

PERCEIVED RISK ASSOCIATED WITH TECHNOLOGY ADAPTATION IN NEPAL AND THE ROLE OF GOVERNMENT POLICIES IN MITIGATING RISKS AND BUILDING TRUST

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ABSTRACT

This study investigates the influence of perceived risk and government policies on the adoption of mobile financial services (MFS) in Nepal. While financial risk negatively affects adoption, government policies positively influence consumer intention to use MFS. Perceived risk shows a negative correlation with adoption but does not significantly affect behavioural intentions, potentially due to respondents' dual roles as users and employees of MFS providers. Confidence in MFS is bolstered by advanced customer support and automatic refund mechanisms. Government policies play a pivotal role in driving MFS adoption, as proactive regulation fosters development, enhances consumer trust, and ensures the reliability of financial services. Overcoming perceived risk barriers remains essential for building trust in new technology and facilitating its seamless adaptation.

1. INTRODUCTION

Consumer adoption of new technology is a dynamic process influenced by a myriad of factors, ranging from perceived utility to regulatory frameworks. This process, as outlined by Chan and Lu (2004), encompasses various stages, including awareness, interest, evaluation, and eventual adoption. In today's competitive landscape, consumers are inundated with choices, necessitating careful consideration of the benefits and risks associated with each new product or technology.

Mobile technology, particularly mobile financial services (MFS), has emerged as a transformative force, revolutionizing the way individuals access and interact with financial services. The widespread availability of smartphones has facilitated the expansion of mobile banking, insurance sales, e-commerce, and other services, making them accessible to a broader segment of society. Despite the convenience offered by MFS, businesses face challenges in fostering consumer adoption, primarily driven by consumers' perceptions of risk and utility.

Perceived ease of use and usefulness are critical factors influencing consumer adoption, as demonstrated by research from Chung and Kwon (2009). Consumers are more likely to embrace new products or services when they perceive them as easy to use and beneficial. However, concerns such as perceived risk, cost, and compatibility can act as significant barriers to adoption, as noted by Wessels and Drennan (2010). In the case of MFS, security concerns and vulnerabilities associated with mobile transactions amplify consumers' hesitancy towards adoption (Corradi et al., 2001).

Understanding the role of perceived risk in shaping consumer behaviour is crucial for businesses and policymakers seeking to promote MFS adoption. Perceived risk encompasses a range of concerns, including security, privacy, and reliability, which may deter consumers from embracing MFS despite its potential benefits. Addressing these concerns requires strategies to mitigate perceived risks and build trust among consumers.

Moreover, the regulatory environment plays a significant role in shaping the adoption and diffusion of Mobile Financial Services (MFS). Government regulations influence

market dynamics, competition, and consumer protection measures, thereby impacting consumers' willingness to adopt MFS. Regulatory frameworks that promote innovation, competition, and consumer trust are more likely to facilitate MFS adoption, while overly restrictive or ambiguous regulations may impede adoption efforts (Isukul & Tantua, 2021; Tulu, 2023). Studies show that well-structured regulatory policies enhance financial inclusion and technology adoption by addressing trust and access barriers. Conversely, unclear or overly stringent regulations can deter market entry and innovation, slowing the diffusion of MFS (Bongomin, Munene, & Yourougou, 2020). In Nepal, government initiatives have been crucial in enhancing financial inclusion through mobile banking, despite challenges like infrastructure deficits (Dr. Lalitha & Balaji, 2022).

Even though Research on technology adoption is limited in Nepal, understanding the interplay between perceived risk, government regulations, and consumer behaviour is particularly crucial. By examining these dynamics, businesses and policymakers can develop targeted strategies to promote MFS adoption and foster financial inclusion within Nepali society.

