

Challenges and solutions by the adoption of AI in the capacity enlargement of Information and Communications Technology (ICT) Development by the retail industry in China

Yiming Chen

College of Energy Engineering, Zhejiang University, Hangzhou, 310013, China, 18267051536@163.com

Abstract

The application of artificial intelligence in modern business is an integral part and this has a huge influence on the capacity enlargement of the ICT. Thus, this research project is concerned with the identification of effectiveness, challenges and mitigation strategies of the application of AI in information and communication in the Chinese retail sector. It has been noted that the capacity of ICT has developed after adopting Artificial Intelligence as it offers unparalleled opportunities for growth and development as well as individual empowerment. Retailers have shifted towards automation by implementing AI chatbots to increase the interaction with the customers as well as develop inventory management. Besides this, the objectives have helped to do the detailed literature review and the theory of Technology Acceptance Model has been applied. The role and challenges of the application of AI have been mentioned. The researcher has followed the interpretivism philosophy and inductive approach to research while following the mono method.

Keywords: Artificial Intelligence (AI), Virtual reality (VRs), Capacity enlargement, advanced technology, retailers, Information Communication Technology (ICT).

1.0 INTRODUCTION

1.1 Background

Over the years, ICT has supported the creation of the most rapidly growing sectors driving towards efficiency in government and various business operations. The capacity of ICT has developed after adopting Artificial Intelligence as it offers unparalleled opportunities for growth and development as well as individual empowerment. According to the statistical data, the global AI market is assumed to reach almost \$60 Billion by 2025 (Martin, 2019). This shows that most retail, healthcare, and finance industries are adopting AI technology and generating benefits in their business operations. In this context, China has become a leader in AI patents and publications worldwide (Shen et al., 2021). The retail industry is going through revolutionary changes to adopt AI in every aspect of its business. However, various challenges are faced by the organisation while developing ICT such as lack of proper infrastructure, regulatory framework, legal policies, problem of acceptance and others (Bisong et al., 2023). The research will examine different challenges which derives various kinds of solutions for the capacity of enlargement within the ICT department.

1.2 Aims and Objectives

1.2.1 Aim

The research aims to understand various challenges and solutions related to enlargement of capacity for Information and communications technology development while adopting artificial intelligence within the retail industry of China.

1.2.2 Objectives

1. To examine the role of Artificial intelligence towards capacity enlargement within information and communications technology development in the retail industry.
2. To acknowledge different challenges within the retail industry while implementing AI for capacity enlargement for information and communication technology in the development of China.

3. To analyse the solutions for eliminating the problems while implementing AI within the capacity enlargement of information and communication technology development in the retail sector of China.

1.3 Rationale

It is very much necessary to execute information and communication technology development within the different sectors. ICT has helped organisations to be more productive thereby ascertaining economic growth and maintaining competitive advantage. The dynamic transformation of the industry towards digitalisation and adaptation of emerging technologies such as AI have helped streamline the decision-making process and access data-driven strategies (Reim et al., 2020). Further, AI in business communication delivers efficiency and enhances targets, personalisation, and data-driven decision-making within the business. Retail and e-commerce are the fastest-growing industries around the globe (Martin, 2019). Retailers have shifted towards automation by implementing AI chatbots to increase the interaction with the customers as well as develop inventory management. However, the adaptation of AI often raises regulatory and ethical concerns which may impact the reputation of the company. Thus, the researchers have decided to determine the challenges and solutions towards the capacity enlargement of ICT while adopting AI within the firms.

2.0 LITERATURE REVIEW

2.1 Definition of AI and its evolution over time

Duan et al. (2018) stated that artificial intelligence can be referred to as the ability of a machine to learn from experience, adjust to new inputs as well as perform human-like tasks. The rapid development of big data technologies, for instance, increases the computer storage capabilities and super-fast speed of data processing machines, AI is being revitalised with the power of big data and its availability (Miller, 2018). Furthermore, AI-enabled systems have helped organisations to expand rapidly by transforming their business operations and enhancing their decision-making process. Over the years, the field of AI has changed drastically, and its capabilities have also increased as per the reports in July 2016, Apple, Google, Twitter, Microsoft and other technical giants had acquired nearly 140 entrepreneurial firms within the field of AI. AI has enhanced the customer experience in the retail sector by providing intelligent chatbots, personalised recommendations and advanced inventory management. Pan (2016) opined that AI-driven analytics has helped retailers to better understand customer behaviours and preferences. It also allows marketers to tailor their offerings to the customers' requirements. The evolution of AI has delivered a remarkable journey with innovation and countless breakthroughs propelling the field to increase economic development and make the world a better place to live.

