

# UNDERSTANDING THE CONSUMER DYNAMICS OF AI IN NORTH MACEDONIAN E-BUSINESS

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#### Abstract

**Research Purpose:** This study investigates the dynamics of Artificial Intelligence (AI) in e-business, particularly from the perspective of consumers in North Macedonia. The research aims to identify and evaluate the benefits and challenges of AI integration in e-business, explore the ethical concerns related to AI decision-making, and understand the impact of AI on consumer behaviour and preferences.

**Design/Methodology/Approach:** The research adopts a mixed-methods approach, integrating qualitative and quantitative analyses. Primary data was collected via a structured questionnaire distributed among various demographic groups to gauge the level of awareness and experiences with AI in e-business. A range of statistical tests, including ANOVA and correlation tests, were employed to assess the significance of the data collected and to test a set of hypotheses concerning consumer perceptions and experiences of AI.

**Findings:** The results reveal that demographic factors such as age, status, education, and occupation do not significantly impact the level of understanding, awareness, or experiences with AI among Macedonian consumers. Participants exhibited a level of high awareness of the importance of AI in e-business and rated their shopping experiences with AI more positively than traditional methods. Trust and reliability in AI did not significantly differ across demographic lines. The findings of this study have significant policy implications, especially in guiding the ethical and responsible integration of AI in e-business. They suggest a need for policies emphasising consumer data protection and privacy, given the heightened awareness and concern among consumers regarding using their personal information. Furthermore, the results advocate for the development of regulatory frameworks that ensure transparency and fairness in AI algorithms, addressing potential biases that could negatively impact consumer trust.

**Originality/Value/Practical Implications:** This research contributes novel insights into the Macedonian consumer market's perception of AI in e-business, a topic scarcely covered in existing literature. The findings underscore the necessity for businesses to adopt AI responsibly and ethically, highlighting the importance of prioritising fairness, privacy, and transparency to leverage AI's full potential in e-business. This study stands out in its exploration of AI in e-business from the consumer perspective in North Macedonia, a context not extensively covered in existing literature. The originality of our research lies in its focus on a comprehensive range of consumer-centric factors, including awareness, experiences, ethical concerns, and behaviour related to AI in e-business.

Keywords: Artificial Intelligence, E-business, Consumer Behaviour, Ethical Implications, North Macedonia

JEL codes: M21

# Introduction

Artificial Intelligence (AI) has emerged as a transformative technology, revolutionising various industries, including e-business. The evolution of artificial intelligence in e-business has paved the way for improved customer experiences, improved operational efficiency and increased competitiveness. The early stages of AI in e-business focused primarily on rule-based systems and simple automation. Basic chatbots were introduced to provide automated customer support and address frequently asked questions. These rule-based systems relied on predefined rules and decision trees, limiting their ability to handle complex queries and adapt to changing customer needs. Machine learning algorithms have marked a significant advance in artificial intelligence for e-business. Machine learning has enabled systems to learn from data, identify patterns and make predictions. E-businesses have started using machine learning models to analyse massive amounts of customer data and gain valuable insights into customer preferences, behaviour and buying patterns. This, in turn, allowed businesses to personalise customer experiences and provide targeted product recommendations (Laudon & Traver, 2020).

Artificial Intelligence (AI) has rapidly become an intrinsic part of digital transformation, offering robust solutions to complex problems across numerous domains. In e-business, AI's integration has been a catalyst for innovation, transforming traditional business models and customer interaction paradigms. The proliferation of AI applications has led to more sophisticated data analysis, enabling personalised services and enhancing user engagement. These advancements augment the user experience, streamline business processes, bolster operational efficiency, and foster a data-driven decision-making culture (Kaplan & Haenlein, 2019). However, AI's ascendancy in e-business comes with its own set of challenges. The technology's pervasive nature raises questions about data privacy, algorithmic transparency, and ethical considerations (Brynjolfsson & McAfee, 2017). Additionally, the reliance on complex algorithms and data may lead to socio-technical systems that are opaque and hard to scrutinise, often referred to as "black boxes," which can obscure how decisions are made (Castillo, 2016). This lack of transparency can create a divide between e-businesses and consumers, potentially eroding trust and complicating regulatory compliance (Bostrom & Yudkowsky, 2014). E-businesses embracing AI must navigate these challenges while leveraging the technology to stay competitive. This delicate balance requires a nuanced understanding of AI's capabilities and limitations, as well as a commitment to ethical principles that guide its application. It is imperative that businesses not only harness AI to gain insights into consumer behaviour but also engage with stakeholders to establish norms and practices that prioritise consumer welfare and trust (Russell & Norvig, 2016).

