and mobile platforms, while Perceived User-friendliness promotes the intention to adopt the online and mobile platforms. Meghana et al., (2018) explored the factors that impact the adoption of cloud ERP systems. The study reported data accessibility, availability, and data backup and recovery as the most prioritized criteria. Rotchanakitumnuai and Speece (2009) utilized the technology acceptance model (TAM) to analyze internet securities trading and determine the factors that shape the perception of usefulness. Additionally, they examined the influence of trust and investor attitudes towards using online systems. The research findings revealed that factors such as information quality and accessibility have a positive impact on the perceived usefulness of the online trading process. Rotchanakitumnuai and Speece (2009) employed the technology acceptance model (TAM) to evaluate internet securities trading and identify the factors that influence the perception of usefulness. They also investigated the impact of trust and investor attitudes towards using online systems. The study's outcomes indicated that ease-of-use is a crucial factor that positively affects the perceived usefulness of the online trading process. Li et al., (2020) investigated the main determinants that affect consumers' willingness to adopt vegetable e-commerce, The findings indicate that the perceived quality of service is a crucial factor that influences e-commerce adoption. Additionally, the proximity of the nearest vegetable market has a substantial impact and is positively associated with the level of adoption willingness. Concerning this matter, Hypothesis 3 was formulated:

Hypothesis 3: Convenience and accessibility will positively influence a consumer's willingness to adopt e-commerce.

Trust and security: The perceived usefulness of an e-commerce platform can be influenced by how trustworthy and secure it is perceived to be. If users have confidence that their personal and financial information is secure and the platform is reliable, they are more likely to view the platform as useful. Salih et al., (2021) identified security, Trust, and usability as the three most frequently mentioned critical concerns for the adoption of cloud-based ERP. The literature presents diverse viewpoints on how trust and security impact technology adoption. Ahn and Ahn (2020) discovered that factors such as data security and complexity do not have a considerable influence on ERP adoption. However, other studies, such as Nakeng et al. (2021), have demonstrated a positive correlation between security and privacy concerns and the acceptance of Cloud ERP. The research analyzed the low adoption rate of Cloud ERP and identified security and privacy concerns as a crucial factors influencing the solution's adoption. Liu and Tang (2018) discussed the trust-building methods in e-commerce and presented a comprehensive insight into how the perceived effectiveness of trust-building mechanisms online affects trust in both the e-marketplace and the e-seller. Their study uncovered that the perceived effectiveness of seller-based mechanisms has an impact on trust in both the e-marketplace and the e-seller. Rotchanakitumnuai and Speece (2009) applied the technology acceptance model (TAM) to internet securities trading to investigate the factors that influence the perception of usefulness. They also explored the role of trust and investor attitudes towards using online systems. The study revealed that trust has a beneficial impact on the perceived usefulness of the online trading process. In relation to this matter, Hypothesis 4 was formulated.

Hypothesis 4: Trust and security will positively influence a consumer's willingness to adopt e-commerce.

2.3.2 Perceived Ease of Use

After reviewing the literature, it appears that these factors can impact how a user perceives the ease of use of an e-commerce platform, which may, in turn, affect their decision to adopt and use the system in a friendly manner. These factors have the potential to influence the main construct of perceived ease of use in the Technology Acceptance Model (TAM) from an e-commerce perspective.

Customer service: The perceived usefulness of an e-commerce platform can also be influenced by the quality of customer service it provides. If users receive prompt and beneficial customer support, including aid with product selection, returns, or exchanges, they are more inclined to perceive the platform as useful. Mohamad et al., (2019) emphasized the significance of customer support in the post-implementation phase of ERP and highlighted that the training programs for ERP systems are a crucial step towards achieving project adoption. In their research on ERP adoption among SMEs, Lutfi et al. (2022) confirmed that the provision of continuous support by service providers has a notable effect on the adoption of ERP systems. Al-Tit (2020) investigated the key factors that have a significant impact on e-commerce adoption in SMEs and identified customer satisfaction as one of the primary predictors of e-customer loyalty, which is strongly influenced by excellent customer support. Han and Li (2021) examined the notion that inadequate post-purchase customer service is a perceived risk associated with online shopping. Regarding this issue, Hypothesis 5 was developed:

Hypothesis 5: Customer service will positively influence a consumer's willingness to adopt e-commerce.

