
Assessment of household risk perception regarding digital payment adoption

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ABSTRACT

Technology integration into commercial operations has paved the way for a range of novel support services in the market. Among these, electronic payments (e-payments) have emerged as a significant option, allowing transactions to occur electronically and eliminating the need for physical cash. The global acceptance of electronic payment systems varies, with specific methods achieving widespread popularity while others experience limited adoption. A key factor influencing the slow uptake of some payment systems is their perceived risk level. In this study, we surveyed 200 households in Pune to investigate their perception of risk concerning digital payments. The findings indicate that households' perception of risk related to digital payments is relatively low. This suggests a high level of confidence in digital payment systems' reliability and security measures.

KEYWORDS: COVID-19, Digital payments, Households, Risk perception.

1. INTRODUCTION

Financial inclusion stakeholders – market regulators, standards bodies, consumer advocates and other market participants – agree that a thoughtful approach to risk management and regulation is essential to support successful digital financial services. But risk is a complicated terrain, even for conventional financial services, where banks are the dominant players, value chains are relatively well understood, and risk management terminology and approaches have been established for years. Digital payments and broader digital financial services bring additional complexity, with new entrants constantly entering the market, introducing unused products regularly, and changing value chain dynamics. A lack of common terminology and frameworks for identifying and assessing the associated risks complicates matters further. Since digital payments form the basis for digital financial services, a framework for managing and regulating their risk is the first step. Significant helpful literature outlines the more common risks (such as fraud) associated with digital payments. However, works that attempt to present a unified framework for risk in a way that

is accessible to non-experts but also meaningful to risk practitioners and industry participants are very few. Such a framework would aid the adoption of low-cost digital payments by aligning industry participants (e.g., banks and telecommunications companies), customers, and regulators on the risks associated with digital payments and how to mitigate them. Using a survey of 200 households in Pune, we examined the risk perception towards digital costs in this article. Some common risks associated with Digital Systems of Payment (DSP) are described briefly.

Inability to transact due to network outage or service unreliability

Many DSP programs target populations in poor, primarily remote locations where mobile network coverage is often inadequate. As a result, recipients experience frequent network connectivity issues for point-of-sale (POS) devices and mobile phones. DSP beneficiaries struggling to access their regular payments suffer acutely from this unreliability.

- **Insufficient liquidity of agent or ATM:** DSPs are usually transferred in bulk, with most recipients withdrawing all their money in a single day. This puts much pressure on the access point to meet liquidity requirements, a challenge in remote and less secure areas. As a result, recipients often queue up and wait hours to access or collect their payments or are sent back home to repeat the journey the next day. This risk seems to perpetuate a vicious cycle: the lack of liquidity erodes the trust of recipients and trust in the system, creating the need to withdraw the entire payment at once and immediately after it is deposited, exacerbating cash liquidity problems.
- **Complex user interfaces and payment processes:** Complex interfaces and complicated processes – which increase the likelihood of errors and losses due to incorrect transactions or recurring timeouts due to limited transaction time – create risks and a poor user experience for all DFS users. DSP recipients are even more likely to be negatively affected. In addition to being among them, the most vulnerable and least literate consumer segments are often new and initially uncomfortable with the digital payment system, including the technology and the numerous steps required to access or use payments.
- **Poor or no repair mechanism:** Another fragile point in DSP programs is recourse mechanisms such as complaints, inquiries and dispute resolution. Recipients are often unaware of or confused about appeals and support options, making it difficult to resolve issues or get answers to their questions about their payments. Recipients from several programs also feared losing their transfers if they complained, a misperception that made them reluctant to report problems.
- **Fraud that targets the recipient:** DSP recipients are particularly vulnerable to copying, such as unauthorized charges, merchant price gouging, and skimming payments (i.e., illegal withholding of a portion).

2. REVIEW OF LITERATURE

Slozko and Pelo (2015) have written that digital technology and the increased use of the Internet have caused significant changes in the functioning of the global economy. The article examines how the introduction of digital technologies is transforming the global financial landscape, studies changes in the forms of financial circulation and examines the impact of digital technologies on payments. It also reveals the challenges and risks associated with adopting digital technologies that the financial sector may face. The authors believe that digital technologies, in particular, support the evolutionary development in finance second, reduce operating costs and increase efficiency. Risks are analyzed, and tips on how to overcome them are given.