In light of these considerations, this research aims to dissect the intricacies of AI's role in e-business with a focus on consumer impacts. It seeks to unravel the nuanced interplay between technological capabilities and consumer expectations, providing a comprehensive analysis of the benefits and drawbacks as perceived by the end-users. By doing so, the study endeavours to offer a granular understanding of the AI-induced transformation in e-business and its broader societal implications.

This study delves into the multifaceted dynamics of AI in e-business to comprehensively elucidate the impacts on consumers. The research question of the paper is stated as follows:

How does the integration of Artificial Intelligence in e-business impact Macedonian consumers in terms of perceived benefits, challenges encountered, ethical considerations, and the influence on their behaviour and preferences?

## **Literature Review**

Artificial intelligence (AI) brings numerous advantages and opportunities to e-business, revolutionising the way companies operate and interact with customers. AI enables businesses to deliver highly personalised and customised experiences to their customers. By analysing vast amounts of customer data, AI algorithms can understand individual preferences, behaviours and buying patterns. This allows businesses to offer personalised product recommendations and tailored marketing messages and offers, resulting in a more engaging and satisfying customer experience. AI chats and virtual assistants also provide instant and personalised customer support, improving response times and resolving queries efficiently.

Artificial intelligence technologies automate repetitive and mundane tasks, increasing operational efficiency and productivity. Robotic Process Automation (RPA) automates rule-based tasks such as data entry, order processing and inventory management, reducing errors and saving time. AI-driven systems can optimise supply chain management, demand forecasting and inventory management, streamlining operations and reducing costs. By automating routine tasks, businesses can effectively allocate resources, allowing employees to focus on higher-value activities, creativity, and innovation.

Artificial intelligence empowers businesses to make data-driven decisions by extracting valuable insights from large data sets. Machine learning algorithms analyse historical data, identify patterns, and make predictions about future outcomes (Porter & Heppelmann, 2015). This enables businesses to optimise pricing strategies, forecast demand and identify trends and opportunities. Real-time analytics facilitated by artificial intelligence enables businesses to immediately respond to market changes, customer needs and emerging trends, gaining a competitive advantage. Artificial intelligence technologies are revolutionising e-business marketing and advertising. By analysing customer data, AI algorithms identify target audiences, segment customers, and develop highly effective marketing campaigns. AI systems can analyse customer sentiment and social media data, providing valuable insights into brand perception and sentiment (Manyika et al., 2011). AI-driven programmatic advertising optimises ad placements, targeting and bidding, resulting in higher conversion rates and increased return on investment (ROI). AI also enables businesses to personalise marketing messages and offers, improving customer engagement and loyalty.

AI enables businesses to gain deeper insight into customer behaviour, preferences and buying patterns. By analysing vast customer data, AI algorithms can identify key customer segments, uncover hidden patterns, and predict future customer behaviour. This information allows businesses to create targeted marketing campaigns, develop personalised product offerings, and optimise customer acquisition and retention strategies. AI-driven customer analytics also enables businesses to anticipate customer needs and proactively address their requests, increasing customer satisfaction and loyalty. AI plays a key role in e-business fraud detection and prevention. Machine learning algorithms analyse patterns and anomalies in large data sets, flagging suspicious activity and potentially fraudulent transactions. AI systems constantly learn from new data, adapting to evolving fraud techniques. This proactive approach protects businesses and their customers from financial loss and reputational damage. AI-driven risk management tools also help businesses assess and mitigate potential risks, improving overall security and trust. Artificial intelligence technologies are accelerating innovation and product development in e-business. AI systems can analyse market trends, customer feedback, and competitor data to identify gaps and opportunities. This insight allows businesses to develop new products and services that align with customer needs and preferences (Agrawal et al., 2018). AI-driven systems can automate and improve the product testing and quality assurance process, providing faster time-to-market and improved product reliability.

