

# The Impact of AI-driven Technological Influences on Security Measures within Digital Wallets amid Digital Revolution

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**Abstract:** The integration of artificial intelligence (AI) into digital wallets is an intriguing representation of the manner in which money and technology are mingling in the modern digital age. Digital wallets, which are evolving from transactional tools to sophisticated systems with cutting-edge capabilities, are incorporating artificial intelligence. This essay examines the intricate relationship between artificial intelligence and digital wallets in order to suggest future research options. Tailored user interfaces, strong security measures, proactive risk assessment, and effective financial management tools are a few of these enhancements. As technology transforms how consumers interact with financial services, we'll also examine the moral questions raised by the appropriate use of digital wallets.

**Keyword:** Digital wallet, Artificial intelligence, protocols, Technology, biometric recognition, Customer fulfillment.

## 1. Introduction:

For digital wallets to improve consumer happiness and strengthen security protocols, they must incorporate contemporary features. By keeping an eye on transaction patterns and offering individualised financial data, these flexible features actively prevent fraud. Robust authentication mechanisms are ensured by the additional layer of unbreakable security offered by biometric identity. If recommendations are enhanced by considering user preferences and predictive algorithms are used, user engagement could rise.

One of these advancements' most important aspects is the continuous enhancement of security procedures. To protect user information and financial transactions, risks must be quickly identified and eliminated. Along with free resources like budgeting and expenditure tracking, customers are also urged to practise sensible money management.

Technology innovations' ethical ramifications are becoming more and more crucial to take into account. A number of considerations must be made in order to become ethically responsible, such as privacy, transparency, biases in algorithms used for decision-making, and the appropriate use of user data. To maintain the trust and confidence of customers, it is imperative to strike the right balance between ethical considerations and innovation.

However, it is still necessary to carefully consider the ethical implications of new technologies, especially in situations when they improve security and user experience. Once this balance is reached, clients enjoy contemporary features and moral stability, and the development route is guaranteed to adhere to moral norms.

### Need for the study:

Comprehending the implications, challenges, and feasibility of artificial intelligence technologies is crucial, particularly considering the growing ubiquity of digital wallets with mobile banking. Examining user perspectives and experiences can provide significant insight into the attraction of these digital financial services alongside potential roadblocks to their continued adoption. Comprehending these fundamental components empowers legislators, banks, and businesses to improve consumer satisfaction.

## 2. Review of Literature:

P. C. Lai et al.'s goal with machine learning inference is to investigate the relationship between these variables and the uptake of e-payment services in 2022. The study looks at a number of variables affecting the uptake of e-payments using an AI-driven analytical methodology. Using a hybrid AI and tree method, important pipeline analysis elements were found and their linkages were shown. As the study makes clear, a number of factors, including user attitudes, performance expectations, enabling conditions, and expectations, influence the usage of electronic payment systems. Furthermore, gamification may help those under 25 embrace e-payments, but social support may be necessary for people over 40 to do the same.

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S. S. Latha and others (2022) Over the past ten years, there has been a growing trend of helping people who face difficulties with everyday chores like making payments online and making purchases. An article evaluates a new e-service application created especially for visually impaired people, addressing accessibility concerns associated with e-payment services. By utilising this tool, they may manage bill payments efficiently and on their own, saving both time and money. The payment procedure can be initiated by users who scan a QR code in order to receive audio help. Image processing software recognises the required quantity, which they first input and confirm on the screen. Voice assistance then confirms with the user that the payment was successful after the transaction is complete.

In their 2021 study, Yiming Li et colleagues. investigate anomalies in real-world electronic payment networks. They study a temporal interaction graph of an electronic payment system, in which the multidimensional transaction sequences connecting users are edges, and users are nodes. Innovative temporal graph representation learning algorithms and node classification methods are used in the study to identify unauthorised users in the electronic payment network. In this research, we propose a unique method, called Graph Temporal Edge Aggregation (GTEA), to model temporal interaction graphs. More precisely, GTEA trains the edges of the network to mimic the temporal dynamics of individual nodes, as opposed to continuously collecting the interactions of all nodes throughout time. In order to find communication patterns between two individuals, this approach logs several features. One further way to eliminate extraneous noise and emphasise important links is to include a self-attention technique in the design.

Hackers can't access e-payment systems without authorization when PINs, passwords, and cards are used on a regular basis. Nadir Kamel Benamara et al. (2021) have taken steps to rectify these problems. The credit card of a valid user may allow hackers to access the system even in the face of these security precautions. The authors propose implementing deep learning to include facial biometry into RFID cards for E-payment systems. Using this dual authentication approach, using an RFID card in addition to being physically present is required to get access to the E-Payment system.