2.2 Role of AI towards increasing capacity enlargement of ICT

According to Marín-García et al. (2021), the application of artificial intelligence along with machine learning can speed up the ability of the information and community system as well as promote the prediction and recommendations towards accessible alternatives. The characteristics of AI to analyse and interpret individual behaviours and preferences promote the adoption of personalised and targeted communication measures. In the retail industry, it also facilitates the application of omnichannel measures fosters efficiency, and operational excellence, reduces cost and accelerates real-time market understanding. Besides this, Lewis & Bell (2019), have opined that artificial intelligence has a major role in cyber security and creates a smart framework to identify any kind of leakage of information and safeguard the network. The delivery of accurate protection will improve the effectiveness of the ICT in the retail industry. The development of automation systems and an effective information system are another role of AI in the ICT process. The automated reasoning structure will cause the progression of the calculations and other related activities. Weber & Schütte (2019) have mentioned that automated content generation has influenced the marketing process of the retail sector, and it fosters the consistency in community, counters misinformation and maintains a controlling nature against the challenging situation. Additionally, the other role of artificial intelligence is the predictive analysis that will guide the retail authorities to identify patterns, analyse the challenges and support the adoption of strategic approaches and informed decisions of the organisation. Khrais (2020) have stated that the use of AI in information and communication technology is also able to reduce human errors and promote the

development of unbiased decisions in addition to streamlining customer service, boosting workflow productivity and facilitating the transformation of the enterprise. The optimisation of complex systems and rapid experimentation are regarded as another important role of AI in the retail sector.

2.3 Challenges of AI in Developing ICT in the Retail Industry

According to Taddeo et al. (2019), the successful integration of artificial intelligence has encountered challenges related to the absence of proper training of staff and the presence of proper technological infrastructure. It has been observed that the application of artificial intelligence in the inventory and supply chain management has encountered issues due to improper technical infrastructure. This further hampers the retail operations, work management and customer service. Another significant trouble in AI implementation is the absence of employee knowledge, skill and expertise to handle the upgraded digital tools and these should result in difficulties in proper functioning. On the other hand, Marr (2019) has mentioned that retail industry is prone to the cyber security issues as this is associated with the data breaching and cyber-attacks. This have reflected that the lack of effective data management has affected the application of technical platform in regular operations. The organisations have encountered difficulties due to the absence of proper data, effective data quality, and proper way of utilisation. After that, Horowitz et al. (2022) have pinpointed that, the presence of essential resources is another obstacle in the AI implementation as the expenses of AI algorithms, hardware and software are very high. The legal compliances have also resulted in certain difficulties regarding the liabilities, copyrights and intellectual property rights. The system malfunction, erroneous outputs are another concern in this case. Further, AI sometimes have faced difficulties during the maintenance of data confidentiality and thus these issues have put a huge concern to the retail business during the application of digital tool and require effective concerns.

2.4 Effective measures to deal with the AI implementation challenges in the retail business

It has been observed that the AI implementation challenges require certain effective strategies and boost efficiency. Hence, from the point of view of Russell (2019), continuous digital monitoring is essential that should be foster the avoidance of bias generation in AI algorithm. The digital monitoring should also include the maintenance of fairness, accountability followed by transparency, ethical structures and the application guidelines. TAM or Technology Acceptance Model should be applied in the digital application, and this will support the enhancement of the quality of digital applications. Additionally, as per Brattberg et al. (2020), the employee training is an important part in this segment and thus, organisations need to improve their investment structure to promote the ability of the workforce. The data governance tools should also be adopted to avoid the incidences of data breaching and influence the data quality. The issues in the retail business can also be overcome by the effective collaboration with different digital partners and these will help to maintain protocols and suggestions of cyber security. The companies should adopt the transparent application models as well. According to Stahl (2021), the testing of software and the adoption of quality assurance practices should be facilitated at every step of the software lifecycle to eliminate the risks related to software malfunction. Organisations need to adopt contingency plans and robust error-handling mechanisms to reduce the impact of software malfunction, in case these occur. Further, the maintenance of data privacy laws should be facilitated as the privacy protection will help to build trust among stakeholders and promote the effectiveness of being reliable and responsive.

