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Role of Technology in Improving Customer Service in Nepal

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Abstract

This study examines the role of technology in improving customer service in Nepal. Customer experience is the dependent variable. The selected independent variables are ATM, QR code, mobile banking, credit cards, and bundle discount. The primary source of data is used to assess the opinions of respondents regarding ATM, QR code, mobile banking, credit cards, text alert, and customer experience. The study is based on primary data from 125 respondents. To achieve the purpose of the study, a structured questionnaire is prepared. The correlation and multiple regression models are estimated to test the significance and importance of role of technology in improving customer service in Nepal.

The study showed a positive impact of ATM on customer experience. It indicates that satisfactory ATM facilities lead to better customer experience. Similarly, the study showed a positive impact of QR code on customer experience. It indicates that more use of QR code results in better customer experience. Likewise, the study also revealed a positive impact of mobile banking on customer experience. It indicates that higher the usage of mobile banking leads to better customer experience. Further, the study observed a positive impact of credit cards on customer experience. It indicates that higher the usage of credit cards leads to exceptional customer experience. In addition, the study observed a positive impact of text alerts on customer experience. It indicates that timely information from text alerts leads to excellent customer experience.

Keywords: customer experience, ATM, QR code, mobile banking, credit cards, text alerts

1. Introduction

Technology has become a pivotal force in transforming customer service, enhancing the efficiency, personalization, and overall experience for consumers. By leveraging advanced tools such as artificial intelligence, chatbots, and data analytics, businesses can provide faster and more accurate responses, anticipate customer needs, and offer tailored solutions. These technological advancements enable seamless communication across multiple channels, ensure 24/7 availability, and foster stronger customer relationships. Consequently, technology not only elevates the standard of service but also drives customer satisfaction and loyalty in an increasingly competitive market. Technology plays a pivotal role in enhancing customer service by streamlining communication, personalizing interactions, and providing efficient, round-the-clock support. With the advent of the Internet and a host of advanced Information Technologies (IT) that take advantage of this global network infrastructure, the role of technology as an important strategic weapon has solidified (Feeny, 2001).

ATMs have revolutionized customer service in the banking sector by providing 24/7 access to essential banking services. Customers can perform various transactions such as cash withdrawals, deposits, balance inquiries, and fund transfers without the need to visit a bank branch. This convenience significantly enhances customer satisfaction and reduces the workload on bank staff (Batiz-Lazo and Reid, 2011). The deployment of ATMs has improved

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the efficiency and speed of banking services. Customers benefit from reduced waiting times and immediate access to their funds, which enhances their overall banking experience. ATMs also enable banks to extend their reach to remote areas, providing banking services to underserved populations (Kariuki and Ngugi, 2014). ATMs equipped with advanced functionalities, such as check scanning and bill payment, offer a wide range of services beyond simple cash withdrawals. These multifunctional ATMs enhance customer service by providing additional convenience and reducing the need for multiple banking channels. This diversification of services through ATMs contributes to higher customer retention and loyalty (Tiwari *et al.,* 2006).

The integration of technology in customer service has revolutionized how businesses interact with customers. Advanced technologies such as Artificial Intelligence (AI), chatbots, and Customer Relationship Management (CRM) systems have significantly enhanced the efficiency and quality of customer service. These technologies enable businesses to provide personalized, timely, and efficient responses to customer inquiries, thereby improving customer satisfaction and loyalty (Dabić *et al.,* 2019). Technology plays a crucial role in transforming customer service by enabling self-service options, enhancing communication channels, and providing real-time support. Self-service technologies, such as online portals and mobile apps, empower customers to find solutions independently, reducing the burden on customer service representatives and increasing efficiency (Zhang and Lu, 2020). The use of big data analytics in customer service allows businesses to gather insights into customer behavior, preferences, and feedback. By analyzing this data, companies can anticipate customer needs, tailor services to individual preferences, and proactively address potential issues, leading to improved customer experiences and satisfaction (Wamba *et al.,* 2017). The deployment of Omni channel strategies supported by technology provides a seamless customer experience across multiple touch points. Technologies such as integrated CRM systems, unified communication platforms, and social media tools ensure consistent and coherent interactions with customers, regardless of the channel they choose to use (Verhoef *et al.,* 2015).