The research done in 2021 by Amin, Sultana, Saha, Islam, and Kashem investigates how Bangladeshi consumers see the use of mobile banking, focusing especially on frequent users. Customers appreciate mobile banking because it's simple to use and relieves their concerns about real cash loss, which makes them feel satisfied on a psychological level. All things considered, mobile banking is well-received by Bangladeshis. However, there are some

barriers to its broader acceptance, such as potential online fraud and technical problems with mobile banking systems.

E-payments are vital for online firms and are growing more and more significant due to the rapid growth of e-business, claim Nasr et al. (2020). The advent of electronic payments has significantly enhanced people's ability to manage transactions, offering unprecedented convenience and enjoyment through diverse formats and device compatibility. Effective integration of e-payments within the realm of e-business is imperative for their success. Despite the myriad opportunities in electronic commerce, e-payments encounter numerous challenges and potential risks that demand solutions. The article provides an overview of the possibilities, challenges, and associated risks within e-payments, pinpointing fraud as the most critical menace causing substantial financial losses. The study extensively discusses the merits of e-payments along with their future trajectory, encompassing their benefits and the evolving landscape of e-payment systems.

### Objectives of the study

- Identifying possible risks associated with digital wallet
- Artificial Intelligent based tools to address vulnerabilities, enhancing security measures for better protection.

### Research Gap:

Existing literature extensively covers the adoption and acceptance of mobile wallet services. However, a notable gap in research emerges regarding the connection between customer ecstasy and the enduring usage patterns of digital wallets over an extended period. While numerous studies focus on initial adoption and acceptance, there's a dearth of research investigating how the intense delight or satisfaction experienced by users correlates with their continued and consistent utilization of digital wallet services over time. This lack of exploration into the sustained usage characteristics in relation to the emotional state of users presents a significant area for further investigation and scholarly inquiry within the field of digital wallet usage and customer behavior. Addressing these gaps in research could offer a more comprehensive understanding the correlations observed between different elements and customer satisfaction in digital wallet usage. These insights could further assist in refining strategies to enhance customer satisfaction by focusing on key elements within digital wallet services.

### 3. Research Methodology

The study explores the impact of using artificial intelligence within mobile payment systems on trust levels

within digital wallet applications. It aims to identify factors influencing customer adoption of digital wallets, examining the risks and challenges users encounter, as well as understanding the operational mechanisms of digital wallets. Additionally, the study focuses on safety concerns in digital wallet transactions and the necessity for secure transaction methods. Data was gathered through structured questionnaires distributed via mail to respondents in Chennai, categorized by gender and income. Using purposive sampling, data was collected from 297 respondents. The research employed a quantitative approach, specifically regression testing, to derive statistical insights from the respondents.

### Study Design

Research methodology refers to a systematic approach used to address research problems by exploring various methods. In this study, random sampling is employed to analyze the 297 participants. Questionnaire is used to collect the data for respondents to assess digital wallet usage of customer fulfillment, while secondary data was obtained from research papers for review purposes

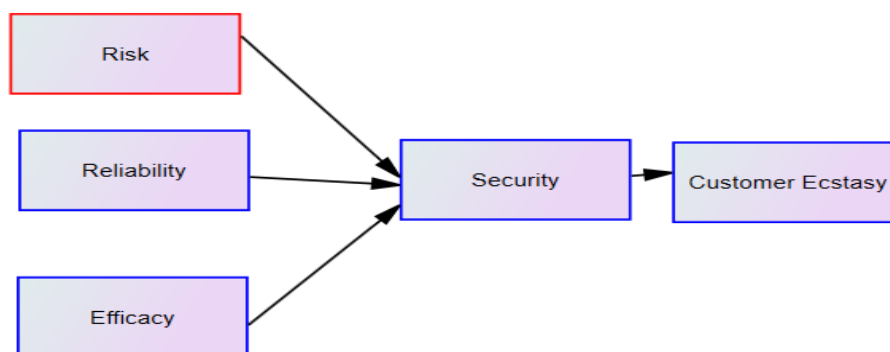
### Sampling

#### a. Profile of the Samples

The data is collected from 297 samples of Chennai classified from corporation of Chennai, the data is collected through questionnaire and if required oral interview is also used.

#### b Instrument and Measures

### Conceptual Framework



### Reliability:

The filled-in questionnaires from 71 respondents were collected, and the Cronbach’s alpha criterion was applied

The data is collected through questionnaire, which was enlarged after conducting an extensive literature review. The questionnaire consisted of 37 items, and participants were selected through random sampling. While the detailed descriptions of all 37 items are not included in this article, the comprehensive process of extensive developments is documented.

### C. Scale Development

A questionnaire having 37 items was constructed to reflect the concept. The purpose of the study was stated and suggestions given in the questionnaire. The development of items in the questionnaire is explained as follows:

Part I: Demographic profile of the respondents.

