Digital and Technological Factors Influencing Consumer Behaviour in Telecommunications: A Scoping Review

Viktória Cvacho[1], Radovan Madleňák[1]

[1]University of Žilina, Faculty of Operation and Economics of Transport and Communications, Univerzitná 8215/1, 010 26 Žilina, Slovakia

Abstract The telecommunications industry is characterised by rapid digital transformation, technological innovation, and evolving consumer expectations. This scoping review aims to identify and map existing evidence on digital and technological factors influencing consumer behaviour in the telecommunications context. The review focuses on consumer decision-making, satisfaction, loyalty, customer experience, and usage intentions related to telecommunication services and emerging technologies. The search was conducted in the Web of Science and Scopus databases, and data were extracted using a predefined charting template. A total of 12 studies were included in the review. The findings indicate that consumer behaviour in telecommunications is shaped by perceived ease of use, service quality, customer experience, perceived value, technological readiness, and the adoption of digital technologies such as artificial intelligence, Big Data, 5G, augmented reality, mobile applications, and predictive analytics. The results highlight the growing importance of digital transformation, customer experience management, and responsible technology implementation in strengthening customer satisfaction and loyalty in the telecommunications sector.

Keywords consumer behaviour, telecommunications, digital technologies, artificial intelligence, scoping review, customer loyalty

JEL L96, M31, O33

1. Introduction

The telecommunications industry is a dynamic sector characterised by continuous technological innovation and evolving consumer demands (Ribeiro et al., 2024). Understanding consumer behaviour within this context is crucial for telecommunications service providers in order to remain competitive and effectively meet customer needs. Consumer behaviour in telecommunications encompasses a range of factors, including decision-making processes, satisfaction levels, loyalty, and intentions to use specific services or technologies (Alsaggaf & Althonayan, 2018). These factors are influenced by a complex interplay of technological advances, marketing strategies, service quality, and individual consumer characteristics.

The rapid proliferation of technologies such as 5G, artificial intelligence (AI), and augmented reality (AR) is transforming the telecommunications landscape and creating new opportunities and challenges for service providers (Mustafa et al., 2022; Salhab, 2025). These technologies have the potential to enhance customer experiences, improve service delivery, and create new revenue streams. However, they also require telecommunications providers to adapt their strategies and offerings to meet the evolving needs and expectations of consumers.

Despite the growing importance of understanding consumer behaviour in telecommunications, there remains a need for a comprehensive overview of existing research in this area. While individual studies have examined specific factors influencing consumer behaviour, a broader synthesis of the literature is still lacking. This scoping review aims to address this gap by mapping the existing evidence on factors influencing consumer behaviour in the telecommunications context.

The primary objective of this scoping review is to identify and map existing evidence on digital and technological factors influencing consumer behaviour in the telecommunications context, with particular attention to customer decision-making, satisfaction, loyalty, customer experience, and usage intentions. This objective is addressed through specific aims framed using the PCC framework: Population, Concept, and Context. The population of interest includes consumers of telecommunication services, encompassing individuals and organisations using mobile operators, internet providers, and m-commerce platforms. The concept under investigation is the multifaceted nature of consumer behaviour, including decision-making processes, satisfaction levels, loyalty, and usage intentions. The context of this review is the telecommu-

DOI: 10.26552/tac.C.2026.1.5

nications industry, with a specific focus on the impact of modern technologies such as Big Data, 5G networks, artificial intelligence (AI), social media, and mobile applications on consumer behaviour.

2. Methods

2.1. Protocol and Registration

This scoping review did not undergo formal registration with a prospective register such as PROSPERO. Given the exploratory nature of scoping reviews, registration is not always mandatory, but it is acknowledged as a best practice for ensuring transparency and minimising bias.

2.2. Eligibility Criteria

The eligibility criteria for this scoping review were defined using the PCC (Population, Concept, Context) framework. The population included consumers of telecommunication services, encompassing individuals and organisations using mobile operators, internet providers, and m-commerce platforms. The concept under investigation was the multifaceted nature of consumer behaviour, including decision-making processes, satisfaction levels, loyalty, and usage intentions. Studies were included if they examined factors influencing these aspects of consumer behaviour. The context of this review was the telecommunications industry, with a specific focus on the impact of modern technologies such as Big Data, 5G networks, artificial intelligence, social media, and mobile applications on consumer behaviour. The inclusion criteria comprised peer-reviewed journal articles focused on consumer or customer behaviour in the telecommunications or closely related digital service context; studies examining satisfaction, loyalty, decision-making, usage intention, service quality, technology acceptance, customer experience, or behavioural prediction; and studies published in English between 2018 and 2025. The exclusion criteria comprised studies outside the telecommunications or related digital service context, studies not focused on consumer or customer behaviour, non-peer-reviewed publications, conference abstracts, editorials, book chapters, and articles without accessible full text.