2.5 Theoretical implication

Bareis & Katzenbach (2022), have mentioned that the TAM or Technology Acceptance Model is an information system theory that facilitates the explanation of acceptance and encouragement towards the utilisation of new technology. This theory has certain important components like perceived ease of use, perceived usefulness, behavioural intention to use and the attitude towards use. This all guides the understanding of the benefits of information technology. The segment of this theory guides the organisations to adopt digital integration and it has a high level of prediction in certain contexts. Additionally, according to Jordan (2019), the application of TAM theory promotes a positive attitude towards the application of digital tools in organisational activities and facilitates acceptance. On the other hand, this theory has certain limitations related to concern about the variables that are evaluated by interpersonal influences and other subjective means.

2.6 Research Gap

While conducting the studies, highlight certain areas that were insufficient or missing specific information regarding the topic. This gap or new adequate information in research will be identified and further analysis will be conducted based on it. For example in this research, it was difficult to determine or ascertain specific challenges that the companies can face due to excessive dependence on AI. Most of the data used in the research were focused towards primary analysis which also showcases the need for secondary analysis on a similar topic. Thus, this study aims to fill the gaps identified from the literature review in the form of findings and analysis for justifying the research outcomes.

3.0 RESEARCH METHODOLOGY

Research methodology is the explanation of data collection, analysis and conclusion process to deliver the validity and justification to the investigation. The research methodology has followed the layers of the onion model to conduct the research effectively (Nash, 2019). Hence, philosophy is the first layer of the onion model and represents the beliefs and values of the researcher to select the design and accomplish the proper execution. Here, the research has followed interpretivism philosophy as the position that reality is socially constructed (Yadav, 2022). It has delivered the way to deliver the subjective way to reality and support the delivery of shape to the social and historical perspective of the individual. Here, the social perspective and theories have been focused and promote the high validity of results. It also guides in understanding the deep perspective of the topic and fosters in-depth analysis. Besides this, the approach of the research is the second layer of the model and highlights the procedures and plans of the investigation. Further, an inductive research approach will be used as it is flexible, explanatory and focuses on qualitative analysis (Russell, 2019). As the researcher has focused on the interpretivism philosophy, thus the inductive approach has been effective. It helps to analyse the patterns and observations of the facts. The inductive approach has promoted the generation of new theories and aided the investigator in developing themes that will promote the understanding of the common factors and patterns. This approach has also discovered new perspectives and captured the complexity. Qualitative research is a type of research that explores and provides deeper insights towards real-world problems. Research choice indicates the critical decisions adopted by the researcher regarding the applied methods in the investigation process (Kelly, 2023). Additionally, the study has focused on the mono method in that only qualitative research has been conducted. The determination of the data collection and analysis tools is also important. Thus, the researcher has collected the secondary data from Google Scholar, newspapers, company portals, journals, articles and other grey literature. The secondary method of data analysis has also been applied focusing on qualitative analysis. This analysis has been advantageous as this is time-efficient and less expensive and the finding of data regarding the research objectives becomes easy. In addition, the cross-sectional time horizon has been applied to complete the investigation before the deadline. On the other hand, the researcher has conceded certain inclusion and exclusion criteria while conducting the research (Davies, 2022). The inclusion criteria include the use of accessible secondary data sources from Google Scholar in the forms of books, articles and journals and any type of websites and paid papers should not be considered. The study results should be reliable, and the use of theories should be promoted (Floridi et al., 2021). A secondary qualitative theme analysis will be supported to get reliable results. Further, the exclusion criteria have the avoidance of primary data collection and analysis, and the characteristics of the population will not be considered as the determinant. There has been no survey or questionnaire method allowed and the researcher has not focused on the primary research.