2. REVIEW OF LITERATURE

New technology development has been happening at a breathtaking pace. Every day we can hear about advancement in technology development. Some advancement in technology are easily accepted by general public and some falter and die off. With the ever-increasing development of technology and its integration into public's private and professional life, a decision regarding its acceptance or rejection still remains an open question. Various theories has been proposed which try to explain why some technology are easily accepted and grow up to become a huge industry and some do not make it out of the lab or if they do than they are not very well received by the end users. There have been a number of researchers addressing the consumers' adoption of new technologies (Dapp, Stobbe, & Wruuck. 2012; Lai & Zainal, 2014, 2015; Lai, 2016). A number of theories have proposed to explain consumers' acceptance of new technologies and their intention

to use. These included, but were not restricted to, the Theory of Diffusion of Innovations (DOI) that started in 1960, the Theory of Task-technology fit (TTF) , the Theory of Reasonable Action, Theory of Planned Behaviour (TPB), Decomposed Theory of Planned Behaviour (DTPB), the Technology Acceptance Model (TAM) proposed by Fred Davis in 1989. There has been various addition to the TAM model proposed after it originally appeared in 1989.

Factors affecting new technology adaptation have been an area of focus in many studies, and various theories have been proposed as mentioned above. These theories, most of which use behavioural intention (attitude and subjective norm) of the user to predict technology usage, have identified common factors such as perceived usefulness, perceived ease of use, individual awareness, perceived benefits, perceived risks, cost, and social norms as key determinants of technology adaptation. Recent studies highlight the role of perceived risks and government policies in shaping these factors. For instance, effective governance frameworks can significantly mitigate perceived risks, facilitating the adoption of emerging technologies (Begozzi et al., 2023). In the context of public service, perceived risks such as data privacy and security concerns are often addressed through transparent government policies (Adedeji, 2021). Moreover, factors like trust and knowledge, influenced by government initiatives, play crucial roles in technology adaptation (Li & Li, 2023).

Perceived Risk

Perceived risk is can be defined as subjective risk that individual has regarding the possible negative consequences of performing certain action or behaviour due to inherent uncertainty. Risk perception plays a significant role in shaping consumer behavior, as individuals tend to be more driven to avoid errors than to seek maximum purchasing benefits (Mitchell, 1999). Studies on mobile banking (Mitchell, 1999; Mitchell & Greateorex, 1993; Mitchell & Greateorex, 1990; Polatoglu & Ekin, 2001) highlight that perceived risk is a key factor influencing both the adoption of mobile banking services and customer satisfaction levels.

According to Lovelock et al. (2001), when the risk involved is low, people are more likely to adapt and be eager to employ technology-enabled service delivery. Wu and Wang (2005) found that users' inclination to adopt mobile commerce in Taiwan was statistically significantly impacted by perceived risk. Risk issues might be more important for mobile devices because of the infrastructure needed for wireless applications, which increases the risk of security breaches. Compared to fixed equipment, mobile telecommunications involves several points of communication, which increases risk (Corradi et al., 2001). Additionally, because of the potential for device loss or theft, mobile phone applications might be viewed as riskier.

Hypothesis 1: Perceived risk associated with the service has negative influence in adaptation of mobile financial services.

Government policies

The government must implement the proper policies for any technology to succeed. One factor propelling technical innovation is direct government intervention (Utomo & Dodson, 2001). Governments must create regulatory oversight that promotes competition and innovation while meeting public demands in light of each new technological advancement (Choudrie & Papazafeiropoulou, 2006; Lee-Kelley & Kolsaker, 2004).

Japan was the first country in 1960 where government played a vital role in development of long-term technology policy that enabled the country to introduce new technology (Freeman, 1998). After those countries in Europe and North America adopted similar strategy. By 1990, there is an agreement in the literature about the vital role of public administration in the diffusion of new technologies (King et al., 1994; Neo et al., 1995; Rapp, 1996). King et al. (1994) applied the demand-pull and supply-push theory to examine government intervention in technology diffusion. They propose that governments can act either as influential agents or as regulators. By integrating these two approaches with the two driving forces, they identified six key institutional actions: building knowledge, deploying knowledge, providing subsidies, mobilizing resources, issuing innovation

directives, and setting standards.

Evens and Pirchio (2015) have examined the policy characteristics of countries where mobile money has been successful and where it has failed. They have observed that the major difference in countries where mobile money has been successful and where it has failed is the regulation in place. (Evans & Pirchio, 2015) have shown that mobile money has been successful in almost all the countries that have light regulation in place for KYC and agent onboarding requirement. Similarly, (Lal & Sachdev, 2015) in their paper have put forward following regulation that government needs to be clear on. If these regulations are in place then there is a higher chance of success.