The design and navigation of online platforms: Al-Tit (2020) examined the factors that significantly influence e-commerce adoption among SMEs and concluded that customer trust, user interface quality, and customer satisfaction are the primary predictors of e-commerce adoption. The design of an e-commerce platform can shape a user's perception of its ease of use. If a platform provides straightforward navigation and a user-friendly interface, it is more likely to be perceived as easy to use. According to Audrey et al. (2022), perceived user-friendliness can encourage the adoption of online and mobile platforms. Meghana et al. (2018) investigated the factors that influence this adoption. Their findings revealed that user-friendliness is among the most crucial factors for the adoption of ERP systems. Hwang and Grant (2011) conducted research aimed at examining the impact of integration on ERP performance within a group of users who required a high level of user-friendliness. The study's findings revealed that both system-specification and socio-organizational integration had a significant effect on ERP performance. Shimange and Pillay (2023) identified 13 factors that contribute to a successful implementation and adoption of ERP systems. They highlighted that one of the key factors is having a user-friendly system, which greatly aids in facilitating adoption. Therefore, The significance of a user-friendly system and the end-users' perception in influencing the performance of an ERP system is crucial and cannot be overstated. How easily customers can navigate an e-commerce platform to find what they need can impact their perception of the website's ease of use. Muhammad and Rhee (2018) put forward an IS-CB model for online shopping that integrates information systems and consumer behavior to analyze the factors that affect online shopping. Specifically, the study suggested that information design, visual design, and navigation design are crucial factors that influence the adoption of online platforms. Concerning this matter, Hypothesis 6 was formulated:

Hypothesis 6: The design and navigation will positively influence a consumer's willingness to adopt e-commerce.

Clarity of product information: Clarity of product information on e-commerce plays a crucial role in improving the ease of use and achieving business success. E-commerce content quality encompasses the issue of information. Web content must be personalized, comprehensive, pertinent, and easy to comprehend as it is regarded as one of the key factors in satisfying e-commerce users. Online shoppers require comprehensive product information to feel assured about completing the purchasing process. In addition to instilling confidence, providing detailed product information may also enhance the user experience and reduce cognitive strain, leading to a higher likelihood of completing a purchase. Ballantine (2005) confirmed that the level of interactivity and amount of information significantly affected consumer satisfaction. Huang et al., (2013) explained that offering more information regarding product features or pricing can increase consumer trust, thereby decreasing their price sensitivity and improving the ease of use of an e-commerce platform. Overall, the literature indicates that delivering unambiguous and comprehensive product information can enhance the ease of use and promote business success in e-commerce. This can be accomplished by decreasing cart abandonment rates, elevating the customer experience, and lowering the rate of product returns. By prioritizing the provision of accurate and complete product information, businesses can achieve greater success in the e-commerce realm. Janita and Miranda (2013) explored the service quality dimensions in B2B e-marketplaces. Their research revealed that the perceived utility of information and value-added services are the main dimensions of service quality, as seen from the perspective of users who sell products online on e-marketplaces. Hypothesis 7 was formulated with regards to the clarity of product information:

Hypothesis 7: The clarity of product information will positively influence a consumer's willingness to adopt e-commerce.

Payment option: The ease of use of payment options can have a significant impact on the success of e-commerce adoption for businesses. According to research conducted by ACQUISDATA (2021), 21% of online shoppers abandoned the checkout process and their cart because of a lack of payment options and a checkout process that was too long and complicated. This underscores the significance of offering multiple simple and user-friendly payment options to decrease cart abandonment rates and drive sales. The absence of a customer's preferred payment option could lead to cart abandonment, and a negative payment experience could discourage customers from returning to that merchant for future purchases, Offering a variety of payment options can boost conversion rates, increase successful payment transactions, and encourage customers to return to the business for future purchases (Tielman, 2003). In summary, the study implies that offering simple and convenient payment options can notably influence the success of businesses adopting e-commerce. By lessening the instances of cart abandonment, boosting conversion rates, and enhancing the payment experience for customers, businesses can attain greater triumph in the e-commerce realm.

2.4 Theoretical Model

This study involved an extensive literature review, which led to the development of eight hypotheses. In particular, we focused on breaking down the key components of perceived ease of use (PEOU) and perceived usefulness (PU). Peiris et al. (2015) noted that TAM has a significant limitation in that it views e-commerce solely as a communication medium, but fails to take into account consumer behavior and the specific features of the medium used for the transaction. Therefore, After conducting a thorough literature review, we concluded that combining

additional variables with TAM would be necessary for predicting the factors that impact perceived usefulness and ease of use in the service industry.

we formulated 4 hypotheses to measure the construct of perceived ease of use and four hypotheses to measure the perceived usefulness. These hypotheses are presented and discussed in the preceding section. Table 1, which follows, summarizes the constructs, and Figure 1 depicts our proposed theoretical model.

