

Evaluating the Potential of Artificial Intelligence in Improving Business Intelligence in Lusaka: A Case Study of Airtel Zambia

Lucas Bubblegum Ngulube^{1*}, Mukwalikuli Mundia¹

¹ School of Business Studies, Kwame Nkrumah University, Zambia

* Corresponding Author

Article Info

Volume 7, Issue 5

Publication history:

Accepted on 3 July 2026;
Published: 5 September 2026

Key Words:

Artificial Intelligence, Business Intelligence, Customer Service, AI Chatbot, Personalisation, Airtel Zambia, Telecommunications, Organisational Readiness

Article Doi:

10.59413/ajocs/v7.i5.11

Abstract

Artificial Intelligence (AI) is increasingly being integrated into customer-service and Business Intelligence (BI) environments, but evidence on the readiness and customer-service implications of such integration in Zambia remains limited. This study evaluated the potential of AI to improve BI for customer service at Airtel Zambia in Lusaka. The study was guided by the Technology Acceptance Model, the Technology-Organisation-Environment framework and the DeLone and McLean Information Systems Success Model. A mixed-method case-study design was adopted. Quantitative data were obtained from 52 Airtel subscribers through a structured questionnaire, while contextual evidence was obtained from one Airtel Zambia IT Director. The achieved subscriber sample represented 52.5% of the intended 99 respondents. Descriptive statistics were used for subscriber responses, while the key-informant response was analysed thematically and compared with subscriber evidence. The findings showed that subscribers viewed the accuracy of customer-service information and the usability of Airtel's digital platforms positively, but perceptions were weaker regarding the use of previous interactions and personalised recommendations. Support for AI-enabled service was stronger: 78.4% of valid respondents preferred WhatsApp communication, 78.4% would use an AI chatbot if it provided instant responses and 81.6% wanted usage-based bundle recommendations. The IT Director confirmed the use of BI systems and data analytics in customer-service decisions, while reporting that infrastructure and AI-related expertise were only partially capable of supporting AI. Management support and funding were reported as available and overall organizational readiness was rated as ready. The study concludes that Airtel Zambia has a meaningful foundation for AI-enabled customer service, but implementation should be phased and accompanied by stronger infrastructure, AI skills, data governance, human escalation and customer-visible personalisation.

1. Introduction

Artificial Intelligence has moved from an experimental technology to an increasingly practical component of organisational information systems. In customer service, AI can support automated interaction, information retrieval, recommendation and decision support. Davenport and Ronanki (2018) describe practical organisational AI applications in terms of automating business processes, gaining insight from data and engaging with customers and employees. This creates a direct connection between AI and Business Intelligence because organisations can use analytical data not only to report what has happened, but also to support prediction, recommendation and automated service.

Business Intelligence refers to technologies and practices used to collect, integrate, analyse and present information for organisational decision-making. Chen, Chiang and Storey (2012) explain that BI and analytics have evolved with large and diverse data environments, creating opportunities for organisations to derive value from data at greater scale. Wixom and Watson (2010) similarly emphasise that the value of BI depends on the ability to transform data into information that supports business outcomes. For telecommunications firms, this is particularly relevant because customer interactions generate large volumes of transactional, behavioural and service data.

The telecommunications industry is therefore a useful environment for examining AI-enabled BI. Airtel Africa reports continuing investment in digital services and customer experience across its markets, while its annual reporting provides a broader corporate context for digital transformation. Airtel Africa plc (2025) identifies digitalisation, customer experience and data-driven operations among the strategic areas shaping the group. In Zambia, the ICT market is regulated by the Zambia Information and Communications Technology Authority (ZICTA), whose market reporting documents continuing expansion of digital connectivity and electronic communications services (ZICTA, 2024).

The Zambian environment also presents regulatory considerations. The Data Protection Act No. 3 of 2021 establishes requirements concerning the processing and protection of personal data, which is relevant to AI personalisation because recommendation systems depend on customer information (Republic of Zambia, 2021a). Zambia's National Artificial Intelligence Strategy 2024–2026 further establishes a national policy direction for AI development and responsible adoption (Ministry of Technology and Science, 2024).