Additionally, AI enables businesses to iterate and optimise products based on real-time feedback and data, promoting innovation and agility. By embracing AI, businesses can gain a significant competitive advantage in the digital landscape. AI systems enable businesses to optimise processes, improve customer experiences, make data-driven decisions, and innovate at a faster pace. This differentiation allows businesses to stay ahead of the competition, attract and retain customers, and drive growth and profitability.

The intersection of AI and consumer dynamics in e-business has garnered significant academic interest, particularly in understanding how AI reshapes consumer behaviour and decision-making processes. It is important to emphasise the transformative role of AI in personalising consumer experiences, suggesting that AI-driven recommendations significantly influence consumer choices and purchasing habits. Further, a growing body of research, including works by Grewal et al. (2020) and Huang and Rust (2018), delves into the psychological impact of AI interactions, revealing a complex interplay between consumer trust, perceived utility, and the overall satisfaction derived from AI-enhanced shopping experiences. However, challenges such as privacy concerns and algorithmic biases raise critical questions about consumer acceptance and the ethical use of AI in e-business. Collectively, these studies underscore the need for a nuanced understanding of consumer dynamics in the AI-augmented

e-business landscape, balancing technological advancements with ethical considerations and consumercentric approaches.

# Methodology

The subject of the research is an examination of the situation regarding the use of AI in e-business from the point of view of consumers in North Macedonia and the discovery of the benefits and challenges of using AI in e-business from the perspective of consumers. The main objective of the research is to identify the consumer benefits and challenges of using AI in e-business. Within the framework of the research part of the paper, data from the primary research was collected, processed, systematised and analysed through the implementation of the survey questionnaire method. For this purpose, the following research methods were used:

- **Comparative method** The comparative method was used to analyse the responses from the survey questionnaire.
- **Quantitative and qualitative method** In this part of the paper, the empirical analysis of the questionnaires was made, that is, of the primary data obtained from the conducted survey questionnaire using quantitative and statistical analysis (descriptive statistics, statistical grouping of the data and graphical presentation of the data). The nature of the topic and the object of research point to the need for a qualitative analysis of the answers.
- Analysis and Synthesis Method The analysis method was used throughout the paper, analysing various aspects of previously obtained results from other researchers and analysing respondents' responses. The synthesis method was used to summarise the responses into results to meet the research objectives.

In order to fulfil the goals and tasks of the research, the following hypotheses have been formulated:

- H1: According to the age of consumers, there are no significant differences in terms of understanding, awareness, and the role of AI in e-business;
- H2: According to the status of consumers, there are no significant differences in terms of understanding, awareness, and the role of AI in e-business;
- H3: According to consumer education, there are no significant differences regarding the understanding, awareness, and role of AI in e-business;
- H4: According to the occupation of the consumers according to the industry, there are no significant differences regarding the understanding, awareness, and role of AI in e-business;
- H5: According to the age of consumers, there are no significant differences in terms of experiences with AI in e-business;
- H6: According to the status of consumers, there are no significant differences in terms of experiences with AI in e-business;
- H7: According to consumer education, there are no significant differences regarding experiences with AI in e-business;
- H8: According to the occupation of consumers by industry, there are no significant differences regarding experiences with AI in e-business;
- H9: According to the age of consumers, there are no significant differences in terms of trust and reliability in AI;
- H10: According to the status of consumers, there are no significant differences in terms of trust and reliability in AI;
- H11: According to consumer education, there are no significant differences regarding trust and reliability in AI;