Table 1: Explanation of Constructs in the Theoretical Model.

Construct	Description
Product Selection (PS)	The product selection process has a positive impact on perceived ease of use.
Price and Value (PV)	Price and value have a positive impact on perceived ease of use.
Convenience and accessibility (CA)	Convenience and accessibility have a positive impact on perceived ease of use.
Customer Service (CS)	Customer service has a positive impact on perceived ease of use.
Design and Navigation (DN)	Design and navigation have a positive impact on perceived ease of use.
Product Information (PI)	Product information has a positive impact on perceived ease of use.
Payment options (PO)	Available payment options have a positive impact on the perceived ease of use for customers.
Trust and security (TS)	Perceived ease of use is positively affected by Trust and security.

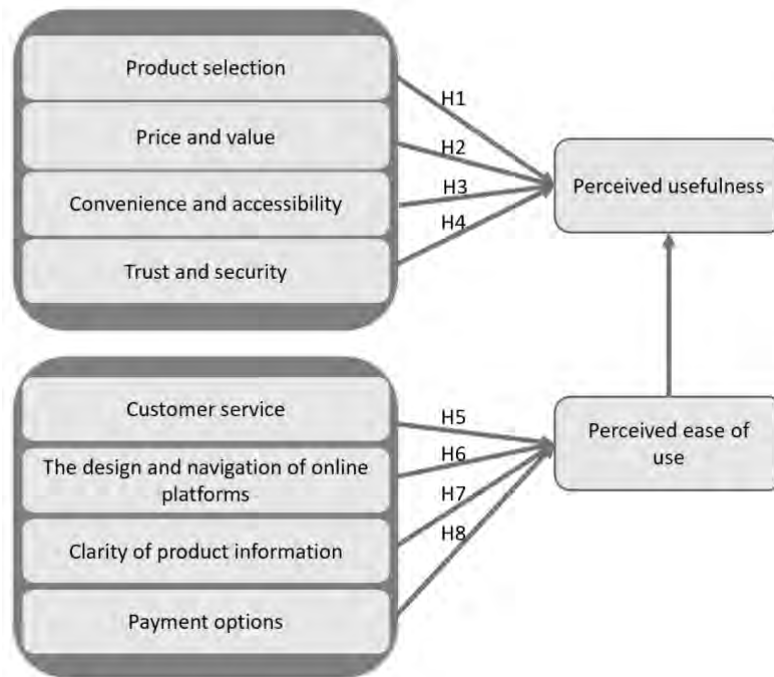


Figure 2. An extended technology acceptance model for e-commerce adoption

3. METHODOLOGY

This section addresses the selection process of the survey sample and the creation and deployment of the survey instrument for the current study, along with considerations of reliability and validity. The available literature suggests that technology and e-commerce research employs both quantitative and qualitative concepts. The objective of this study is to investigate the motivating factors that prompt a UAE consumer to engage in an online transaction within the industrial sector. While using qualitative methods in researching the adoption of e-commerce in the industrial sector, several factors need to be considered as the interpretation of a single case may not be sufficient enough to propose a model to assist in the adoption of e-commerce. However, utilizing qualitative approaches can be advantageous in capturing an overview of the population as a whole and forming a collective understanding of the segment under consideration. Some researchers who have employed quantitative methods in technology and e-commerce research, particularly in the context of TAM, are Yung-Ming (2020); Yung-Ming, (2018); and Kloppling and McKinney (2004).

Given the considerations, the qualitative method was deemed the most appropriate approach for this study. To conduct the survey, a simple random sampling method was employed. The main population of interest for this study consists of individuals who use e-commerce platforms online within the industrial sector in the UAE. Statistics projected that the number of users in the UAE eCommerce market would reach 7.32 million by 2027. To obtain results with a 5% margin of error for a population of over one million, a minimum sample size of 385 was recommended (Peiris et al., 2015). For this study, a sample size of at least 385 was estimated, but the actual response to our online questionnaire was 480. The questionnaire was divided into two sections. The first section aimed to collect demographic information from the respondents, while the second section was designed to gather their opinions on the variables identified in our hypotheses using multiple questions. To ensure maximum response rates, we employed both online and offline methods for distribution. The online survey was distributed using SurveyMonkey, while the offline survey was distributed to various governmental and non-governmental entities.