The adoption of AI in customer service, including virtual assistants and automated response systems, significantly reduces response times and improves service availability. These AI-driven technologies can handle routine inquiries and tasks, allowing human representatives to focus on more complex and high-value interactions (Huang and Rust, 2018). Mobile banking applications are equipped with features that enhance customer service by providing real-time notifications, personalized financial advice, and instant support. These applications use customer data to offer tailored solutions and alerts, ensuring that customers are informed about their financial activities and can make timely decisions. This level of personalization and immediacy greatly improves the customer experience in the banking sector (Zhou, 2012). Mobile banking has significantly reduced transaction costs and increased the efficiency of banking operations. By leveraging mobile technology, banks can serve a larger customer base without the need for extensive physical infrastructure. This not only reduces operational costs but also allows banks to offer more competitive services, thereby improving customer satisfaction and loyalty (Lee, 2009).

The security features integrated into mobile banking platforms, such as biometric authentication and encryption, enhance the trust and confidence of customers in using these services. By ensuring that customers' financial information is protected, banks can improve

the overall user experience and foster a secure environment for digital transactions (Martins *et al.,* 2014). Mobile banking enhances financial inclusion by providing banking services to underserved populations, particularly in remote and rural areas. By offering mobile banking solutions, banks can reach customers who may not have access to traditional banking facilities, thus promoting financial inclusion and improving the overall quality of customer service (Demombynes and Thegeya, 2012). Text alerts have become a crucial tool in enhancing customer service within the banking sector. These alerts provide customers with real-time updates on their account activities, such as transaction confirmations, low balance warnings, and payment reminders. By keeping customers informed and engaged, text alerts help prevent overdrafts, fraudulent activities, and missed payments, thereby improving overall customer satisfaction and trust in the bank's services (Adesina and Ayo, 2010). The integration of text alert services in banking has significantly enhanced the immediacy and responsiveness of customer service. Customers receive instant notifications regarding suspicious activities, enabling them to take swift action to protect their accounts. This proactive approach not only mitigates potential fraud but also enhances the security and reliability of banking services (Mattila *et al.,* 2003).

The adoption of artificial intelligence in different marketing processes is opening several opportunities for marketers, and it is generating interest regarding its different applications among practitioners (Fagella, 2018). The adoption of digital banking technologies has significantly enhanced customer service in the banking sector. Innovations such as mobile banking apps, online banking platforms, and automated teller machines (ATMs) have provided customers with convenient, accessible, and efficient ways to manage their finances. These technologies reduce the need for physical branch visits, thereby saving time for customers and reducing operational costs for banks (Laukkanen, 2017). The implementation of Customer Relationship Management (CRM) systems in banks has improved the personalization of customer service. These systems enable banks to gather and analyze customer data, leading to more targeted marketing efforts and personalized financial advice. By understanding customer preferences and behavior, banks can offer customized products and services, enhancing customer satisfaction and loyalty (Stein and Ramaseshan, 2016).

The use of artificial intelligence (AI) in banking has transformed customer service by providing 24/7 support through chatbots and virtual assistants. These AI-driven technologies can handle routine inquiries, process transactions, and provide financial advice, leading to quicker response times and increased service availability. The integration of big data analytics in banking enables institutions to better understand customer needs and preferences. By analyzing large volumes of data, banks can predict customer behavior, tailor financial products, and provide proactive customer support. This data-driven approach enhances the overall customer service experience and fosters a more customer-centric banking environment (Chen *et al.*, 2012). Mobile banking has revolutionized the banking sector by providing customers with 24/7 access to their financial services. The convenience and accessibility of mobile banking allow customers to perform a variety of transactions, such as transferring funds, checking account balances, and paying bills, without the need to visit a physical branch. This has significantly enhanced customer satisfaction and engagement by offering a seamless and user-friendly banking experience (Shaikh and Karjaluoto, 2016).

In the context of Nepal Khadka and Maharjan (2017) revealed that customer

satisfaction relates as customer's evaluation of a product or service in terms of whether it has met their needs and expectations. Over the last few years, Nepal has seen a shift toward digital banking, as per Nepal Rastra Bank nine million people utilize m-banking services (Ghimire and Dhakal, 2023). Increased availability of mobile phones, internet penetrations, government initiatives, increased competition among banks, and the convenience of digital banking solutions makes the rise in mobile banking services (Ghimire *et al*., 2021). Limited connectivity, inadequate infrastructure, security and fraud concerns, evolving regulatory framework, low levels of financial literacy, and poor customer service are some of the key challenges of mobile banking services in Nepal (Klapper and Singer, 2017).

The above discussion shows that empirical evidences vary greatly across the studies on the role of technology in improving customer service. Though there are above mentioned empirical evidences in the context of other countries and in Nepal, no such findings using more recent data exist in the context of Nepal. Therefore, in order to support one view or the other, this study has been conducted.

The major objective of the study is to examine role of technology in improving customer service in Nepal. Specifically, it examines the relationship of ATM, QR code, mobile banking, credit cards, and text alerts with customer experience.