• H12: According to the occupation of consumers by industry, there are no significant differences in terms of trust and reliability in AI;

The responses of consumers in North Macedonia who are familiar with AI in e-business served as primary data and provided a suitable basis for drawing conclusions and fulfilling the research objectives. These data were provided through an anonymous structured questionnaire, conceptualised in 5 parts and consisting of 19 questions. The first part refers to the demographic characteristics of the respondents and contains five questions. The second part addresses general consumer awareness and the use of AI in e-business. This part is composed of three questions (two of which are answered with a Likert scale, and one is a choice of one of the offered options). The third part of the questionnaire asks about the characteristics of AI in e-business. Also, it contains three questions (two are multiple-choice, and one is a dichotomy with an option to explain the affirmative answer). The following section tries to determine whether and how much consumers trust AI. The section contains five questions, of which two are answered with a Likert scale, one is dichotomous, and two are with the possibility of answering from three offered options. The fifth part examines the consumer experience related to AI through 1 question, consisting of 7 sub-questions answered on a Likert scale.

The research sample consists of 78 respondents, grouped in 6 groups according to age, in four categories according to status, in six categories according to education and with 16 occupations according to industry. According to the job position, the sample is heterogeneous and includes electrical engineers, trainers, pharmacists, laboratory technicians and other medical personnel, employees in sales and production, legal, IT, financial sector, accounting and auditing, etc. The most represented consumers are between the ages of 36 and 45 (27 or 34.6%), and the smallest participation was taken by the youngest, 15 (19.2%). The group aged 46 to 55 years (17 or 21.8%) had two more respondents, and there were 19 respondents (24.4%) aged 26 to 35. Regarding the status of the respondents, there is a drastic discrepancy between the category of employees and the other three categories. Namely, as many as 70 or 89.7% of the sample are employed people, and only a small part (8 people, i.e., 10.3%) consists of students and unemployed people (6 people or 7.7% are students and 2 or 2.6% are unemployed). Not a single respondent is retired. Most respondents have a higher education (46 or 60%), and only one respondent (1.3%) is a doctor of science. 19 or 24.4% have secondary education, and 12 or 15.4% have master's degrees. Not a single person lacked higher education, i.e., has only obtained primary education.

# **Results and Discussion**

The processing of the responses was carried out on the basis of tests generated with the statistical package International Business Machines Corporation Statistical Package for the Social Sciences (version 26). Tests include:

- Descriptive statistics about the survey sample and the responses to the questions;
- One-Way ANOVA tests for examining differences in opinion according to different demographic characteristics of respondents;
- correlation tests, which were used to examine the significance of relationships between variables, Goodman and Kruskall's lambda for multi-group nominal variables, Point-biserial for correlations between ordinal and nominal variables, and Kendall's tau-b for correlations between ordinal variables;
- Ordinal Regression tests examine the predictive power of the analysed demographic characteristics in relation to the awareness, meaning and role of AI in e-business, to trust in AI in e-business and to consumer experiences related to AI in e-business.

All tests were conducted at a 95% confidence interval, and values of p<0.05 were considered statistically significant. Initially, in Table 1, which follows, the results of an examination of the differences according to the demographics of the respondents are shown.

		ANOVA				
		Sum of Squares	df	Mean Square	F	Sig.
Age	Between Groups	3,032	9	,337	,287	,976
	Within Groups	79,839	68	1,174		
	Total	82,872	77			
Status	Between Groups	1,062	9	,118	,689	,717
	Within Groups	11,655	68	,171		
	Total	12,718	77			
Education	Between Groups	2,732	9	,304	,646	,754
	Within Groups	31,948	68	,470		
	Total	34,679	77			
Occupation by Industry	Between Groups	129,136	9	14,348	1,331	,238
	Within Groups	732,980	68	10,779		
	Total	862,115	77			

 Table 1. Differences by demographic characteristics regarding understanding, awareness and role of AI in e-business (Source: Compiled by authors)

We can note that neither according to the age of the respondents, nor according to their status and education, nor according to their occupation or industry, there are no significant differences in the awareness and understanding of the role and meaning of AI in e-business (r=0.976; 0.717; 0.754 and 0.238, respectively). So, they first became aware of the use of artificial intelligence in e-business, do not make significant differences and have similar experiences when shopping online, that is, through the Internet with AI-powered systems and traditional stores. They also rate their understanding of the role of AI in e-business very similarly.