4. RESULT

To ensure questionnaire reliability, we conducted four pilot studies in four iterations prior to administering it. The 75 responses we received from the pilot studies were gathered through the online survey. The analysis of the responses was conducted using SPSS. The reliability check was conducted using the Cronbach's alpha value. Table 2 presents the findings from the final pilot study, which indicate that all variables exhibit a Cronbach's alpha value > 0.7 , signifying strong consistency among the variables (Mohamad et al., 2019). After confirming the internal consistency of the questionnaire, we distributed the instrument to a sample of 480 respondents.

Table 2: Reliability Test Results.

Construct	Cronbach's α
Product Selection (PS)	0.895
Price and Value (PV)	0.741
Convenience and accessibility (CA)	0.798
Customer Service (CS)	0.978
Design and Navigation (DN)	0.855
Product Information (PI)	0.905
Payment options (PO)	0.855
Trust and security (TAS)	0.841

The questionnaire data was analyzed using SPSS, The responses were encoded using a five-point Likert scale with the following values: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Upon conducting the analysis, it was determined that the data did not follow a normal distribution. Consequently, we employed Spearman's correlation coefficient to assess the degree of variance of the dependent variable with respect to the independent variable. According to the findings presented in Table 3, all hypotheses were confirmed to be valid. The correlation coefficient values for Hypothesis 5 ("Customer service will positively influence a consumer's willingness to adopt e-commerce.") and Hypothesis 7 ("The clarity of product information will positively influence a consumer's willingness to adopt e-commerce.") were the highest. The elevated values suggest a significant association between the consumer's intention to use e-commerce and both customer service and product information.

Table 3: Correlation Coefficient Results

Construct	Correlation Coefficient	Accept/ Reject
Product Selection (PS)	0.821	Accept
Price and Value (PV)	0.640	Accept
Convenience and accessibility (CA)	0.820	Accept
Customer Service (CS)	0.861	Accept
Design and Navigation (DN)	0.710	Accept
Product Information (PI)	0.851	Accept
Payment options (PO)	0.790	Accept
Trust and security (TAS)	0.770	Accept

5. DISCUSSION AND CONCLUSION

After analyzing the data, we found that the variables we identified have an impact on consumers' willingness to buy from e-commerce platforms in the industrial sector, as depicted in Figure 2.

The results indicate that the variables of Product Selection, Price and Value, Convenience and Accessibility, and Customer Service have an impact on the dependent variable of perceived usefulness, which in turn influences the behavioral intention of consumers to use the industrial e-commerce platform. The study's findings also indicate that the variables Design and Navigation, Product Information, Payment options, and Trust and security have an impact on the dependent variable of perceived ease of use, which consequently influences the behavioral intention of consumers to use the industrial e-commerce platform.

The variables with the strongest relationship to the behavioral intention to use for the perceived usefulness variable are Customer Service and product selection. Additionally, product information and Payment options show a significant relationship to the behavioral intention to use for the perceived usefulness variable. This finding suggests that industrial companies need to focus on improving consumer perception of Product Selection, Price and Value, Convenience and Accessibility, and Customer Service, and how to effectively promote these values of perceived usefulness in order to enhance and increase consumer adoption of e-commerce. The results of this study suggest that industrial companies in the UAE need to shift their focus when it comes to their e-commerce platforms. In addition to showcasing their product and service offerings, these companies must also prioritize factors such as payment options and improving the overall customer experience. It is important for them to pay close attention to the product information that is published on their e-commerce platform to enhance the user's browsing experience.