The remainder of this study is organized as follows: section two describes the sample, data, and methodology. Section three presents the empirical results and final section draws the conclusion

2. Methodological aspects

The study is based on the primary data which were collected from 125 respondents through questionnaire. The study employed convenience sampling method. The respondents' views were collected on ATM, QR code, mobile banking, credit cards, text alerts, and customer experience. This study is based on descriptive as well as causal comparative research designs.

The model estimated in this study assumes that customer experience depends upon role of technology in improving customer service. The dependent variable selected for the study is customer experience. Similarly, the selected independent variables are credit cards, ATM, mobile banking, text alerts, and QR codes. Therefore, the model takes the following form:

Consumer experience = f (credit cards, ATM, mobile banking, text alerts, and QR codes)

More specifically,

$$CE = \beta_0 + \beta_1 A + \beta_2 QR + \beta_3 MB + \beta_4 CC + \beta_5 TA + e$$

Where,

CE = Consumer Experience

A = ATM

QR = QR code

MB = Mobile banking

CC = Credit Cards

TA = Text Alerts

Consumer experience was measured using a 5-point Likert scale where the respondents were asked to indicate the responses using 5 for strongly agree and 1 for strongly disagree. There are 5 items and sample items include I believe that technology has personalized my customer service experience with businesses in Nepal", "I find it easier to financial transaction through Digital platform." and so on. The reliability of the items was measured by computing the Cronbach's alpha (a = 0.789)

ATM was measured using a 5-point Likert scale where the respondents were asked to indicate the responses using 5 for strongly agree and 1 for strongly disagree. There are 5 items and sample items include "I am satisfied with the availability of ATMs for accessing banking services", "I believe ATM are very reliable" and so on. The reliability of the items was measured by computing the Cronbach's alpha (a = 0.731).

QR code was measured using a 5-point Likert scale where the respondents were asked to indicate the responses using 5 for strongly agree and 1 for strongly disagree. There are 5 items and sample items include "I believe that QR codes have simplified my payment and transaction processes in Nepal", "I am satisfied with the convenient use QR codes for making payments in shops and restaurants in Nepal" and so on. The reliability of the items was measured by computing the Cronbach's alpha (a = 0.818).

Mobile banking was measured using a 5-point Likert scale where the respondents were asked to indicate the responses using 5 for strongly agree and 1 for strongly disagree. There are 5 items and sample items include "I believe that mobile banking has improved my access to financial services in Nepal", "Mobile Banking Apps have helped me manage my finances" and so on. The reliability of the items was measured by computing the Cronbach's alpha (a = 0.772).

Credit cards were measured using a 5-point Likert scale where the respondents were asked to indicate the responses using 5 for strongly agree and 1 for strongly disagree. There are 5 items and sample items include I believe that owning a credit card has provided me with financial flexibility and convenience in Nepal", "I am satisfied with the acceptance and usage of credit cards at various merchants and establishments in Nepal" and so on. The reliability of the items was measured by computing the Cronbach's alpha (a = 0.830).

Text alerts were measured using a 5-point Likert scale where the respondents were asked to indicate the responses using 5 for strongly agree and 1 for strongly disagree. There are 5 items and sample items include "I believe that receiving text alerts from my bank has improved my awareness of financial transactions and account activities in Nepal", "I am satisfied with the timeliness and relevance of text alerts regarding my account balances, transactions, and payment due dates in Nepal" and so on. The reliability of the items was measured by computing the Cronbach's alpha (a = 0.804).

The following section describes the independent variables used in this study along with the hypothesis formulation.

QR Code

Pons (2011) found that QR codes are used in a wide range of areas like media, street banners, etc which have had a positive impact on the customers experiences. Likewise, Walsh and Andrew (2011) showed a positive relationship between QR code usage and customer experience. Similarly, Chang *et al.* (2021) assessed the customers' intention to

use QR codes in mobile payments. The study showed that customer's intention to use QR codes are influenced by attitude, perceived usefulness, and subjective norms of the users. Furthermore, Shin *et al.* (2011) concluded that QR codes enhance customer experience by offering interactive and engaging features that integrate multimedia content, and social media thereby enriching the overall experience and positively influencing customer intentions to use the technology. Similarly, Yoon and Yu (2022) found that QR code-based mobile payment systems positive impact on customer experience by improving transaction speed, security, and convenience. Based on it, this study develops the following hypothesis:

$H_{1:}$ There is positive relationship between QR code and customer experience.