2.3. Information Sources

The following electronic databases were searched to identify relevant studies: Web of Science and Scopus. These databases were selected because they provide comprehensive coverage of the scholarly literature in a wide range of disciplines, including business, management, computer science, and engineering. In addition to searching electronic databases, we also conducted a manual search of the reference lists of relevant articles.

2.4. Search Strategy

A comprehensive search strategy was developed to identify relevant studies in the selected databases. The search was conducted on 2nd May 2026 and covered studies published between 2018 and 2025. Only peer-reviewed studies published in English were included. The following search query was used in Web of Science and adapted for Scopus: TS=(("consumer behaviour" OR "customer behaviour" OR "user behaviour" OR "consumer decision making" OR "customer satisfaction" OR "customer loyalty" OR "usage intention*") AND ("telecommunication*" OR "mobile operator*" OR "internet provider*" OR "m-commerce") AND ("Big Data" OR "5G" OR "artificial intelligence" OR "AI" OR "social media" OR "mobile application*")).

2.5. Selection of Sources Process

The selection of sources was conducted in a two-stage process. First, titles and abstracts of all identified records were screened for relevance based on the eligibility criteria. Records that clearly did not meet the eligibility criteria were excluded at this stage. Second, the full texts of potentially relevant articles were retrieved and assessed in detail against the eligibility criteria. Any disagreements between reviewers were resolved through discussion and consensus.

2.6. Data Charting Process

A data charting template was developed to extract relevant information from the included studies. The template was designed to capture key study characteristics, theoretical frameworks, methodologies, and key findings related to factors influencing consumer behaviour. Data were extracted from the included studies by one reviewer and checked by a second reviewer. Any discrepancies were resolved through discussion and consensus.

2.7. Data Items Extracted

The following data items were extracted from the included studies: author(s), year of publication, study design, sample size, population characteristics, telecommunication service type, theoretical framework, key variables, and key findings related to factors influencing consumer behaviour.

2.8. Critical Appraisal

Consistent with the methodology for scoping reviews, a formal critical appraisal of the included studies was not conducted. Scoping reviews aim to map the existing evidence on a topic, rather than to assess the quality or validity of individual studies.

2.9. Synthesis Methods

The findings of the included studies were synthesised using a narrative synthesis approach. This approach involved summarising the key findings of each study and identifying common themes and patterns across studies. The synthesis was organised around the key digital and technological factors influencing consumer behaviour in telecommunications and related mobile service contexts.

3. Results

3.1. Selection of Sources of Evidence

The initial search across multiple databases and sources yielded 91 records. Following the removal of duplicates, 78 records underwent screening based on their titles and abstracts. During this phase, 66 records were excluded as they did not align with the research question or inclusion criteria. The remaining 12 full-text articles were then assessed for eligibility. Of these, none were excluded because they did not meet the inclusion criteria. Therefore, a total of 12 studies were included in this scoping review.

3.2. Characteristics of Sources of Evidence

The included studies exhibit a diverse geographic distribution, with research conducted in various countries including China (Zheng & Liu, 2020; Mustafa et al., 2022; Zhao et al., 2025), Syria (Wassouf et al., 2020), Taiwan (Lee et al., 2024), India (Sharma & Madan, 2022), Indonesia (Giningroem et al., 2023), Spain (Segarra-Moliner & Moliner-Tena, 2024), Portugal (Ribeiro et al., 2024), Jordan (Salhab, 2025), and Saudi Arabia (Alsaggaf & Althonayan, 2018). Most of the studies were published recently, with the majority appearing between 2020 and 2025.

The study designs employed in the included research are primarily quantitative, using surveys (Sharma & Madan, 2022; Mustafa et al., 2022; Segarra-Moliner & Moliner-Tena, 2024; Alsaggaf & Althonayan, 2018; Salhab, 2025), experiments (Lee et al., 2024), and analysis of existing datasets (Zheng & Liu, 2020; Wassouf et al., 2020). A few studies also adopted case study approaches (Wassouf et al., 2020; Zhao et al., 2025). The sample sizes vary considerably across studies, ranging from 40 (Zhao et al., 2025) to 127 million records (Wassouf et al., 2020).

Table 1 provides an overview of the 12 studies included in the scoping review. The studies differ in terms of geographical context, technological focus, methodological approach, and the behavioural factors examined.

3.3. Synthesis of Results

The synthesis of the included studies revealed several key themes related to digital and technological factors influencing consumer behaviour in telecommunications and related mobile service contexts. These themes include predictive analytics for customer loyalty, service quality and customer experience, technology acceptance, customer engagement, augmented reality, 5G adoption, and the detection of anomalous customer behaviour.