The problem addressed by this study is therefore not simply whether Airtel Zambia possesses digital systems. The more important question is whether existing BI and customer-data capabilities can support practical AI applications that improve customer service and whether the organisation is sufficiently prepared to implement them. The study focused specifically on three connected issues: the existing BI environment used for customer service; the requirements for an AI WhatsApp chatbot and AI personalisation in the My Airtel App; and organisational readiness to adopt AI.

The study sought to identify the BI systems used by Airtel Zambia for customer service, assess the technical and operational requirements for an AI WhatsApp chatbot and AI personalisation in the My Airtel App and examine Airtel Zambia's readiness to integrate AI into BI systems for customer-service improvement.

2 Literature Review

2.1 Business Intelligence and Analytics

Business Intelligence provides an organisational mechanism for converting data into information that supports decision-making. Chen, Chiang and Storey (2012) distinguish contemporary BI and analytics from traditional reporting by highlighting the increasing importance of large-scale data, advanced analytics and organisational decision processes. Sharda, Delen and Turban (2018) similarly present BI as a combination of data, analytical methods and decision-support capabilities.

The quality of an information system also affects the value users obtain from it. DeLone and McLean (2003) identify system quality, information quality, service quality, use, user satisfaction and net benefits as interconnected dimensions of information-systems success. In the Airtel context, accurate information, usable digital platforms, timely service and effective use of customer data can therefore be treated as observable manifestations of a broader information-system environment.

Business Intelligence can be extended by AI because AI systems can operate on analytical data to generate predictions, recommendations and automated responses. Mikalef et al. (2019) found that big-data analytics capabilities are linked to organisational performance through organisational capabilities, indicating that data resources alone do not guarantee value. The implication for Airtel is that customer data and BI infrastructure provide a foundation, but value depends on the organisation's ability to integrate technology, people and processes.

2.2 Artificial Intelligence in Customer Service

AI-enabled customer service commonly includes conversational agents, recommendation systems, automated classification and predictive analytics. Adamopoulou and Moussiades (2020) describe chatbots as systems designed to interact with users through natural-language communication and note their application across multiple service contexts. Nicolescu and Tudorache (2022) found in their systematic review that chatbot experience is influenced by factors associated with the chatbot, the customer and the context of interaction.

Natural Language Processing is particularly relevant to an AI WhatsApp chatbot because it allows a system to interpret customer queries and generate responses. Olujimi and Ade-Ibijola (2023) reviewed NLP techniques for automated customer queries and identified their usefulness for response automation while also noting challenges associated with ambiguity and domain-specific language. For a Zambian telecommunications environment, these challenges make local terminology, common service expressions and escalation rules important design considerations.

Customer expectations also shape AI service outcomes. Følstad and Skjuve (2019) found that users' expectations of chatbots are connected to the service context and interaction experience. Luger and Sellen (2016) showed that users' expectations of conversational systems can differ substantially from system capabilities. This suggests that Airtel should avoid positioning a chatbot as universally capable and instead define the tasks it can reliably perform.

The human element remains important. Wirtz et al. (2018) argue that service robots can change service encounters but also raise questions about customer acceptance and the appropriate division between technology and human employees. A chatbot for Airtel should therefore incorporate escalation to human agents where the query is complex, sensitive or outside the system's competence.

2.3 AI Personalisation and Customer Experience

Personalisation involves adapting content, offers or interactions to individual customer characteristics or behaviour. Lemon and Verhoef (2016) explain that customer experience is shaped across multiple touchpoints rather than through a single service interaction. Verhoef et al. (2021) further identify digitalisation, artificial intelligence and data as developments reshaping customer experience management.

In telecommunications, usage-based recommendations could allow customers to receive bundle suggestions that correspond to their consumption patterns. Huang and Rust (2021) argue that AI can transform service by supporting tasks that require mechanical, thinking and feeling-related capabilities at different levels. The practical implication is that AI personalisation should be designed around useful customer outcomes rather than simply increasing automation.

Trust is a critical condition. Araujo (2018) found that the way users perceive conversational agents can be affected by how the agent is presented and disclosed. Pentina, Guilloux and Milkovich (2023) reviewed consumer-machine relationships and highlighted the importance of understanding how consumers form relationships with AI systems. For Airtel, personalisation therefore requires not only data and algorithms, but also transparency, privacy and customer control.

2.4 Theoretical Framework

The Technology Acceptance Model (TAM) developed by Davis (1989) proposes perceived usefulness and perceived ease of use as fundamental determinants of technology acceptance. In this study, TAM was used to interpret subscriber responses concerning instant chatbot responses, WhatsApp communication,

AI recommendations and perceived benefits of AI-enabled customer service.