4.0 FINDINGS AND DISCUSSION

4.1 Findings

Table 1 Systematic review table

S L. N o	Particulars	Year	Source Title	Cited by	Document Type	Source	Description	Design	Subject Area

1.	Technology roadmap of AI applications in the retail industry	2023	Technological Forecasting and Social Change	8	Journal	Scopus	Application of AI in the retail industry	Qualitative (case study analysis)	Technology
2.	Revolution of Retail Industry: From Perspective of Retail 1.0 to 4.0	2022	Procedia computer science	102	Journal	Scopus	Transformation of retail industry due to development of ICT	Qualitative	Computer science
3.	Implementation of Artificial Intelligence in Fashion: Are Consumers Ready?	2020	Clothing and textiles research journals	101	Journal	Scopus	How has AI helped in driving the customers towards fashion with the help of AI	Quantitative	Fashion and textiles
4.	Rise of Artificial Intelligence in Business and Industry	2023	Journal of Engineering Research and Reports	54	Journal	Scopus	Development of AI	Qualitative	Business
5.	Information and communication technology (ICT), digital divide and urbanization: Evidence from Chinese cities	2021	Technology in society	158	Journal	Scopus	The use of ICT to enhance the process of urbanisation	Qualitative	Technology
6.	Shopping intention at AI-powered automated retail stores (AIPARS)	2020	Journal of Retailing and Consumer Services	280	Journal	Scopus	The support of AI towards developing the automated retail stores	Quantitative	Retailing
7.	Hi, May AI help you? An analysis	2023	Journal of retailing and	52	Journal	Scopus	Challenges faced by retailers	Qualitative	Retailing

	of the barriers impeding the implementation and use of artificial intelligence-enabled virtual assistants in retail		customer services				while enabling AI		
8.	A study of barriers and benefits of artificial intelligence adoption in small and medium enterprise	2022	Academy of Marketing Studies Journal	56	Journal	Scopus	Barriers and benefits faced by small and medium enterprise while adopting AI	Qualitative	Retailing
9.	Strategizing Retailing in the New Technology Era	2021	Journal of retailing	177	Journal	Scopus	The implementation of new technology within the business strategy of retail sector	Qualitative	Retailing
10.	Building the AI-powered organization	2019	Harvard Business review	585	Article	Business review	How to build an AI enabled processed organisation	Qualitative	Technology
11.	Customer experiences in the age of artificial intelligence	2020	Computers in human behaviour	527	Journal	PubMed	Determining results regarding the experiences of the customer for using AI in organisations	Mixed	Human Behaviour
13.	Reskilling and Upskilling the Future-read	2022	Information Systems Frontiers	353	Journal	Scopus	Training and skill development of the employees	Quantitative	Information Technology

	y Workforce for Industry 4.0 and beyond						for industry 4.0		
14	The Origins of Lewin's Three-Step Model of Change	2019	Applied behavioural Science	475	Journal	Scopus	Lewin's change management model	Qualitative	Behavioral Science
15	Improving IoT privacy, data protection and security concerns.	2021	International Journal of Technology, Innovation and Management	644	Journal	Scopus	The importance of IoT privacy, security concerns and data protection for the companies for effective implementation of Artificial Intelligence	Qualitative	Technology and innovation

Theme 1: The role of AI towards the capacity enlargement of ICT within the retail industry

Artificial intelligence is one of the significant contributors that has led to various innovations that have shaped the retail industry. Specifically, after the outbreak of the pandemic there has been a revolutionary change in the spending habits of the consumers (Lu et al., 2023). This proves that the dynamic change in consumer purchasing behaviour has affected the global economy which has forced retailers to rethink their marketing needs. AI has been a great contributor that has led to the capacity enlargement of ICT services. For instance, transformation to click-and-mortar business mode wherein the operations of the business are conducted in both online and offline stores (Liang et al., 2020). Further, the integration of online and offline operations has revolutionised the retail industry and allowed customers to shop differently. Technological advancement has helped business operators predict the demand for the product among customers and determine the valuation to bring radical changes within their marketing process.