- The categories of entities permitted to own and operate a mobile money service.
- The entities authorized to offer related services, including cash-in and cash-out transactions.
- The level of integration, if any, required with the existing banking infrastructure.
- The procedures for complying with KYC (Know Your Customer) and AML (Anti-Money Laundering) regulations.
- The extent of legal clarity regarding the permissible activities of mobile money operators.

Hypothesis 2: Favourable government policies have positive influence on the adaptation of mobile financial services.

3. MATERIALS AND METHODOLOGY

The study focuses on the population of employees from IME Limited, IME Digital, and Swift Technology, all involved in providing mobile financial services under the brand name "IME Pay" in Nepal. A total of 337 staff members (76% male and 24% female) were targeted for data collection, encompassing both male and female employees. An online questionnaire was distributed to all staff via email during April, 2022, constituting a census study. Primary data collection was conducted using structured questionnaires

containing closed-ended questions, divided into demographic information and factors affecting consumer adoption and the role of government policy in technology adaptation. Secondary data was gathered from research papers, government data, and policy papers to understand the impact of government regulation on mobile financial services (MFS) uptake.

Data analysis was conducted using SPSS software, with a 32% response rate yielding 117 responses. The collected data was cleaned, coded, and analyzed using descriptive statistics such as percentage, mean, and standard deviation. Regression analysis was employed to test the relationship between independent and dependent variables, and factor analysis was utilized to condense Likert scale questions into more manageable factors. The respondent profile indicated a majority of male participants (66.6%), primarily aged between 18-30 years (76.1%), with educational backgrounds ranging from high school to masters and above. 61% of the respondents has bachelor's degree and 26% had master's degree.

Validity and reliability were ensured through the standardized distribution of questionnaires to MFS service provider staff, maintaining anonymity in data collection, and refraining from pressuring or influencing respondents' responses. Ethical considerations were prioritized, with data collected solely for research purposes and respondents not coerced or threatened in any manner during the data collection process. Overall, the methodology employed adhered to ethical standards and aimed to provide reliable insights into factors influencing consumer adoption of MFS and the role of government policy in technology adaptation.

4. RESULT AND DISCUSSION

Perceived Risk (perceived relative risk) and its influence in adaptation of MFS

New financial technology comes with risk and the perception of the severity of the risk by the individual user plays an important role in behaviour intention to use the new technology.

By perceived risk (perceived relative risk) this study means the set of risk that consumer has in mind while using a new service regarding the outcome of the service usages. It is basically a level of uncertainty that individual have regarding the worth of using new services. If the perceived risk associated with new technology is higher than the current method that users are used to then this could play negative role in the consumer adoption of new technology.

The sub variable used to measure Perceived Risk (perceived relative risk) have Cronbach alpha value of .745 which is relatively high which means that variables have relatively high internal consistency.

Table 1: Reliability of the Study

R Square value	Durbin-Watson	F value	P value	Cronbach Alpha
.04	1.734	.834	.529	.745

Source: Field study, 2022.

The sub-variables that assess Perceived Risk (perceived relative risk) have R square value of .04 meaning they can explain 4% of variance in behaviour intention for consumer technology adoption. The ANOVA analysis shows that model has F value of .834 and p value of .529 which indicates that the model is not statistically significant. This means that the sub-variables are not statistically significant predictors of behaviour intention for consumer technology adoption. Durbin-Watson value of 1.734 is relatively high meaning the residual value (error value) are independent and there is no autocorrelation.

Correlation analysis done shown in Table 2 that there is negative correlation between the sub variables used to measure perceived risk and behaviour intention for consumer technology adoption.