Zimmerman and Silvia (2016) stated that Digital social payments (DSP) offer several advantages over traditional cash, voucher or in-kind methods. Proponents often cite increased efficiency, reduced leakage, and faster, more convenient, and safer recipient payments. Bottom-of-the-pyramid DSPs could pave the way for fuller financial inclusion when linked to

bank accounts or mobile wallets that offer value storage options or access to other financial services. However, evidence shows that the benefits of DSP financial inclusion have so far been limited: most beneficiaries withdraw 100 percent of their payment at once and generally do not use the account again until another transfer, let alone to take advantage of additional benefits. This lacklustre use has led some to question the promise of DSPs as a gateway to financial inclusion.

Acharya (2017) states that digital financial services have benefits but pose privacy risks that harm consumers, merchants, markets and more. Some payment systems in India suffer from vulnerabilities because they have not been forward-looking with privacy by design. On the back end, centralized data storage is risky. On the front end, faulty sensing devices allow data to be misused. Over the middle mile, data is transmitted without solid encryption. Payment systems must be redesigned to protect privacy and prospectively use unbreakable encryption and open standards. Data protection legislation and a potent market regulator are also essential.

Agur et al. (2020) have written that the COVID-19 pandemic and the need for social distancing have focused on digital financial services. Digital financial services enable social distancing, allow governments to quickly and efficiently disburse funds to those in need, and enable many households and businesses to access online payments and financing quickly. However, risks to stability and integrity, which are always present, may worsen if digital financial services use expands rapidly in crises without adequate regulations and safeguards. At the same time, the effort to intensify the usage of digital financial services should prevent the existing differences between users from deepening.

Shree et al. (2021) have stated that driven by recent policy initiatives and technological developments, India's digital payment system is a promising success story. At the same time, the data also point to a growing use of cash. While country-level aggregate data may indicate citizens' overall preferences, we use a new dataset based on online surveys to understand how factors such as "perception" and "trust" in digital payments and experiences with online fraud influence consumers' payment behaviour. While demographic factors such as age, gender, and income are relevant factors that determine this choice, we find compelling evidence that the use of digital payment methods is influenced by her perception of these tools, as well as her trust in the overall payment and banking framework system in general. We found that the degree to which prior experience with online fraud deters the use of digital payments varies by transaction purpose.

Manrai et al. (2021) explored the factors influencing women's adoption of digital payments in rural India. The study extended the UTAUT-2 Unified Theory of Technology Acceptance and Use elements with perceived trustworthiness and self-determination theory to understand the user behaviour of rural Indian women. The study verified the mediating role of some constructs in addition to testing the direct relationship. The study was conducted in the rural parts of the adjoining areas of Delhi where women from different states, education and financial backgrounds live. The research model was empirically tested on 568 respondents using the structural equation modelling (SEM) technique. The research model explained 72.6% of the variance in the user behaviour variable. The expected effort, habit, facilitating conditions and perceived competence proved to be significant determinants of user behaviour. In addition to these direct relationships, two constructs, practice and facilitating needs, partially mediate the relationship between behavioral intention and behaviour. This study provides some important clues for digital payment service companies by highlighting the significant factors explaining technology adoption by semi-rural women. Companies need to design appropriate marketing strategies to instil the trust of prospective customers towards their companies and the services they provide. The role of a simple digital platform that is easy to learn and use is also an essential element in determining technology adoption.

Khiaonarong et al. (2022) state that major operational incidents in payment systems indicate the need to improve their resilience. Meanwhile, as payment infrastructures become

increasingly digitized, integrated and interdependent, they require more strength. In addition, the risks that could cause significant disruptions have become more acute due to increased power outages, cyber incidents and natural disasters. International experience suggests that reliability targets, redundancy, evaluation of critical service providers, endpoint security and alternative arrangements must be strengthened.