Mobile banking

Mobile banking is the use of mobile devices, such as smartphones or tablets, to access and manage banking services. Suoranta and Mattila (2004) found a positive impact of mobile banking on customer experiences as it is perceived as a useful tools for conducting any financial transactions .Similarly, Porteous (2006) concluded that mobile baking has helped in improving customer experience by providing easy access and effective use while performing any sort of monetary transaction. Likewise, Pousttchi and Schurig (2004) concluded that mobile banking has a positive impact on consumer and it has the potential for further improvement in the future due to its easy application. Furthermore, Barnes and Corbitt (2003) revealed that mobile banking (m-banking) have a positive impact on customer experience as it provides convenience and accessibility while doing financial transactions. Based on it, this study develops the following hypothesis:

H_2: There is a positive relation between mobile banking and customer experience.

ATM

An Automated Teller Machine (ATM) is an electronic banking device that allows customers to perform basic financial transactions without the need for a human teller. ATMs are typically found in various locations, including banks, shopping centers, airports, and other public places. Harelimana (2018) found that from a customer experience standpoint, this suggests that ATMs enhance customer convenience and accessibility to banking services, which in turn leads to increased usage and customer satisfaction, ultimately driving the bank's profitability. Furthermore Emmanuel and Mulyungi (2019) found that ATMs enhance customer convenience and accessibility to banking services, leading to increased customer satisfaction and loyalty, which in turn supports the bank's growth and sustainability. Likewise, Acharya *et al*. (2012) concluded that ATM has positive influence on productivity, probability and customer satisfaction of users. Similarly, Abdullai and Nyaoga (2017) indicated that the ATMs improve service efficiency and convenience for customers, leading to higher satisfaction and better overall banking experiences. Similarly, Mwai *et al*. (2018) found that from a customer perception standpoint, ATM are perceived as important and influential in expanding the range of financial services available to customers, thereby enhancing their overall banking experience. Based on it, this study develops the following hypothesis:

H_3: There is a positive relation between ATM and customer experience.

Credit cards

A credit card is a plastic or metal card issued by a financial institution, typically a bank or credit card company that allows the cardholder to borrow funds to pay for goods

and services. These borrowed funds must be repaid, usually with interest, according to the terms set by the issuer**.** Calem et al. (2005) found that consumers who have credit card seems to use credit cards a lot for easy transaction. Hartley *et al.* (1995) concluded that the convenience and ease of using credit cards outweigh the potential benefits of lower interest rates from other credit forms. Likewise Vigna and Malmendier (2004) indicated that the strategy aims to enhance customer experience by providing attractive short-term benefits that encourage card adoption and use. Knittel and Stango (2003) revealed that credit card market dynamics, including collusion, regulation, and competition, play significant roles in shaping the customer experience. Based on it, this study develops the following hypothesis:

$H_{4:}$ There is a positive relation between credit cards and customer experience.

Text alerts

A text alert is a notification sent via SMS (Short Message Service) to a mobile phone. These alerts can be used by various organizations, including banks, retailers, and service providers, to inform users about important information or updates. Omollo and Nyakomitta (2014) concluded that integrating SMS-based alert notifications in credit application queuing systems can significantly enhance customer experience, improve efficiency, and reduce waiting time. Likewise, Thulani *et al. (*2011) found that text alerts can lead to faster processing of transactions and increased accessibility which have a positive impact on customer experience. Similarly, Shi Yu (2009) concluded that context-specific factors like service quality and service awareness significantly influence a positive perceptions on customers. Based on it, this study develops the following hypothesis:

H_5: There is a positive relation between text alerts and customer experience.

3. Results and discussion

Correlation analysis

On analysis of data, correlation analysis has been undertaken first and for this purpose, Kendall's Tau correlation coefficients along with mean and standard deviation has been computed and the results are presented in Table 1.

Table 1

Kendall's Tau correlation coefficient matrix

This table presents Kendall's Tau correlation coefficients between dependent variable and independent variables. The correlation coefficients are based on 130 observations. The dependent variable is CE (Customer experience). The independent variables are QR (QR code), MB (Mobile banking), CC (Credit cards), TA (Text alerts), and ATM (ATM).

Variable	Mean	S.D.	CE	ATM	QR	MB	CC	TA
CE	3.901	0.638	1					
ATM	3.894	0.514	0.430**	1				
QR	3.907	0.608	0.423**	0.505**	1			
MB	3.790	0.616	0.538**	0.440**	0.451**	1		
CC	3.906	0.604	0.533**	0.384**	0.415**	0.538**	1	
TA	3.843	0.653	0.451**	0.390**	0.330**	0.403**	0.299**	1

Notes: The asterisk signs (**) and (*) indicate that the result are significant at one percent and five percent levels respectively.