Table 2: Correlation Matrix

		0	1	2	3	4	5
Behaviour intention for Consumer technology Adoption (0)	Pearson Correlation	1					
I think the level of uncertainty associated with the use of Mobile phone to conduct financial transactions are high (1)	Pearson Correlation	-.037	1				
I worry that if my phone is lost or misplaced then someone might use it to perform unauthorized transaction using my account (2)	Pearson Correlation	-.064	.203*	1			
Mobile Financial technology may not Process payments correctly due to various technical issue and my dues gets unpaid (3)	Pearson Correlation	-.168	.367**	.366**	1		
When transaction errors occur, I worry that I cannot get my money back easily (4)	Pearson Correlation	-.078	.296**	.376**	.548**	1	
I prefer traditional methods of financial transaction then MFS due to high level of financial risk involved especially from hacking (5)	Pearson Correlation	-.158	.416**	.171	.511**	.434**	1
*. Correlation is significant at the 0.05 level (2-tailed).							
**. Correlation is significant at the 0.01 level (2-tailed).							

Source: Field Study, 2022.

Table 3 shows the relationship between sub variable and behaviour intention for consumer technology adoption.

Table 3: Perceived Risk (perceived relative risk) and influence in adaptation of MFS

Statement	Beta Coefficients	t value	P value
Constant		20.864	.000
I think the level of uncertainty associated with the use of Mobile phone to conduct financial transactions are high (PR_1)	.053	.479	.633
I worry that if my phone is lost or misplaced then someone might use it to perform unauthorized transaction using my account (PR_2)	.013	.120	.905
Mobile Financial technology may not Process payments correctly due to various technical issue and my dues gets unpaid (PR_3)	-.189	-1.437	.154
When transaction errors occur, I worry that I cannot get my money back easily (PR_4)	.043	.344	.732
I prefer traditional methods of financial transaction then MFS due to high level of financial risk involved especially from hacking (PR_5)	-.085	-.689	.492

Source: Field Study, 2022.

Above table shows that none of the variable used to measure perceived risk have significant relationship with behaviour intention for consumer technology adoption at 10% level of significance. This result is not in line with the research done around the world. Research by (Mitchell & Greateorex, 1993; Polatoglu & Ekin, 2001; Mitchell, 1999) have found that perceived risk was one of the major factors affecting consumer adoption as well as customer satisfaction of mobile banking services. Similarly, research done

by Chen (2013); Laforet and Lia (2005) have also shown perception of risk negatively influences on the use of online banking/mobile banking services. This current research showed that there is negative correlation between the sub variable and dependent variable which is in line with research done by Chen (2013) but the regression analysis done did not show any significant relationship between sub-variables used to measure perceived risk and behaviour intention for consumer technology adoption. One of the main reasons could be that the surveyed individuals were users as well as employee of mobile service provider and they are not very concerned about technical risk as well as risk of losing the money (Financial risk) for failed transactions. Since the service provider have state of the art customer service call centre and provides auto refund for failed transaction which the surveyed individual were aware thus they did not show any concerns. It is quite possible that the result could have been different if the surveyed individual were non users and did not have idea about the service and internal workings of mobile financial service provider. Further research can be done in this regard but research have shown that it is very necessary for the service provider to think about assuring the customer that there are not any financial risk during transaction and there are not any technology related risks while performing financial transaction with Mobile financial service related technologies.

Government policy and its influence in adaptation of MFS

For any new technology to develop and flourish in any country, it requires government support in terms of favourable policy and incentives. Government needs to be open for new innovative technology from private or public sector and embrace it rather than find a way to discourage it. Government's direction and favourable regulations and incentives are necessary for new technology like MFS to develop and consumers to adopt it. Heavy regulation initially by the government will kill an innovative technology in its track. This research hypothesizes that government regulation plays positive role in development and adaptation of MFS.

In order to analyse the data related to government roles, factor analysis was done to group variables concerning government roles that influence the development as well as adaptation of new technology in Nepal. Initially 16 different variables was devised to gain insight into what type of role government policy or government intervention play in development as well as adaptation of new technology. After conducting factor analysis, 16 variables was reduced to 4 variable that have most significant role.

Table 4: Reliability of the Study

R Square value	Durbin-Watson	F value	P value	Cronbach Alpha
.570	1.949	31.752	.000	.878

Source: Field study, 2022.

The variable used to measure role of government policy have Cronbach alpha value of .878 which is relatively high which means that variables have relatively high internal consistency.