The first major theme identified across the literature concerns the use of predictive analytics to enhance customer loyalty and retention. Wassouf et al. (2020) conducted a case study using big data to predict customer loyalty in Syriatel Telecom Company. Their study, which analysed 127 million records, found that a gradient-boosted-tree classifier was the most effective for binary classification of customer loyalty. This finding was corroborated by Lee et al. (2024) who developed a hybrid approach to predict customer behaviour changes. Building on these findings, Segarra-Moliner & Moliner-Tena (2024) examined the role of customer citizenship behaviours in predicting customer lifetime value. Ribeiro et al. (2024) offered additional insights by investigating the impact of customer experience with bundled telecommunication services on satisfaction and switching intention.

Table 1. Characteristics of included studies

Author, year of publication	Study and context
Alsaggaf and Althonayan (2018)	Saudi Arabia; telecommunication services; service quality, emotional/cognitive responses, customer intentions.
Zheng and Liu (2020)	China; ISP operating data; anomalous customer behaviour detection and clustering.
Wassouf et al. (2020)	Syria; telecom customer data; customer loyalty prediction using Big Data.
Glavee-Geo et al. (2020)	Ghana; mobile money usage; consumer engagement and behavioural outcomes.
Sharma and Madan (2022)	India; m-commerce and mobile network services; perceived ease of use, service quality, adoption intention.
Mustafa et al. (2022)	China; 5G technology; UTAUT2 and SEM-ANN-based technology acceptance.
Giningroem et al. (2023)	Indonesia; online food delivery services; behavioural intention and convenience motivation.
Lee et al. (2024)	Taiwan; customer behaviour prediction; hybrid behavioural change prediction.
Ribeiro et al. (2024)	Portugal; bundled telecommunication services; customer experience, satisfaction, switching intention.
Segarra-Moliner and Moliner-Tena (2024)	Spain; customer citizenship behaviour; customer lifetime value.
Salhab (2025)	Jordan; AR in telecom sector; cultural and technological determinants.
Zhao et al. (2025):	China-West Africa/Ghana; digital cooperation and e-business risk perception.

The second prominent theme revolves around the impact of service quality and customer experience on customer behaviour and intentions. Alsaggaf & Althonayan (2018) investigated the influence of service quality on customer intentions, using emotional and cognitive responses as mediators. Sharma & Madan (2022) examined the role of perceived ease of use in m-commerce adoption, highlighting the positive influence of mobile network service quality. Giningroem et al. (2023) explored behavioural intention in the context of online food delivery services, focusing on the influence of hedonic motivation, convenience motivation, and post-usage usefulness.

The third significant theme identified is the role of cultural and technological factors in the adoption and use of digitally mediated services. Salhab (2025) investigated the impact of augmented reality on consumer behaviour in Jordan's telecom sector. Mustafa et al. (2022) explored consumers' acceptance of 5G technology in China. Zhao et al. (2025) systematically prioritised e-business risks in China-West Africa digital cooperation.

Finally, the detection of anomalous customer behaviour emerges as a critical theme. Zheng & Liu (2020) proposed a

DOI: 10.26552/tac.C.2026.1.5

Multi-faceted Telecom Customer Behaviour Analysis (MTCBA) framework for anomalous telecom customer behaviour detection and clustering analysis. The MTCBA framework, applied to real-world telecom operating data, enables efficient and effective telecom customer behaviour analysis.

4. Discussion

4.1. Summary of Evidence

The synthesis of the included studies reveals a multifaceted landscape of digital and technological factors shaping consumer behaviour in telecommunications and related mobile service environments. These factors span predictive analytics for customer loyalty, the impact of service quality and customer experience, technology acceptance, anomaly detection, personalisation and customisation, and e-business risk management.

The application of predictive analytics for customer loyalty emerged as a dominant theme. Studies by Wassouf et al. (2020) and Lee et al. (2024) showcase the effectiveness of machine learning algorithms in identifying customers at risk of churn and predicting changes in customer behaviour. Segarra-Moliner & Moliner-Tena (2024) further enrich this theme by demonstrating the link between customer citizenship behaviours and customer lifetime value. The focus on customer experience, as highlighted by Ribeiro et al. (2024), underscores the need for telecommunication companies to provide seamless and satisfying services.

Another significant trend is the recognition of cultural and technological factors in shaping technology adoption and customer behaviour. Mustafa et al. (2022) and Sharma & Madan (2022) both utilise the UTAUT2 model to understand consumer acceptance of new technologies. The detection of anomalous customer behaviour is another critical area where advanced data analytics is proving valuable. Zheng & Liu (2020) present a method for detecting and clustering anomalous behaviour in telecom customers.