These results suggest that we should accept the first four hypotheses, which state that there are no significant differences in age, status, education, and occupation in terms of understanding, awareness and the role of AI in e-business.

 Table 2. Differences by demographic characteristics regarding experiences with AI in e-business (Source:

 Compiled by authors)

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Age	Between Groups	22,235	13	1,710	1,805	,061
	Within Groups	60,637	64	,947		
	Total	82,872	77			
Status	Between Groups	2,067	13	,159	,956	,503
	Within Groups	10,651	64	,166		
	Total	12,718	77			
Education	Between Groups	3,232	13	,249	,506	,913
	Within Groups	31,447	64	,491		
	Total	34,679	77			
Occupation by Industry	Between Groups	246,266	13	18,944	1,969	,038
	Within Groups	615,849	64	9,623		
	Total	862,115	77			

Regarding respondents' experiences with AI in e-business, significant differences are detected only in terms of their occupation according to the industry where they work (p=0.038 and F=1.969). Although there are certain differences in experiences according to gender, the differences are not significant (p=0.061 and F=1.805). There are almost no differences in the respondents' status and education (r=0.503 and 0.913, respectively). So, the consumers participating in this research had similar experiences with the first interaction with AI and with regard to the AI features that make the whole buying process more intuitive. Their interest in providing AI algorithms to make decisions for e-businesses is similar, and there are no significant contrasts in AI-recommended shopping experiences. Opinions that AI chatbots speed up communication between customers and the company and that they help solve customer problems also do not differ significantly. Respondents have similar decisions about whether to buy something when AI is involved. The significance of the differences results from the drastic and significant differences in the answers between the respondents from different industries (p=0.038; F=1.969) and not from differences regarding the answers of the respondents from the same industry (table 2).

Results indicate that we should accept hypotheses 5, 6 and 7, meaning there are no significant differences in age, status and education in terms of experiences with AI in e-business.

On the other hand, we can reject hypothesis 8 since the significance level is below 0,05, meaning there are significant differences for occupation in terms of experiences with AI in e-business.

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Age	Between Groups	11,637	8	1,455	1,409	,208
	Within Groups	71,235	69	1,032		
	Total	82,872	77			
Status	Between Groups	1,083	8	,135	,803	,602
	Within Groups	11,635	69	,169		
	Total	12,718	77			
Education	Between Groups	3,910	8	,489	1,096	,377
	Within Groups	30,769	69	,446		
	Total	34,679	77			
Occupation by Industry	Between Groups	79,691	8	9,961	,878	,539
	Within Groups	782,424	69	11,339		
	Total	862,115	77			

Fable 3. Differences according to demographic characteristics regarding AI trust and reliability (So	urce:
Compiled by authors)	

From Table 3, we can conclude that no demographic characteristic leads to a significant difference in the trust and reliability of the surveyed consumers in AI (for all demographic characteristics p>0.05). Hence, we can say that consumers are similarly thinking about using AI to analyse users' personal data in order to help prevent identity and payment fraud. In this regard, share AI provides appropriate security measures (encryption and access controls), which can reduce the risk of misuse of personal data.

From the results, we conclude that we should accept hypotheses with ordinal numbers 9, 10, 11 and 12, meaning there are no significant differences in age, status, education, and occupation in terms of trust and reliability in AI.