The sub-variables that assess role of government policy have R square value of .570 meaning they can explain 57% of variance in behaviour intention for consumer technology adoption. The ANOVA analysis shows that model has F value of 31.752 and p value <.001 which indicates that the model is statistically significant. This means that the sub-variables listed in Table 4.7 are observed as statistically significant predictors of behaviour intention for consumer technology adoption.

Correlation analysis done in table 5 that there is significant positive correlation between the sub variables GR_1, GR_2 and GR_3 which is used to measure role of government policy on behaviour intention for consumer technology adoption.

Table 5: Correlation Matrix

		0	1	2	3	4
Behaviour intention for Consumer technology Adoption (0)	Pearson Correlation	1				
Government should ensure consumer data are protected and KYC information of customer are strictly taken while performing financial transactions to ensure that MFS is not illegally used by criminal element of the society (1)	Pearson Correlation	.562**	1			
Government's direction and favourable regulations and incentives are necessary for new technology like MFS development and consumer adaptation (2)	Pearson Correlation	.585**	.512**	1		
Government pro activeness in monitoring as well as quick change in regulations if necessary ensures trust among users and increases the chances of adaptation of new technology (3)	Pearson Correlation	.688**	.615**	.515**	1	
New technologies usually develops due to change in market dynamics and government does not have any role in its development (4)	Pearson Correlation	.028	-.033	.056	-.065	1
**. Correlation is significant at the 0.01 level (2-tailed).						

Source: Field study, 2022

Table 6: Government policy and influence in adaptation of MFS

Statement	Beta Coefficients	t value	P value
Constant		2.394	.019
Government should ensure consumer data are protected and KYC information of customer are strictly taken while performing financial transactions to ensure that MFS is not illegally used by criminal element of the society (GR_1)	.126	1.397	.166
Government's direction and favorable regulations and incentives are necessary for new technology like MFS development and consumer adaptation (GR_2)	.325	3.849	.000
Government pro activeness in monitoring as well as quick change in regulations if necessary ensures trust among users and increases the chances of adaptation of new technology (GR_3)	.431	4.817	.000
New technologies usually develops due to change in market dynamics and government does not have any role in its development (GR_4)	.063	.939	.350

Source: Field Study, 2022

Table above shows that variable 2 (GR_2) and variable 2 (GR_3) shows significant relationship with behaviour intention for consumer technology adoption at 1% level of significance. Surveyed individual feel that role of government in setting priorities are necessary and it has positive impact on consumer technology adaptation. This is in line with various literature discussing about the role of public administration in diffusion of new technology (Rapp, 1996; King et al., 1994; Neo et al., 1995). These research argue that government can be either influential or regulator for any new technology development and adaptation by consumer. Similarly result in table 4.6 shows that governments monitoring

and quick action can generate trust among customer to adopt MFS. Trust in MFS seems to be necessary for consumer to be willing to adopt it.

Thus, it is necessary for both the service provider as well as government to generate the environment of trust among the individual for them to be willing to adopt mobile financial technology. Technology provider can create the environment of trust by providing timely service, minimize the risk associated with transacting through mobile phone and market the product as safe and convenient. Also the government needs to ensure the consumer data are safe and mobile financial operators are constantly monitored to make sure they are following the rules set. Regulating body also needs to be very proactive in researching about the future trend of MFS and make necessary arrangements to protect customer so that MFS operators cannot operate in Gray area of policy. This will ensure the potential adopters of MFS to trust the product and transact using MFS offered through either mobile app or through agent network.

There is not significant relationship variable 1 (GR_1) and behaviour intention to use MFS services. The result shows that respondents are not very keen to provide KYC information and are not very concerned about their data while performing financial transaction. This could be because in Nepalese context individuals are not very aware about the necessity of KYC information and need for the government to ensure customer data protection. Government as well and private sector needs to educate the masses that KYC information taken while performing financial transaction is necessary for the financial institutions like MFS provider or banks from being used, intentionally or unintentionally, by criminal elements for money laundering activities. KYC procedures enables financial institution to better understand their customers and their financial dealings which helps them manage their risks in a well-judged manner. It is also necessary to educate the masses about necessity for data protection rules because breach in data security of MFS service provider can have financial implication for the customers. The bank account details if breached can enable the criminal element of the society to use it for unintended purpose or take all the money out from individual bank account. Also personal data of an individual are breached or sold by MFS provider then they can be used in manner that can harm the

individual. In Nepalese context people are not very aware about the risk associated with data breach or KYC information leak but in developed countries this is a very serious issue that has specific laws in place and are implemented strictly.