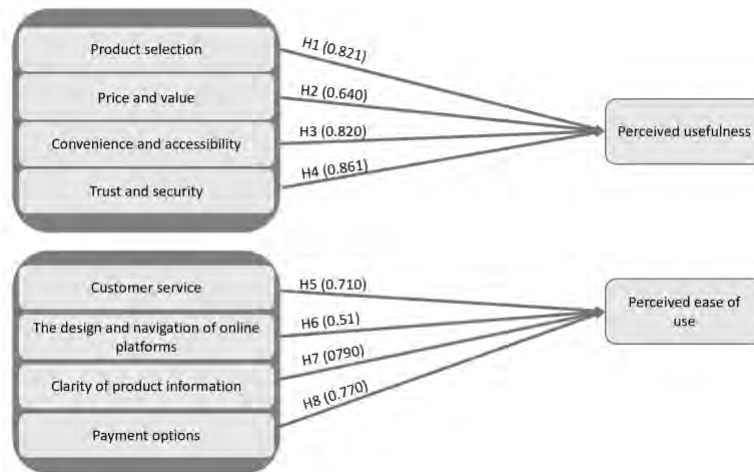


Figure 3. Proposed Theoretical Model Reflecting the Significance of Influence

According to Ajibade (2018), a thorough comprehension of the frameworks and models utilized in technology investigation is essential for gaining a proper understanding of the factors that facilitate the greater adoption of technology. Therefore, When applying a theoretical framework, researchers must consider several factors and be highly conscious of the inherent limitations involved in such an attempt. The TAM has a limitation in that the variable related to user behavior is assessed subjectively, using measures such as perceived usefulness and perceived ease of use, without clear identification. Additionally, the system can be complicated and not

user-friendly due to a complex business process that is reflected in an automated manner. Another limitation highlighted by Ajibade is that behavioral underpinnings cannot be accurately quantified in empirical research due to various subjective factors, such as societal norms and values, personal attributes, and personality traits. Another limitation of the TAM model, as pointed out by Ajibade, pertains to the subjective assessment of the user behavior variable, which is based on factors such as behavioral intention and interpersonal influence. The subjective norm of interpersonal influence refers to the impact of colleagues or friends through word of mouth. However, it should be noted that while a superior can give directives to subordinates regarding the use of technology in line with their IT policy, a friend cannot exert the same level of directive influence over an employee who is accountable to their line manager. Another limitation is that it is challenging to quantify underlying behaviors accurately in empirical research due to several subjective factors such as personal attributes, personality traits, and societal norms and values. Therefore, it is crucial to establish well-defined procedures and regulations for utilizing information systems (IS) provided by the organization. This way, behavioral intention can be assessed in terms of the degree of compliance with measurable factors such as product selection, price and value, convenience and accessibility, and other aspects in an e-commerce context, instead of solely relying on employees' perceptions. Hence, suggesting that the attitude towards technology usage at work is mainly influenced by perceived usefulness and ease of use may be viewed as a purely theoretical notion, and concrete measures need to be implemented.

The Technology Acceptance Model (TAM) assumes that its key constructs - perceived ease of use and perceived usefulness - fully mediate the influence of external variables on technology usage behavior. However, Burton-Jones and Hubona (2005) conducted a study to investigate the impact of individual user differences, such as staff seniority, age, and education level, on usage behavior. The results showed that these factors have significant direct effects on both the frequency and volume of usage. This suggests that the TAM model overlooks many external variables, such as age and education, and further research is required to explore other factors that may impact technology adoption in this digital age.

The literature review carried out in this research has revealed gaps in the study of e-commerce adoption. In particular, there is a lack of research that focuses on the adoption stage of e-commerce and provides clear instructions for effectively adopting and implementing e-commerce systems with clear measures to assess the perceived ease of use and perceived usefulness in the context of e-commerce. There are two primary limitations of this research. First, the scarcity of literature sources in the specific research domain restricts the research. Second, the research only focuses on examining and analyzing the two constructs of the TAM model to develop a theoretical research model. The future research will concentrate on conducting an empirical study to validate the developed research model. A quantitative research approach may be utilized to examine the connections among the model's variables.

In conclusion, this research paper reviewed the Technology Acceptance Model (TAM) in the context of e-commerce adoption. The paper identified that the model has been widely used in various contexts but may lack some variables necessary for the e-commerce field. To address this gap, the paper introduced new variables that can be incorporated into the TAM model to make it more mature in the e-commerce field adoption. These new variables can enhance the model's ability to explain e-commerce adoption behavior among consumers. Future research should focus on validating the proposed model through empirical studies. Overall, this research paper contributes to the development of the TAM model and provides insights into its application in the e-commerce context. The study provides valuable perspectives on the challenges hindering the adoption of industrial e-commerce by consumers in the UAE. Consumer reluctance is primarily attributed to their unease with product selection, and establishing trust and security is

essential in enhancing the perceived usefulness of industrial e-commerce and promoting consumer acceptance. The study supports this apprehension by revealing the growing number of security vulnerabilities and inadequate measures to safeguard personal information. Furthermore, the study uncovered significant hurdles in customer service and payment options that could adversely affect the perceived ease of use of the e-commerce platform.

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