### Conclusions

The research provided insight into Macedonian consumers' general attitudes and understanding regarding using artificial intelligence in e-business. The literature lacks studies investigating the level of awareness of AI in e-business, connecting it with the developed knowledge about the importance and role of AI in e-business. Therefore, it was difficult to compare the awareness and knowledge of Macedonian consumers with those of consumers in other countries. Hence, our research in this direction has provided significant findings, which can be a sound basis for future research. We discovered that Macedonian consumers have a highly developed awareness of the importance of AI in e-business; they understand the role of AI. Mainly about the presence of AI, that is, that a certain e-business uses AI settings/systems and uses AI in the work. They became aware since they noticed that the e-business managed to recognise their interests and predict their needs based on the history of their searches and after receiving proposals from the e-business according to them. The possibility of online payment also indicated the use of AI. Hence, for Macedonian consumers, who satisfactorily recognise these characteristics of AI, we can say that they also understand how it functions.

Macedonian consumers often rated shopping with the presence of AI as a much better experience than shopping from traditional stores (so-called brick stores). Only an insignificant part had the opposite opinion, and about a quarter had a neutral opinion, but still about 90%, in the future would buy online again and did not refrain from using any specific AI function. Acquisti et al. (2015) state that when consumers are provided with clear information and control over their personal data, they are more inclined to trust AI algorithms and perceive them as useful tools, and more recent research on Shin et al. (2022) find that the level of awareness consumers possess about algorithms affects their trust in algorithmic processes significantly and affects how they evaluate safety and security concerns. Belanche et al. (2019) find that consumers with a higher level of familiarity with AI rate it as more useful and have more positive attitudes towards it. The findings show that knowledge of AI engenders understanding and trust.

Our study's findings offer several critical contributions to the existing body of literature on AI in ebusiness, particularly in the context of consumer dynamics. Firstly, by exploring the Macedonian market, our research provides unique insights into a relatively underrepresented demographic in AI research. This enhances the global understanding of AI's impact on diverse consumer bases. Secondly, our analysis of consumer awareness, experiences, and trust in AI adds granularity to existing knowledge by confirming some prevailing notions while challenging others.

Nevertheless, they also reveal that certain demographic factors, such as age and occupation, do not significantly affect consumer engagement with AI in e-business. This highlights the complexity and variance of AI's impact across different consumer segments. Lastly, our research underscores the importance of ethical considerations in AI deployment, extending the dialogue on the ethical use of AI in e-business. By doing so, our study not only contributes to the theoretical understanding of AI in consumer markets but also offers practical insights for businesses aiming to implement AI in a consumer-centric and ethically responsible manner. However, our results contradict those of Alsajjan and Dennis (2006), who found that the presence of trust strengthens the effect on customer experience, and the findings of Ameen et al. (2021), who also highlight the central role that the concept of trust plays in the AI-enabled customer experience and confirm that a high level of trust, in turn, has a positive impact on the overall e-business service experience. Our results showed no significant relationship between trust and experiences with AI in e-business.

While this research provides valuable insights into the consumer dynamics of AI in e-business within the North Macedonian context, it is important to acknowledge its limitations. First, the geographical focus on North Macedonia, while offering in-depth local insights, may limit the generalizability of the findings to other regions with different cultural, economic, or technological contexts. Second, the study relies on self-reported data from consumers, which could be subject to biases and may not fully capture the complexity of their interactions with AI. Additionally, the cross-sectional nature of the survey limits our ability to track changes in consumer perceptions over time, which could be influenced by rapidly evolving AI technologies and market trends. Finally, while the study explores several consumer-centric aspects of AI in e-business, there remain unexplored areas, such as the impact of AI on consumer privacy and long-term trust, which warrant further research. Acknowledging these limitations is crucial for contextualising the findings and guiding future research directions in the field.