Theme 2: Retail 4.0

In the past few decades, the retail industry has transformed drastically due to the leveraging of industry 4.0 technologies. For instance, augmented reality, cloud computing, artificial intelligence, big data analysis, internet of Things has integrated into a new dimension of understanding the needs of the customers (Bharadiya et al., 2023). This proves that the innovation, and integration of technology and people along with huge advancements in production as well as data analytics technologies have made the retail industry 4.0.



Figure 1 The Revolution of the Retail Industry
(Source: Har et al., 2022)

The above diagram shows the revelation of the retail industry that started with retail 1.0 concentrated on steam engine and first cash register to 21st-century digitalisation with advanced and integrated technology. Further, retail 4.0 alters the supply chain towards a customer-centric organisation that enables the rapid flow of information and items between channels by providing high-end customer services (Wang et al., 2020). The integration of retail 4.0 took place due to the establishment of artificial intelligence that led to the capacity advancement of ICT. For example, scanning of QR code, product consultation, chatbot and more convenient shopping experience for the customers (Pillai et al., 2020). All these technological advancements have made the distribution value chain more competitive, efficient and flexible.

Theme 3: Challenges faced by the retail industry due to AI

AI has enabled virtual assistance (VAs) that has evolved the whole shopping experience and opportunities for retailers. Irrespective of these benefits, the adaptation of AI within the retail marketing channel is still patchy (Bhalerao et al., 2022). This proves that acceptance of this advancement in technology remains low specifically in the retail sector as issues such as fear of jobless and lack of understanding of using AI within the operations lead to low adaptation of the process. There is another main challenge which is faced by retailers is the lack of appropriate data as AI needs large amounts of data to perform its function (Grewal et al., 2021; Fountaine et al., 2019). This proves that there are still many retailers or business owners who struggle with the use of AI as they do not have the same kind of data set that other industries have such as finance, and healthcare. Additionally, many retailers have also claimed that customer acceptance is also one of the greatest challenges that they have faced while enabling AI such as chatbots and other capacity enlargement of technology in their operations. A survey was revealed that demonstrates that only 12 per cent of digitalised companies have enabled AI-enabled VAs within their various business processes (Kamoonpuri & Sengar, 2023). At the same time, another survey showed that among 90, 48 per cent of business leaders failed to make the customers accept the latest technology even after enabling chatbots, biometrics and voice bots (Kamoonpuri & Sengar, 2023). Due to this mismatch and ineffective implementation of AI organisations often face internal and external sources towards adopting AI applications or advanced technology.

Theme 4: Focusing on effective solutions to develop the capability of ICT in the Chinese retail industry

In the last few decades, the region industry in China has witnessed a rapid transformation driven by the enabling of artificial intelligence within the business process. Technological advancement has not only developed operational efficiency but has also brought a change in customer experiences which leads to the expansion of the capacity of ICT within the retail sector (Ye et al., 2021). Implementing AI to enlarge the ICT capabilities within the Chinese sector has faced challenges for which strategic solution needs to be provided to maximise effectiveness. First, the retailers need to identify the skill gaps and develop their talent accusation process to enable the capacity of advanced technology within their process (Li, 2022). Companies can invest towards AI education and training programmes to upskill their employees as per the needs of the industry. Further, this initiative will develop the AI literacy rate that fosters efficiency and innovation across different business functions. Secondly, the organisation needs to invest more towards data privacy and security concerns by incorporating robust data governance frameworks and compliance mechanisms to ensure that data usage is transparent, and the trust of the users is also built among the regulatory bodies as well as the consumers (Tawalbeh et al., 2020). Third is the culture change,

most organisations become rigid in their decisions and do not provide adequate support to their workforce to adapt to the capacity enlargement of information technology. Therefore, a change management model such as Lewin's change model is effective in identifying the changes needed and executing changes such as AI-enabled processes within the operations effectively (Burnes, 2020). However, irrespective of various solutions it is the culture of the company that helps the workforce to adapt to innovation and development in their operations.