The Technology-Organisation-Environment (TOE) framework developed by Tornatzky and Fleischer (1990) explains technology adoption through technological, organisational and environmental contexts. The framework is appropriate for assessing Airtel's readiness because the IT Director's responses directly address infrastructure, AI skills, funding and management support.

The DeLone and McLean Information Systems Success Model was used to connect system quality, information quality, service quality, use and benefits to the evaluation of Airtel's current BI environment. DeLone and McLean (2003) argue that information-system success is multidimensional, which supports the use of both subscriber perceptions and organisational evidence in this study.

These theories are complementary rather than competing. TAM explains customer acceptance, TOE explains organizational readiness and the DeLone and McLean model provides a basis for considering information-system quality and benefits.

2.5 Empirical Evidence

Huang and Rust (2018) argue that AI is changing the role of technology in service and that service organisations need to determine where AI can create value. Davenport and Ronanki (2018) similarly identify customer engagement and process automation as practical AI applications. Duan, Edwards and Dwivedi (2019) note that AI can support decision-making but also requires organisations to reconsider the relationship between human and machine intelligence.

A review by Nicolescu and Tudorache (2022) indicates that chatbot performance and customer experience depend on contextual and interaction-related factors. Olujimi and Ade-Ibijola (2023) demonstrate that NLP can automate customer queries but that language ambiguity remains a challenge. Pentina, Guilloux and Milkovich (2023) further indicate that consumer-machine relationships require attention to trust and interaction quality.

The literature therefore supports the potential of AI-enabled customer service, but it does not establish that adoption will automatically improve outcomes in every telecommunications setting. The gap addressed by this study is the limited Zambia-specific evidence connecting existing BI capability, customer requirements for AI-enabled service and organisational readiness within one telecommunications case.

2.6 Challenges and Governance

AI adoption creates technical and governance risks involving data quality, cybersecurity, privacy, transparency, accountability and system reliability. The National Institute of Standards and Technology (2023) identifies trustworthy AI characteristics and risk-management practices that can guide organisations in governing AI systems. The OECD (2019) principles similarly emphasise inclusive growth, human-centred values, transparency, robustness, security and accountability.

At the international policy level, UNESCO (2021) calls for ethical principles for AI that protect human dignity, rights and democratic values. These principles are relevant to personalisation because customer data can be used to influence recommendations and service interactions.

In Zambia, the Data Protection Act provides the legal basis for protecting personal data. Republic of Zambia (2021a) establishes obligations relevant to data processing, making privacy and lawful use central considerations for an AI personalisation system. The Electronic Communications and Transactions Act also provides a broader legal context for electronic communications and transactions (Republic of Zambia, 2021b).

2.7 Conceptual Framework

The conceptual framework links existing BI and customer-data capabilities to AI-enabled customer-service outcomes. Existing BI systems, customer interaction data and digital platforms constitute the technological foundation. AI capabilities include a WhatsApp chatbot, NLP-based query handling and personalisation. These relationships are influenced by enabling factors including ICT infrastructure, AI skills, funding, management support, data quality, privacy, customer trust and human escalation. The expected outcomes are improved response time, accuracy, relevance of recommendations, reduced workload and improved customer experience.

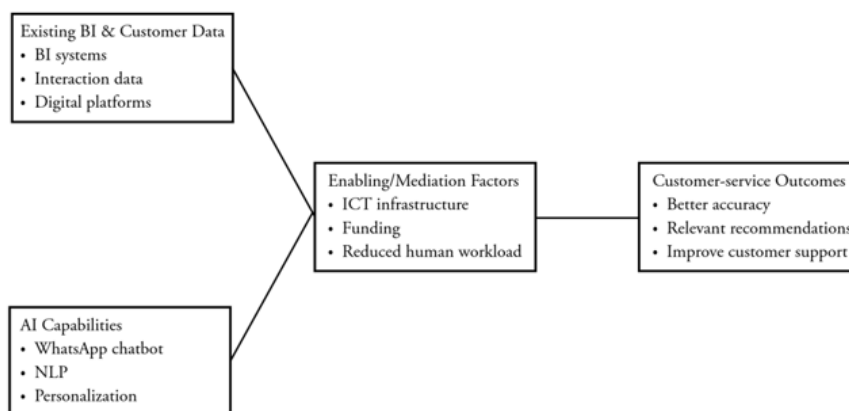


Figure 1: Conceptual framework for AI-enabled BI and customer service at Airtel Zambia.