By responsibly and ethically embracing AI, businesses can drive innovation, improve customer experiences, and gain a competitive edge in the digital marketplace. The benefits of AI in e-business are enormous, ranging from improved customer satisfaction and increased efficiency to optimised decision-making and improved product development. However, it is critical that businesses address the challenges and ethical considerations associated with AI by ensuring that they prioritise fairness, inclusiveness, privacy, and transparency. In conclusion, AI is reshaping the e-business landscape, offering unprecedented opportunities for growth and transformation. Businesses that effectively use AI technologies while considering the ethical implications are likely to thrive in the digital age. The future of e-business lies in the seamless integration of artificial intelligence, human expertise and ethical practices, creating a harmonious balance that maximises benefits for businesses and customers.

### References

Acquisti, A., Brandimarte, L., & Loewenstein, G. (2015). Privacy and human behavior in the age of information. *Science*, *347*, 509-514. <u>https://doi.org/10.1126/science.aaa1465</u>

Agrawal, A., Gans, J., & Goldfarb, A. (2018). Prediction machines: The simple economics of artificial intelligence. Harvard Business Review Press

Alsajjan, B., & Dennis, C. (2006). *The impact of trust on acceptance of online banking*. European Association of Education and Research in Commercial Distribution. <u>https://bura.brunel.ac.uk/handle/2438/738</u>

Ameen, N., Tarhini, A., Reppel, A., & Anand, A. (2021). Customer experiences in the age of artificial intelligence. *Computers in Human Behavior, (114),* 106548. <u>https://doi.org/10.1016/j.chb.2020.106548</u>

Belanche, D., Casaló, L.V., & Flavián, C. (2019). Artificial intelligence in fintech: Understanding robo-advisors adoption among customers. *Industrial Management and Data Systems*, *119*(7), 1411-1430. https://doi.org/10.1108/IMDS-08-2018-0368

Bostrom, N., & Yudkowsky, E. (2014). The ethics of artificial intelligence. In K. Frankish & W. M. Ramsey (Eds.), *The Cambridge Handbook of Artificial Intelligence* (pp. 316-334). Cambridge University Press

Brynjolfsson, E., & McAfee, A. (2017). The business of artificial intelligence: What it can - and cannot - do for your organisation. *Harvard Business Review*. <u>https://hbr.org/2017/07/the-business-of-artificial-intelligence</u>

Castillo, C. (2016). Big data and AI strategies: Machine learning and alternative data approach to investing. *Journal of Investment Strategies*, 5(4), 83-109.

Grewal, D., Roggeveen, A. L., & Nordfält, J. (2020). The future of retailing. *Journal of Retailing*, 96(1), 1-6. https://doi.org/10.1016/J.JRETAI.2016.12.008

Huang, M. H., & Rust, R. T. (2018). Artificial Intelligence in service. *Journal of Service Research*, 21(2), 155-172. <u>https://doi.org/10.1177/1094670517752459</u>

kaplan, a. m., & haenlein, m. (2019). siri, siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, 62(1), 15-25. <u>https://doi.org/10.1016/j.bushor.2018.08.004</u>

Laudon, K. C., & Traver, C. G. (2020). E-commerce: Business, technology, and society. Pearson

Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C., & Byers, A. H. (2011). *Big data: The next frontier for innovation, competition, and productivity*. <u>https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/big-data-the-next-frontier-for-innovation</u>

Porter, M. E., & Heppelmann, J. E. (2015). How smart, connected products are transforming competition. *Harvard Business Review*. <u>https://hbr.org/2015/10/how-smart-connected-products-are-transforming-companies</u>

Russell, S., & Norvig, P. (2016). Artificial intelligence: A modern approach (3rd ed.). Prentice Hall

Shin, D., Kee, K.F., & Shin, E.Y. (2022). Algorithm awareness: Why user awareness is critical for personal privacy in the adoption of algorithmic platforms? *International Journal of Information Management*, 65, 102494. <u>https://doi.org/10.1016/j.ijinfomgt.2022.102494</u>

### **ANNEX 1 – QUESTIONNAIRE**

#### Question number 1. Gender of the respondent

- 1) Male
- 2) Female
- 3) Not specified

### Question number 2. Age

- 1) 18 to 25 years
- 2) 26 to 35 years
- 3) 36 to 45 years
- 4) 46 to 55 years
- 5) 56 to 65 years
- 6) Over 65 years old
- **Question number 3. Status** 
  - 1) A student
  - 2) Unemployed
  - 3) Employee
  - 4) Retiree
  - 5) Other