Similar studies have been carried out by Sharma (2021) and Gupta (2017). A micro-level household risk perception survey at a place like Pune is not seen on record. Hence, this research endeavours to fill this gap.

3. METHODOLOGY

To draw meaningful inferences and conclusions, a minimum sample size of 100 is recommended (Alreck and Settle, 2003). In line with this guidance, a sample size of 200 was fixed. The convenience sampling method was followed. Around 400 questionnaires were sent to household respondents from different parts of Pune. Two hundred responses were received over a month, indicating a response rate of about 50%. The name of the respondent was not recorded to ensure confidentiality. They agreed to cooperate only when the respondents were assured of their privacy.

A questionnaire was designed in Google Forms. It was divided into the following parts:

- a. Demographic Profile
- b. Risk perception towards digital payments

The questionnaire had the following features:

- a. Responses were sought by way of a selection from a range of options.
- b. In seeking agreement or disagreement on a particular issue, the sequence of responses was designed as under- –
 - 0 – No option
 - 1 – Somewhat agree
 - 2 – Completely agree
 - 3 – Somewhat disagree
 - 4 – Completely disagree

The “No option” choice was deliberately kept as the 1st response to provide an early exit option to those who either didn't know the answer or didn't want to answer. The questionnaire was tested for reliability and returned a Cronbach Alpha score of 0.824 and hence was considered reliable. The hypothesis set was:

- Ho: The risk perception towards digital payments is high.
- Ha: The risk perception towards digital payments is low.

The hypothesis was tested based on the average agreement/disagreement responses to the ten statements in the questionnaire related to risk perception with digital payments. The average agreement/disagreement response of the 200 respondents for all the related statements was taken as the sample mean, and it was compared with a hypothesized population mean of 50% agreement/disagreement, connoting an event by chance and not due to any statistical significance. A t-test was applied at a 95% confidence level, and based on the p-value, the null hypothesis was tested for rejection or non-rejection.

4. DATA ANALYSIS AND INTERPRETATION

49% of respondents were male, whereas 51% were female. 24% were from the Northern region of Pune, 18% were from the Eastern part, 28% were from the Western region, and 30% were from the Southern region. 25% of respondents were from the age-group of <30 years, 51% were from the age-group 30-40 years, and 24% were from the age-group of >40 years.

The average disagreement responses to the questionnaire were as follows:

Table 1: Summary of responses to the questionnaire

Statement	1	2	3	4	5	6	7	8	9	10	Average
Disagreement %	87%	91%	86%	86%	92%	87%	88%	93%	85%	85%	88%

Based on the above summary average sample mean, the hypothesis was tested as follows:

Table 2: Testing of Hypothesis

Parameter	Value
Sample Mean (\bar{x})	88%
Hypothesized population mean (μ)	50%
SD of sample	0.879798
n (sample size)	200
t-value= $\text{abs}((\bar{x} - \mu) / (s/\sqrt{n}))$	4.304246
p-value = $\text{tdist}(t,(n-1),1)$	0.00002
Decision	Reject Null

Thus, the null hypothesis, the risk perception towards digital payments is high, was rejected in favour of its alternate; the risk perception towards digital payments is low.

5. CONCLUSION

Our study's results show that households' risk perception towards digital payments is on the lower side. This indicates they are confident about the digital payment systems' robustness and safeguards. The findings of our study show how different programs and DSP providers are working to establish the foundations for successful DSP delivery. On the one hand, they address the identified deficiencies on the supply side and show the importance of strengthening the demand side - the recipient - for self-defence. On the other hand, they become vigilant and empowered customers. Going beyond these basics to achieve meaningful financial inclusion outcomes will require solutions that do more to build trust in digital payment services and ultimately add value to recipients' lives and create interest in other financial services. These issues remain unresolved if obtaining a fee-paying government contract is providers' sole motivation or if the program values designing services with the lowest fee versus customer-centric systems that can deliver the highest value and best service to beneficiaries. Social payment programs and providers are responsible for ensuring DSPs' reliability, convenience, and security. Doing so will mean trade-offs and require time and resources, but it can be the key to uncovering the elusive win-win-win for all parties involved.

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