3 Research Methodology

3.1 Research Design and Approach

The study adopted a mixed-method approach within a case-study design. Airtel Zambia was treated as the single organisational case. Quantitative evidence was obtained from subscribers through a structured closed-ended questionnaire, while contextual evidence was obtained from the Airtel Zambia IT Director. A case-study approach was appropriate because the study examined AI and BI within a specific organisational and national context.

The subscriber component was cross-sectional. Data represented respondents' views at the time of collection in 2026. The analysis was descriptive rather than inferential because the achieved sample was smaller than the intended sample and the study sought to describe patterns rather than estimate causal effects.

3.2 Population, Sample and Sampling

The study population comprised Airtel Zambia subscribers and relevant Airtel Zambia technical or management personnel. The intended subscriber sample was 99 respondents. Fifty-two usable subscriber responses were obtained, representing 52.5% of the intended sample. One completed response was obtained from the Airtel Zambia IT Director.

Purposive sampling was used for the IT Director because the position provided direct knowledge relevant to BI systems, customer data, infrastructure, AI skills and organisational readiness. Subscriber respondents participated through the questionnaire distribution mechanism available to the researcher. The achieved sample should therefore be interpreted as a study sample rather than as a probability sample of all Airtel subscribers in Zambia.

3.3 Data Collection Instruments and Analysis

Two instruments were used. The subscriber questionnaire contained 30 items divided into demographic information and three objective-based sections. The IT Director instrument contained questions on existing BI systems, customer data and feedback, AI chatbot and personalization requirements and organizational readiness.

Subscriber responses were cleaned and analysed using frequencies and percentages. Positive responses were calculated as the proportion selecting Strongly Agree or Agree among valid responses for each item. Items containing ambiguous multiple selections or missing responses were excluded from the affected item-level denominator. The IT Director response was analysed thematically and then compared with the subscriber evidence.

The response-rate limitation is important. The study does not claim that 99 subscribers participated. It reports the 52 usable responses actually obtained. This preserves the distinction between the planned sample and achieved sample.

3.4 Ethical Considerations

Participation was voluntary and the study was conducted for academic purposes. Subscriber responses were analysed in aggregate and no subscriber was identified in the report. The IT Director response was treated as organisational key-informant evidence. The study also recognised privacy and data-protection considerations associated with AI personalisation.

4 Results and Discussion

This section presents and discusses the findings in the integrated format used in the research article model. The results are organised around participant characteristics and the three research objectives.

4.1 Demographic Characteristics of Respondents

Table 1 Demographic Characteristics

Variable	Category	Frequency	Percentage
Gender	Male	25	48.1%
	Female	25	48.1%
	Prefer not to say	2	3.8%
Age	18–24 years	34	65.4%
	25–34 years	16	30.8%
	45–54 years	1	1.9%
	55 years and above	1	1.9%
Education	Degree	37	71.2%
	Secondary school	7	13.5%
	Diploma	3	5.8%
	Master's degree	2	3.8%
	Primary school	1	1.9%
	Craft certificates	1	1.9%
Occupation	Degree, Master's degree	1	1.9%
	Student	27	51.9%
	Unemployed	11	21.2%
	Employed	11	21.2%
	Self-employed	2	3.8%
Airtel tenure	Self-employed, Unemployed	1	1.9%
	More than 6 years	25	48.1%
	4–6 years	14	26.9%
	1–3 years	10	19.2%
	Less than 1 year	2	3.8%

	Missing	1	1.9%
Customer-service use	Very often	37	71.2%
	Often	8	15.4%
	Occasionally	1	1.9%
	Rarely	5	9.6%
	Missing	1	1.9%

The achieved sample was evenly distributed by disclosed gender, while 65.4% were aged 18–24 years. Students represented 51.9% of respondents and 48.1% had used Airtel for more than six years. Customer-service use was also frequent, with 71.2% reporting that they used Airtel customer service very often. The profile indicates that the findings primarily reflect a relatively young and digitally engaged subscriber group and should not automatically be generalised to all Airtel subscribers.