4.2 Discussion

The Chinese retail industry is transforming radically with the implementation of advanced technology in business operations. The objective was to analyse the role of AI in capacity enlargement of ICT in the retail industry of China. The literature has demonstrated the role and effectiveness of AI towards the development of the advance technology. However, the gap has been fulfilled by the thematic analysis demonstrating the specific role of AI in increasing the capacity of ICT within the retail sector. The findings and analysis section has also pointed that irrespective of retailers adapting to advance technology there are still various challenges that are needed to be addressed. Based on that, specific solution were advised that the business owners can implement in their business functions to enable the use of AI.

5.0 Practical implication

The research findings have implied the significance of AI in the capacity enlargement of ICT within the retail industry of China. Various organisations such as Alibaba Group, Vipshop, and Dashang Group have invested towards integrated technological advancement in their business operation. Further, the advanced EI tools have helped retailers to understand the needs of the customer and develop their products focusing on the feedback. The retail industry has been developing at a rapid speed with the help of advanced technology such as artificial intelligence within their business, various challenges must be considered while using the integrated technological advancement by the companies. Challenges such as cybercrimes, fraudulent activities, constant changes in the perspective of human purchasing behaviour and too much dependence on technology which is affecting the labour force. Although, there are huge advantages of AI within the retail industry and the capability enlargement of ICT, irrespective of that there is still a lack of transparency and trustworthiness among the customers regarding the advanced technology. This paper highlights the challenges and the strategies to overcome the issues faced by retailers through various procedures.

6.0 Limitations and Future Scope

This particular research paper has its own limitations that involve market conditions and data collection that should have been considered. Primary data collection a conducted in the form of a survey that provides more factual information and in-depth yes insights into both qualitative and quantitative research strategies. However, this paper is focused only on secondary data sources that are identified from peer-reviewed journals, online portals and government websites. Moreover, this study has only focused on a few journals and articles which has limited the scope of the research outcomes and lacks factual or measurable data to validate the information.

7.0 CONCLUSION

The paper has emphasised on determining the role of AI in increasing the capacity enlargement of ICT within the retail sector. In industry 4.0, AI place a significant role of development of the efficiency of the operations of businesses across the globe. Despite the advancement there are still various barriers that are needed to be resolved for capacity enlargement of ICT to integrate technological advancement and innovation in the retail sector. This paper has been address by conducting secondary research strategy following the systematic literature review. The paper has analysis various literacy sources on the basis of the objectives to ascertain the themes for conducting the findings of the research. The research has demonstrated challenges faced by the retailers and appropriate solutions to overcome those specific issues for enabling AI in the business process.