4.2. Limitations

This scoping review is subject to several limitations. Firstly, the search strategy was limited to specific databases and keywords, which may have resulted in the exclusion of relevant studies. The restriction to English-language publications also introduces potential bias. Secondly, the scoping review methodology does not involve a critical appraisal of the included studies. Thirdly, the time period covered by the review (2018-2025) may not capture the full evolution of digital and technological applications in customer behaviour. Another limitation is that several included studies address broader digital or mobile service contexts rather than telecommunications services in a strict sense. Therefore, the findings should be interpreted as evidence from telecommunications and closely related digital service environments.

4.3. Implications

The findings of this scoping review have several important implications for research, practice, and policy. For research, there is a need for more rigorous empirical studies that evaluate the effectiveness of technology-driven interventions in improving customer loyalty and engagement. For practice, businesses should invest in developing digital and analytical capabilities that can personalise customer interactions and proactively address potential issues. For policy, governments should develop regulatory frameworks that promote responsible technological innovation and protect consumer rights.

5. Conclusions

This scoping review mapped current research on digital and technological factors influencing consumer behaviour in telecommunications. The findings indicate that customer behaviour is shaped by a combination of service quality, perceived ease of use, customer experience, perceived value, technological readiness, and the adoption of emerging technologies such as artificial intelligence, Big Data, 5G, augmented reality, and predictive analytics. The review also highlights the importance of customer loyalty prediction, satisfaction management, switching intention, and responsible use of customer data. Although the evidence base is heterogeneous, the results suggest that digital transformation plays an increasingly important role in shaping customer decision-making and loyalty in the telecommunications sector. Future research should focus on more rigorous empirical studies, cross-country comparisons, and the ethical implications of technology-driven customer behaviour analysis.

ACKNOWLEDGEMENTS

This contribution was undertaken as a part of the project "Consumer Behaviour Research Using Neuroscience in Virtual and Real Environments," supported by the Grant System of the University of Žilina (Project ID: 20450).

REFERENCES

[1] Alsaggaf, M., Althonayan, A., "An empirical investigation of customer intentions influenced by service quality using the mediation of emotional and cognitive responses,"*Journal of Enterprise Information Management*, 2018. https://doi.org/10.1108/jeim-04-2017-0048

[2] Giningroem, D., Farida, N., Soesanto, H., "Behavioral intention using online food delivery service: information technology continuance approach,"*International Journal of Business and Society*, 2023. https://doi.org/10.33736/ijbs.6416.2023

[3] Glavee-Geo, R., Shaikh, A., Karjaluoto, H., Hinson, R., "Drivers and outcomes of consumer engagement: Insights from mobile money usage in Ghana,"*International Journal of Bank Marketing*, 2020. https://doi.org/10.1108/ijbm-01-2019-0007

[4] Lee, N., Lee, H., Hsin, J., Fang, S., "Prediction of customer behavior changing via a hybrid approach,"*IEEE Open Journal of the Computer Society*, 2024. https://doi.org/10.1109/ojcs.2023.3336904

[5] Mustafa, S., Zhang, W., Anwar, S., Jamil, K., Rana, S., "An integrated model of UTAUT2 to understand consumers' 5G technology acceptance using SEM-ANN approach,"*Scientific Reports*, 2022. https://doi.org/10.1038/s41598-022-24532-8

[6] Ribeiro, H., Barbosa, B., Moreira, A., Rodrigues, R., "A closer look at customer experience with bundle telecommunication services and its impacts on satisfaction and switching intention,"*Journal of Marketing Analytics*, 2024. https://doi.org/10.1057/s41270-023-00222-w

[7] Salhab, H., "Augmented reality and consumer behavior in Jordan's telecom sector: cultural and technological determinants,"*Innovative Marketing*, 2025. https://doi.org/10.21511/im.21(3).2025.08

[8] Segarra-Moliner, J., Moliner-Tena, M., "Engaging in customer citizenship behaviours to predict customer lifetime value,"*Journal of Marketing Analytics*, 2024. https://doi.org/10.1057/s41270-022-00195-2

[9] Sharma, K., Madan, P., "Can perceived ease of use improve M-commerce adoption? Role of mobile network service quality,"*International Journal of Online Marketing*, 2022. https://doi.org/10.4018/ijom.299394

[10] Wassouf, W., Alkhatib, R., Salloum, K., Balloul, S., "Predictive analytics using big data for increased customer loyalty: Syriatel Telecom Company case study,"*Journal of Big Data*, 2020. https://doi.org/10.1186/s40537-020-00290-0

[11] Zhao, S., Darko, D., Kodua, L., Luo, A., Sun, T., Sagoe, A., Bentum-Micah, G., "Systematic prioritization of e-business risks in China West Africa digital cooperation using empirical evidence from Ghana,"*Discover Sustainability*, 2025. https://doi.org/10.1007/s43621-025-01553-7

[12] Zheng, F., Liu, Q., "Anomalous telecom customer behavior detection and clustering analysis based on ISPs operating data,"*IEEE Access*, 2020. https://doi.org/10.1109/access.2020.2976898