4.2 Objective One: Existing BI and Current Customer Service

Table 2: Existing BI and Current Customer Service

Customer-service statement	Valid n	Positive response
Accurate information	51	72.5%
Issues resolved promptly	51	49.0%
Previous interactions used to improve support	51	33.3%
Personalised recommendations based on usage	51	43.1%
Customer service available when needed	49	59.2%
Digital platforms easy to use	51	74.5%
Customer data used effectively in solving problems	50	50.0%
Overall satisfaction with current customer service	51	52.9%

Subscriber perceptions were strongest for digital-platform usability (74.5%) and accuracy of customer-service information (72.5%). However, only 33.3% agreed or strongly agreed that Airtel used previous interactions to improve support and 43.1% perceived personalized recommendations based on usage. The results therefore suggest that customers recognise the existence of a digital service environment but do not consistently experience advanced personalisation.

The IT Director provided stronger organisational evidence. The respondent confirmed that Airtel Zambia uses BI systems, that customer-service decisions are always supported by data analytics, that customer interaction data are collected for analysis and that customer feedback is analysed using digital systems. This distinction is important. BI capability can exist internally without all of its analytical outputs being visible to customers. DeLone and McLean (2003) emphasise that information-system success extends beyond system existence to information quality, service quality, use and net benefits.

4.3 Objective Two: AI WhatsApp Chatbot and My Airtel Personalisation

Table 3: AI WhatsApp Chatbot and My Airtel Personalisation

AI-service statement	Valid n	Positive response
Prefer communicating with Airtel through WhatsApp	51	78.4%
AI WhatsApp chatbot would improve customer service	51	72.5%
Would use AI chatbot for instant responses	51	78.4%
Would trust AI chatbot for routine questions	49	59.2%
AI recommendations would improve My Airtel experience	51	70.6%
Want usage-based bundle recommendations	49	81.6%
AI should notify offers relevant to usage	51	68.6%
AI can improve Airtel customer service	50	64.0%

The results indicate substantial customer interest in AI-enabled service. The strongest result was for usage-based bundle recommendations, at 81.6%, followed by preference for WhatsApp communication and willingness to use an AI chatbot when instant responses were available, both at 78.4%. Trust in an AI chatbot for routine questions was lower at 59.2%, indicating that usefulness does not automatically eliminate trust concerns.

The IT Director strongly agreed that an AI WhatsApp chatbot would improve customer service and that AI personalisation would improve the My Airtel App. The respondent also indicated that Airtel has sufficient customer data to support personalisation and that AI could reduce the operational workload of customer-service staff. The convergence between customer demand and internal assessment strengthens the case for these use cases, while the lower trust result indicates a need for accuracy, transparency and human escalation.

4.4 Objective Three: Readiness to Adopt AI

Table 4: Readiness to Adopt AI

Readiness statement	Valid n	Positive response
Airtel technologically advanced enough to implement AI	49	73.5%
Sufficient digital services to support AI	49	63.3%
Airtel would benefit from AI customer service	51	74.5%
AI would reduce customer waiting time	51	86.3%
AI would improve support accuracy	49	75.5%
Would continue using Airtel if AI introduced	51	76.5%
Airtel is ready to adopt AI	51	66.7%
Support Airtel's AI adoption	49	77.6%

Subscribers were broadly supportive of AI adoption. The strongest result was the belief that AI would reduce customer waiting time, at 86.3%. Support for Airtel's adoption of AI was 77.6%, while 76.5% indicated that they would continue using Airtel if AI services were introduced.

The IT Director's response was positive but more qualified. Airtel's ICT infrastructure was assessed as only partially capable of supporting AI and AI-related personnel expertise was also rated partial. Management support and funding were reported as available and the overall readiness assessment was Ready. This pattern corresponds closely with the TOE framework because technological capability and organisational support are not identical dimensions of readiness.

4.5 Integrated Findings

Three broad findings emerged. First, Airtel Zambia has an established BI and digital-data foundation, supported by the IT Director's confirmation of BI use and data-driven customer-service decisions. Second, customer demand for AI-enabled service is strong, particularly for instant responses, WhatsApp communication and usage-based recommendations. Third, organisational readiness is positive but incomplete because infrastructure and AI expertise require further strengthening.