REFERENCES

1. Ameen, N., Tarhini, A., Reppel, A., & Anand, A. (2021). Customer experiences in the age of artificial intelligence. *Computers in human behavior*, 114, 106548. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7463275/>
2. Bareis, J., & Katzenbach, C. (2022). Talking AI into being: The narratives and imaginaries of national AI strategies and their performative politics. *Science, Technology, & Human Values*, 47(5), 855-881.
3. Bhalerao, K., Kumar, A., Kumar, A., & Pujari, P. (2022). A study of barriers and benefits of artificial intelligence adoption in small and medium enterprises. *Academy of Marketing Studies Journal*, 26, 1-6. https://www.researchgate.net/profile/Arya-Kumar/publication/360912025_A_STUDY_OF_BARRIERS_AND_BENEFITS_OF_ARTIFICIAL_INTELLIGENCE_ADOPTION_IN_SMALL_AND_MEDIUM_ENTERPRISE/links/6291e06f8d19206823e1b829/A-STUDY-OF-BARRIERS-AND-BENEFITS-OF-ARTIFICIAL-INTELLIGENCE-ADOPTION-IN-SMALL-AND-MEDIUM-ENTERPRISE.pdf
4. Bharadiya, J. P., Thomas, R. K., & Ahmed, F. (2023). Rise of Artificial Intelligence in Business and Industry. *Journal of Engineering Research and Reports*, 25(3), 85-103. <https://doi.org/10.9734/JERR/2023/v25i3893>
5. Bisong, A. E. Dr., Nkanu, C. U., Imoke, J. E., and Akpo, F. (2023). Challenges and prospects of using information and communication technologies (ICT) in instructional delivery in cross river state secondary schools. *Library Philosophy and Practice* (e-journal), 7739.
6. Brattberg, E., Rugova, V., & Csernaton, R. (2020). *Europe and AI: Leading, lagging behind, or carving its own way?* (Vol. 9). Washington, DC, USA: Carnegie endowment for international peace.
7. Burnes, B. (2020). The origins of Lewin's three-step model of change. *The Journal of Applied Behavioral Science*, 56(1), 32-59. <https://doi.org/10.1177/0021886319892685>
8. Davies, J., (2022). *The Most Effective Way To Tell A Story Is To Listen*. [Online] Available at: <https://www.forbes.com/sites/forbesagencycouncil/2022/06/24/the-most-effective-way-to-tell-a-story-is-to-listen/> [Accessed 12 July 2024].
9. Duan, Y., Edwards, J. S., & Dwivedi, Y. K. (2019). Artificial intelligence for decision making in the era of Big Data-evolution, challenges and research agenda. *International journal of information management*, 48, 63-71. <https://uobrep.openrepository.com/bitstream/handle/10547/623124/Artificial%20Intelligence%20in%20the%20era%20of%20Big%20Data%20revised%20final%20%281%29.pdf?sequence=2&isAllowed=n>
10. Floridi, L., Cowls, J., King, T. C., & Taddeo, M. (2021). How to design AI for social good: Seven essential factors. *Ethics, Governance, and Policies in Artificial Intelligence*, 125-151.
11. Fountaine, T., McCarthy, B., & Saleh, T. (2019). Building the AI-powered organization. *Harvard Business Review*, 97(4), 62-73. https://wuyuanheng.com/doc/Databricks-AI-Powered-Org__Article-Licensing-July21-1.pdf
12. Grewal, D., Gauri, D. K., Roggeveen, A. L., & Sethuraman, R. (2021). Strategizing retailing in the new technology era. *Journal of Retailing*, 97(1), 6-12. https://profrajsethuraman.net/Papers/Dr.%20Raj%20Sethuraman%20Publications/JR_3-Strategizing_Retailing_in_the_New_Technology_Era.pdf
13. Har, L. L., Rashid, U. K., Te Chuan, L., Sen, S. C., & Xia, L. Y. (2022). Retail industry revolution: from the perspective of retail 1.0 to 4.0. *Procedia Computer Science*, 200, 1615-1625. <https://doi.org/10.1016/j.procs.2022.01.362>
14. Horowitz, M. C., Allen, G. C., Saravalle, E., Cho, A., Frederick, K., & Scharre, P. (2022). *Artificial intelligence and international security*. Center for a New American Security.
15. ITU. (2017). *Capacity Building in a Changing ICT Environment*. https://www.itu.int/dms_pub/itu-d/opb/phcb/D-PHCB-CAP_BLD.01-2017-PDF-E.pdf
16. Jordan, M. I. (2019). Artificial intelligence—the revolution hasn't happened yet. *Harvard Data Science Review*, 1(1), 1-9.
17. Kamoopuri, S. Z., & Sengar, A. (2023). Hi, May AI help you? An analysis of the barriers impeding the implementation and use of artificial intelligence-enabled virtual assistants in retail. *Journal of Retailing and Consumer Services*, 72, 103258. <https://www.sciencedirect.com/science/article/abs/pii/S096969892300005X?via%3Dihub>
18. Kelly, R., (2023). *Market Research: An Important Investment For Long-Term Viability*. [Online] Available at: <https://www.forbes.com/sites/forbestechcouncil/2023/06/01/market-research-an-important-investment-for-long-term-viability/> [Accessed 12 July 2024].
19. Khrais, L. T. (2020). Role of artificial intelligence in shaping consumer demand in E-commerce. *Future Internet*, 12(12), 226.
20. Lewis, P., & Bell, K. (2019). Understanding the UK's productivity problems: new technological solutions or a case for the renewal of old institutions?. *Employee relations: The international journal*, 41(2), 296-312.
21. Li, L. (2022). Reskilling and upskilling the future-ready workforce for Industry 4.0 and beyond. *Information Systems Frontiers*, 1-16. <https://doi.org/10.1007/s10796-022-10308-y>
22. Liang, Y., Lee, S. H., & Workman, J. E. (2020). Implementation of artificial intelligence in fashion: are consumers ready?. *Clothing and Textiles Research Journal*, 38(1), 3-18. <https://doi.org/10.1177/0887302X19873437>
23. Lu, H. P., Cheng, H. L., Tzou, J. C., & Chen, C. S. (2023). Technology roadmap of AI applications in the retail industry. *Technological Forecasting and Social Change*, 195, 122778. <https://doi.org/10.1016/j.techfore.2023.122778>
24. Marín-García, A., Gil-Saura, I., Ruiz-Molina, M. E., & Berenguer-Contró, G. (2021). The moderating effect of store format on the relationships between ICT, innovation and sustainability in retailing. *Frontiers in Psychology*, 12, 678991.
25. Marr, B. (2019). *Artificial intelligence in practice: how 50 successful companies used AI and machine learning to solve problems*. John Wiley & Sons.