Thus, this research highlights the dual impact of financial risk and government policy on the adoption of mobile financial services (MFS). Financial risk, though negatively correlated with MFS adoption, showed an insignificant influence on behavioural intentions. This is largely due to users' confidence in strong customer service and automatic refund systems, which ease concerns about financial or technical issues. These findings align with earlier studies that underscore the role of perceived risk in technology adoption. For instance, Venkatesh et al. (2012) also noted that perceived risk often deters users initially but is mitigated by trust-building measures like service reliability and financial guarantees.

Government policies emerged as a significant driver of MFS adoption, with favourable regulations and incentives facilitating development and consumer trust. Proactive government monitoring and swift regulatory adjustments bolstered trust and increased the likelihood of technology adaptation. This has been highlighted by research done by Senarathna (2020) underscores the critical role of regulatory frameworks, such as those implemented by the Central Bank of Sri Lanka, in stabilizing MFS amid inherent operational risks, strategic risks, reputation and compliance risks. Similarly, Bongomin et al. (2019), argued that swift regulatory adjustment like transaction tax exemptions has significantly boost MFS adoption by mitigating financial risks and promoting economic growth in developing nations.

The requirement for Know Your Customer (KYC) verification did not significantly influence consumers' behavioural intentions, suggesting a lack of awareness regarding data protection and the necessity of KYC information. This observation aligns with findings by Tahe and Siregar (2021), who noted that while trust and security influence the adoption of e-KYC, a lack of consumer awareness diminishes its perceived importance. Similarly, Zahra and Tejomurti (2023) emphasize that without proper implementation and

education, KYC's role in preventing fraud and ensuring consumer protection in financial technologies remains underutilized. Moreover, Ismail (2018) demonstrated that robust security measures, including effective KYC processes, significantly enhance consumer trust, which is a critical factor in adopting FinTech services. This suggests that KYC verification could play a more impactful role if consumers were better informed about its benefits. Therefore, a concerted effort by both regulators and financial institutions to educate consumers about KYC's importance could bridge this awareness gap and bolster trust in digital financial services.

5. CONCLUSION AND SUGGESTIONS

The study found that while financial risk concerns can negatively impact consumers' intention to adopt mobile financial services (MFS), active users of these services didn't let these worries affect their behaviour. This is likely because they felt confident in the safeguards in place, such as customer service support and automatic refunds for failed or incorrect transactions. Knowing they wouldn't lose money due to technical issues helped reduce their perceived risks. On top of that, government policies played a key role in boosting consumer trust. Regulations that protect users from fraud and ensure quick action in the event of problems helped create a sense of security, making people more likely to adopt and continue using MFS.

For those already using MFS, the confidence that the government would intervene if there was a fraudulent transaction, or other issues was crucial to their ongoing use of the service. Government regulations, combined with refund mechanisms and fraud prevention measures offered by service providers, helped break down the psychological barrier of perceived financial risk. The study also found that allowing potential users to try out the service on a limited basis could be an effective way to build confidence. Once people feel secure, know their money is protected, and see the benefits firsthand, they're more likely to fully adopt new financial technologies. Ultimately, reducing perceived risk through clear government policies, effective fraud prevention, and trial opportunities is

key to making the transition to new technology smoother and more trustworthy.

This study focuses only on the users of Mobile Financial Services (MFS) and the sample is taken from the employees of mobile financial service provider namely IME Digital, Swift Technology and IME Limited. These three company in combination have been providing mobile financial services through Agent as well as mobile app. The research does not go into details about other factors that might positively or negatively influence the adaptation of mobile financial services namely Individual awareness, Perceived usefulness and ease of use, perceived benefits and cost.

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