### Question number 4. Education

- 1) No education
- 2) Primary education
- 3) Secondary Education
- 4) Secondary vocational education
- 5) High education
- 6) Master
- 7) PhD

### Question number 5. Occupation by industry

- 1) Information and Communications
- 2) Energy
- 3) Professional, scientific and technical activities
- 4) Financial activities and insurance activities
- 5) Education
- 6) Processing industry
- 7) Wholesale and retail trade
- 8) Construction
- 9) Administrative and auxiliary service activities
- 10) Health and social care activities
- 11) Arts, entertainment and recreation
- 12) Tourism
- 13) Another industry

### Question number 6. Occupation by sector (job in which sector)

1) Maintenance and servicing

- 2) Administration
- 3) Human resources
- 4) Finance and Accounting
- 5) Marketing and sales
- 6) IT sector
- 7) Another sector

#### 1. General Awareness and Use:

Question number 7. How did you first become aware of the use of artificial intelligence in e-business?

1) Favouring a product or service

2)

Question number 8. On a scale of 1 to 10, how would you rate your understanding of the role of artificial intelligence in e-business?

#### Scale 1\_\_\_\_10

Question number 9. How would you compare your online shopping experiences with AI-powered systems versus traditional ones?

- 1) Much worse
- 2) Worse
- 3) The same
- 4) Get better
- 5) Much better

### 2. Features of artificial intelligence in e-business:

Question number 10. Have you ever refrained from using a specific AI feature while shopping online? If so, why?

- 1) No
- 2) Yes.Why?\_\_

Question number 11. In your experience, which AI feature speeds up the purchase decision the most?

- 1) Quick search of data and products
- 2) Easy search of data and products
- 3) Fast communication with customers
- 4) Better customer experience
- 5) Provides personalised recommendations and offers
- 6) It gives good solutions
- 7) Less chance for mistakes
- 8) Other\_\_

Question number 12. Can you think of an instance when an AI feature helped you discover a new product or brand?

#### 1) Through a personalised message

- 2) Via e-mail
- 3) Through an ad on FB, Instagram or another social network
- 4) Through a voice ad
- 5) Through an advertisement on a website
- 6) Through an ad while searching for a product in an e-store
- 7) By redirecting to the experiences of previous customers for a new product or brand
- 8) Other\_\_\_\_\_

Question number 13. How does the presence of AI features in an e-business affect your decision to shop there?

- 1) It helps me find the desired product more easily
- 2) He recommends similar products to me
- 3) Responds quickly
- 4) It processes payment data quickly
- 5) Immediately sends information about received payment
- 6) I feel safe when paying online
- 7) Sends information about delivered products
- 8) It allows real-time shipment tracking
- 9) Errors are reduced to a minimum, or there is no possibility of error at all.
- 10) I have more confidence in these e-businesses than in traditional ones
- 11) Other\_\_

### 3. Trust and security:

Question number 14. Do you believe that AI systems are more objective than human-driven systems in e-business settings?

- 1) No
- 2) Somewhat because the subjectivity of the human factor is excluded
- 3) Yes

Question number 15. Have you ever been recommended a product by an AI system that you ended up regretting?

- 1) No
- 2) Yes, but rarely
- 3) Yes, often

Question number 16. In cases where you felt that the AI system made a mistake, did it deter you from continuing your purchase or returning to the e-business?

- 1) No
- 2) Yes

#### 4. User experience:

**Question number 17.** On a scale of 1 to 10, how would you describe your first experience interacting with an AI system in an e-business setting?

1-----10

Question number 18. On a scale of 1 to 10, how much do you think AI features make the online shopping process more intuitive?

1-----10

Question number 19. If you had the choice to turn off all AI features on an e-business platform, would you?

- 1) No
- 2) Yes