26. Martin (2019). Top Industries Getting Revolutionised by Artificial Intelligence. *Medium*. <https://medium.com/hackernoon/top-industries-getting-revolutionised-by-artificial-intelligence-686a440857c0>
27. Miller, S. (2018). AI: Augmentation, more so than automation. *Asian Management Insights*, 5(1), 1-20.
28. Nash, J. (2019). Exploring how social media platforms influence fashion consumer decisions in the UK retail sector. *Journal of Fashion Marketing and Management: An International Journal*, 23(1), 82-103.
29. Pan, Y. (2016). Heading toward artificial intelligence 2.0. *Engineering*, 2(4), 409-413. <https://doi.org/10.1016/J.ENG.2016.04.018>
30. Pillai, R., Sivathanu, B., & Dwivedi, Y. K. (2020). Shopping intention at AI-powered automated retail stores (AIPARS). *Journal of Retailing and Consumer Services*, 57, 102207. https://cronfa.swan.ac.uk/Record/cronfa54533/Download/54533__17561__ad0d0acb3e104d79b2bf7e8f6cc3926c.pdf
31. Reim, W., Åström, J., & Eriksson, O. (2020). Implementation of artificial intelligence (AI): a roadmap for business model innovation. *AI*, 1(2), 11. <https://www.mdpi.com/2673-2688/1/2/11/pdf>
32. Russell, S. (2019). *Human compatible: AI and the problem of control*. Penguin UK.
33. Shen, K., Tong, X., Wu, T and Zhang, F (2022). The next frontier for AI in China could add \$600 billion to its economy. *Mc Kinsey*. <https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-next-frontier-for-ai-in-china-could-add-600-billion-to-its-economy>
34. Stahl, B. C. (2021). *Artificial intelligence for a better future: an ecosystem perspective on the ethics of AI and emerging digital technologies* (p. 124). Springer Nature.
35. Taddeo, M., McCutcheon, T., & Floridi, L. (2019). Trusting artificial intelligence in cybersecurity is a double-edged sword. *Nature Machine Intelligence*, 1(12), 557-560.
36. Tawalbeh, L. A., Muheidat, F., Tawalbeh, M., & Quwaider, M. (2020). IoT Privacy and security: Challenges and solutions. *Applied Sciences*, 10(12), 4102. <https://www.mdpi.com/2076-3417/10/12/4102/pdf>
37. Wang, D., Zhou, T., & Wang, M. (2021). Information and communication technology (ICT), digital divide and urbanization: Evidence from Chinese cities. *Technology in Society*, 64, 101516.
38. Weber, F. D., & Schütte, R. (2019). State-of-the-art and adoption of artificial intelligence in retailing. *Digital Policy, Regulation and Governance*, 21(3), 264-279.
39. Yadav, D. (2022). Criteria for good qualitative research: A comprehensive review. *The Asia-Pacific Education Researcher*, 31(6), 679-689. <https://link.springer.com/content/pdf/10.1007/s40299-021-00619-0.pdf>
40. Ye, Y., Hung Lau, K., & Teo, L. (2023). Transforming supply chains for a new competitive market alignment—a case study of Chinese fashion apparel companies. *International Journal of Logistics Research and Applications*, 26(3), 365-397. <https://doi.org/10.1080/13675567.2021.1951690>