The most significant gap is between internal capability and customer-visible personalisation. The IT Director reported customer-data availability and digital analysis, whereas only 33.3% of subscribers perceived Airtel as using previous interactions to improve support. This indicates an opportunity to translate existing analytical capability into more visible and useful customer experiences.

5 Conclusion and Recommendations

5.1 Conclusion

This study evaluated the potential of Artificial Intelligence in improving Business Intelligence and customer service at Airtel Zambia in Lusaka. The evidence indicates that Airtel has an established BI foundation and that its customer-service decisions are supported by data analytics. Subscribers generally view the accuracy of information and usability of digital platforms positively, although perceptions of historical interaction use and personalisation are weaker.

The study further concludes that an AI WhatsApp chatbot and My Airtel personalisation have strong practical potential. Customers showed substantial interest in instant responses, WhatsApp communication and usage-based recommendations. However, trust in AI for routine questions was lower than support for general AI adoption, demonstrating that customer acceptance depends on reliability and confidence as well as convenience.

Airtel's overall readiness is positive but not complete. Management support and funding provide favourable organisational conditions, while infrastructure and AI expertise remain areas requiring strengthening. The study therefore concludes that AI adoption should be phased rather than treated as a single technology deployment.

5.2 Recommendations

Implement AI in phases, beginning with high-volume, low-risk customer-service queries for which answers can be validated and monitored.

Integrate the WhatsApp chatbot with authoritative Airtel service information and appropriate customer-data systems so that responses are accurate and context relevant.

Strengthen AI-related skills through recruitment and training in data science, Natural Language Processing, AI engineering, model evaluation, cybersecurity and AI governance.

Improve customer-visible personalisation by translating existing customer-data capabilities into useful usage-based recommendations while providing customers with transparency and appropriate control.

Establish AI governance covering privacy, access control, security, auditability, transparency, model monitoring and accountability, consistent with the principles in the NIST AI Risk Management Framework (NIST, 2023).

Maintain human escalation for complex, sensitive or unresolved queries so that customers are not trapped in automated interactions.

Develop measurable AI customer-service indicators, including response accuracy, first-contact resolution, escalation rate, containment rate, waiting time and customer satisfaction.

Test AI using real Zambian customer-service scenarios, including local terminology and ambiguous requests, before wider deployment.

5.3 Limitations and Areas for Further Research

The principal limitation was the achieved subscriber response count of 52 against the intended 99. The study therefore does not claim statistical representation of all Airtel subscribers. The subscriber sample was also obtained through a non-probability process and the IT Director component comprised one key informant. Some questionnaire responses contained ambiguous multiple selections; these were excluded from the affected item-level calculations rather than being arbitrarily assigned. The findings should consequently be interpreted as case-based evidence.

Future studies should use larger probability-based subscriber samples, compare Airtel Zambia with other mobile network operators, conduct technical audits of BI-to-AI integration requirements, evaluate chatbot pilots using operational metrics and investigate customer trust and privacy perceptions concerning AI personalization.