Table 1 shows that ATM is positively correlated to customer experience. It indicates that satisfactory ATM facilities lead to better customer experience. Similarly, QR code is positively correlated to customer experience. It indicates that more use of QR code results in better customer experience. Likewise, mobile banking is positively correlated to customer experience. It indicates that higher the usage of mobile banking leads to better customer experience. Further, credit cards are also positively correlated to customer experience. It indicates that higher the usage of credit cards leads to exceptional customer experience. In addition, text alerts is also positively correlated to customer experience. It indicates that timely information from text alerts leads to excellent customer experience.

Regression analysis

Having indicated the Kendall's Tau correlation coefficients, the regression analysis has been carried out and the results are presented in Table 2. More specifically, it shows the regression results of ATM, QR code, mobile banking, credit cards, and text alerts on customer experience.

Table 2

Estimated regression results of ATM, QR code, mobile banking, credit cards, and text alerts on customer experience

The results are based on 130 observations using linear regression model. The model is $CE = \beta_0 + \beta_1 ATM + \beta_2 QR + \beta_3 MB + \beta_4 CC + \beta_5 TA + e$ where the dependent variable is CE (Customer experience). The independent variables are QR (QR code), MB (Mobile banking), CC (Credit cards), TA (Text alerts), and ATM (ATM).

Model	Intercept	Regression coefficients of					Adj. R_bar^2	SEE	F-value
		ATM	QR	MB	CC	TA			
1	1.175 (3.235)**	0.700 (7.566)**					0.312	0.529	57.242
2	1.175 (3.235)**		0.581 (7.376)**				0.301	0.533	54.412
3	1.580 (5.464)**			0.612 (8.128)**			0.344	0.517	66.068
4	1.580 (5.464)**				0.679 (9.320)**		0.409	0.490	86.866
5	1.660 (6.024)**					0.583 (8.246)**	0.351	0.514	67.993
6	0.899 (2.502)**	0.434 (3.631)**	0.336 (3.326)**				0.364	0.509	36.494
7	0.682 (1.954)**	0.311 (2.604)**	0.182 (1.723)**	0.232 (2.481)**			0.418	0.486	30.733
8	0.340 (1.017) **	0.083 (0.751) **	0.076 (0.752)**	0.232 (2.481)**	0.679 (9.320)**		0.495	0.453	31.411
9	0.097 (0.305)**	0.083 (0.751) **	0.069 (0.726)**	1.36 (1.497)**	0.679 (9.320)**	0.309 (4.244)**	0.558	0.424	32.293

Notes:

i. Figures in parenthesis are t-values.
ii. The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent level respectively.
iii. Customer experience is dependent variable.

The regression results show that the beta coefficients for ATM are positive with customer experience. It indicates that ATM has a positive impact on customer experience. This finding is consistent with the findings of Emmanuel and Mulyungi (2019). Similarly, the beta coefficients for QR codes are positive with customer experience. It indicates that QR codes have positive impact on customer experience. This finding is consistent with the findings of Pons (2011). Likewise, the beta coefficients for mobile banking are positive with customer

experience. It indicates that mobile banking has a positive impact on customer experience. This finding is consistent with the findings of Suoranta and Mattila (2004). Further, the beta coefficients for credit card are positive with customer experience. It indicates that credit cards have positive impact on customer experience. This finding is consistent with the findings of Calem *et al.* (2005). In addition, the beta coefficients for text alerts are positive with customer experience. It indicates that text alerts have positive impact on customer experience. This finding is similar to the findings of Omollo and Nyakomitta (2014).

4. Summary and conclusion

Technology has become a pivotal force in transforming customer service, enhancing the efficiency, personalization, and overall experience for consumers. By leveraging advanced tools such as artificial intelligence, chatbots, and data analytics, businesses can provide faster and more accurate responses, anticipate customer needs, and offer tailored solutions. These technological advancements enable seamless communication across multiple channels, ensure 24/7 availability, and foster stronger customer relationships. Consequently, technology not only elevates the standard of service but also drives customer satisfaction and loyalty in an increasingly competitive market. Technology plays a pivotal role in enhancing customer service by streamlining communication, personalizing interactions, and providing efficient, round-the-clock support.

This study attempts to examine the role of technology in improving customer service in Nepal. The study is based on primary data of 125 respondents.

The major conclusion of the study is that QR code, mobile banking, ATM, credit card, and text alerts have positive impact on customer experience. It indicates that higher the use of QR code, mobile banking, ATM, credit card, and text alerts, better would be the customer experience. The study also concludes that ATM followed by credit card is the most influencing factor that affect the change in the level of customer experience.

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