References

- Airtel Africa plc. (2025). Annual report and accounts 2025. Airtel Africa plc.
- Adamopoulou, E., & Moussiades, L. (2020). An overview of chatbot technology. In I. Maglogiannis, L. Iliadis, & E. Pimenidis (Eds.), *Artificial Intelligence Applications and Innovations* (pp. 373–383). Springer.
- Araujo, T. (2018). Living up to the chatbot hype: The influence of anthropomorphic design cues and communicative agency framing on conversational agent and company perceptions. *Computers in Human Behavior*, 85, 183–189. <https://doi.org/10.1016/j.chb.2018.03.051>
- Chen, H., Chiang, R. H. L., & Storey, V. C. (2012). Business intelligence and analytics: From big data to big impact. *MIS Quarterly*, 36(4), 1165–1188.
- Davenport, T. H., & Ronanki, R. (2018). Artificial intelligence for the real world. *Harvard Business Review*, 96(1), 108–116.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, 19(4), 9–30. <https://doi.org/10.1080/07421222.2003.11045748>
- 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://doi.org/10.1016/j.ijinfomgt.2019.01.021>
- Følstad, A., & Skjuve, M. (2019). Chatbots for customer service: User experience and motivation. *Proceedings of the 1st International Conference on Conversational User Interfaces*, 1–9. <https://doi.org/10.1145/3342775.3342784>
- GSMA. (2024). The mobile economy Sub-Saharan Africa 2024. GSMA.
- Huang, M.-H., & Rust, R. T. (2018). Artificial intelligence in service. *Journal of Service Research*, 21(2), 155–172. <https://doi.org/10.1177/1094670517752459>
- Huang, M.-H., & Rust, R. T. (2021). A strategic framework for artificial intelligence in marketing. *Journal of the Academy of Marketing Science*, 49, 30–50. <https://doi.org/10.1007/s11747-020-00749-9>
- International Telecommunication Union. (2024). AI for good: Artificial intelligence and telecommunications. ITU.
- Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, 80(6), 69–96. <https://doi.org/10.1509/jm.15.0420>
- Luger, E., & Sellen, A. (2016). Like having a really bad PA: The gulf between user expectation and experience of conversational agents. *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, 5286–5297. <https://doi.org/10.1145/2858036.2858288>
- Mikalef, P., Pappas, I. O., Krogstie, J., & Giannakos, M. (2019). Big data analytics capabilities: A systematic literature review and research agenda. *Information Systems and e-Business Management*, 16, 547–578. <https://doi.org/10.1007/s10257-018-0397-6>
- Ministry of Technology and Science. (2024). National artificial intelligence strategy 2024–2026. Government of the Republic of Zambia.
- National Institute of Standards and Technology. (2023). Artificial intelligence risk management framework (AI RMF 1.0). U.S. Department of Commerce. <https://doi.org/10.6028/NIST.AI.100-1>
- Nicolescu, L., & Tudorache, M. T. (2022). Human-computer interaction in customer service: The experience with AI chatbots: A systematic literature review. *Electronics*, 11(10), 1579. <https://doi.org/10.3390/electronics11101579>
- OECD. (2019). Recommendation of the Council on Artificial Intelligence. OECD.
- Olujimi, P. A., & Ade-Ibijola, A. (2023). NLP techniques for automating responses to customer queries: A systematic review. *Discover Artificial Intelligence*, 3, 20. <https://doi.org/10.1007/s44163-023-00065-5>
- Pentina, I., Guilloux, V., & Milkovich, M. (2023). Consumer-machine relationships in the age of artificial intelligence: Systematic literature review and research directions. *Psychology & Marketing*, 40(8), 1593–1614. <https://doi.org/10.1002/mar.21853>
- Republic of Zambia. (2021a). Data Protection Act No. 3 of 2021. Government Printer.
- Republic of Zambia. (2021b). Electronic Communications and Transactions Act No. 4 of 2021. Government Printer.
- Sharda, R., Delen, D., & Turban, E. (2018). *Business intelligence, analytics and data science: A managerial perspective* (4th ed.). Pearson.
- Tornatzky, L. G., & Fleischer, M. (1990). *The processes of technological innovation*. Lexington Books.
- UNESCO. (2021). Recommendation on the ethics of artificial intelligence. UNESCO.
- Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, 889–901. <https://doi.org/10.1016/j.jbusres.2019.09.022>
- Wirtz, J., Patterson, P. G., Kunz, W. H., Gruber, T., Lu, V. N., Paluch, S., & Martins, A. (2018). Brave new world: Service robots in the frontline. *Journal of Service Management*, 29(5), 907–931. <https://doi.org/10.1108/JOSM-04-2018-0119>
- Wixom, B. H., & Watson, H. J. (2010). The BI-based organization. *International Journal of Business Intelligence Research*, 1(1), 13–28.
- Zambia Information and Communications Technology Authority. (2024). 2024 annual market report for the ICT sector. ZICTA.
- Zambia Information and Communications Technology Authority. (2025). ICT statistics and market performance reports. ZICTA.
- Zambia Statistics Agency. (2022). 2022 census of population and housing. Government of the Republic of Zambia.
- Airtel Zambia. (2025). Annual report 2025. Airtel Networks Zambia PLC.
- Atkinson, A., & Messy, F.-A. (2012). Measuring financial literacy: Results of the OECD/International Network on Financial Education pilot study. *OECD Working Papers on Finance, Insurance and Private Pensions*, No. 15.

- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478.
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.
- Huang, M.-H., & Rust, R. T. (2020). Engaged to a robot? The role of AI in service. *Journal of Service Research*, 23(2), 155–172.
- World Bank. (2021). *World development report 2021: Data for better lives*. World Bank.