Part II: Containing of 37 items and the participants pleaded to score on a Likert five-point scale.

5 – Strongly Agree, 4 - Agree, 3 – Partially Agree, 2 – Disagree, 1 – Strongly Disagree

### 4. Data Analysis

In an increasingly digital world, individuals store their financial and personal data within applications, becoming prime targets for cyber attackers seeking to exploit these platforms for malicious purposes. In this context establishing a robust and thorough security infrastructure stands as the crucial approach to encourage users to utilize your application.

to test reliability and validity. The questionnaire was framed based on the responses and suggestions by altering the questions according to the research.

Risk	Cronbach's alpha coefficient: (0.8463227318033373, array([0.827, 0.864]))
Reliability	Cronbach's alpha coefficient: (0.7495883125753682, array([0.717, 0.779]))
Efficacy	Cronbach's alpha coefficient: (0.8190764298890238, array([0.796, 0.84 ]))
Security	Cronbach's alpha coefficient: (0.8439479021086312, array([0.824, 0.862]))
Ecstasy	Cronbach's alpha coefficient: (0.7874786547095345, array([0.759, 0.813]))

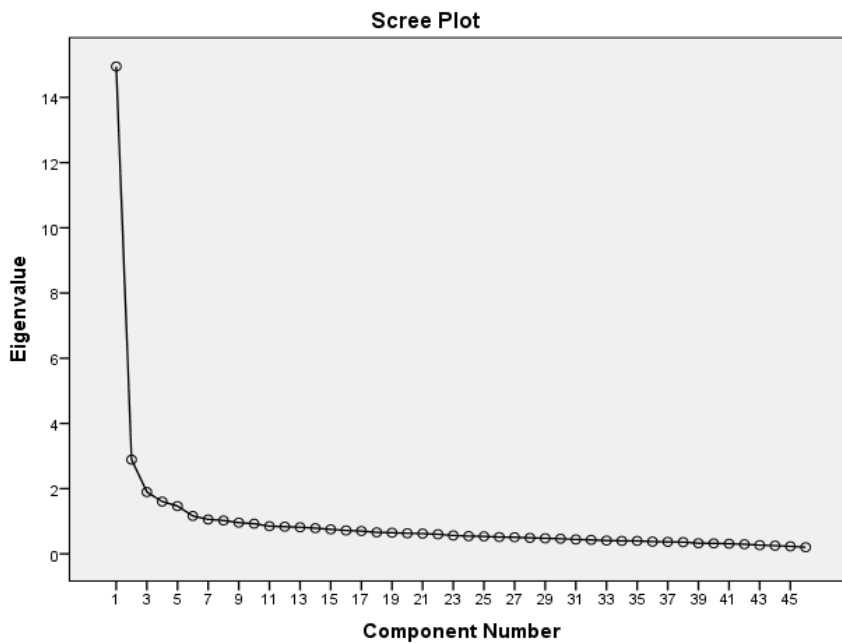
**Interpretation:**

Anderson- Darling Test the test returns a statistics value and compares it with the critical value at different significance levels. If the statics value is less than critical value at a certain significance level, we can assume that

data is normally distributed which indicates my study is less than critical value and it's proved my data is normally distributed.

**Factor Analysis**

Scree Plot:



<b>KMO value for the model is 0.8750464984606007</b>
<b>KMO value for the model is 0.8581712676787254</b>
<b>KMO value for the model is 0.8031235253054918</b>
<b>KMO value for the model is 0.8037224251928728</b>
<b>KMO value for the model is 0.8581712676787254</b>

Factor Loading represent the correlation between each variable and the underlying factors extracted from the data. Each factor loading value ranges from -1 to 1, with

values close to -1 indicating a negative relationship with the factor and values close to 1 indicating a positive relationship with the factor.

In general, a factor loading greater than 0.4 is considered significant and indicates that the variable is strongly associated with the factor, However, the threshold for a significant factor loading can vary depending on the specific research context and the number of variables and factors in the analysis.

It is also important to look at the patten of factor loading across all variables to identify which factors are most strongly associated with which variables. Factors with multiple variables with high loading are considered to

have more substantive meaning and are more reliable that factors with only one or few high loadings.

Additionally, it is important to consider the theoretical and practical implications of the factor structure and how it aligns with existing knowledge and research on the topic being studied.

**CHI-SQUARE Test:**

H<sub>1</sub> – There is an association between Monthly Income and average amount spent on payment using digital wallet.

Income – avg amount spent on payment using digital wallet			
Chi-Square Tests			
	Value	Asymp. df	Sig. (2-sided)
Pearson Chi-Square	54.127a	6	0
Likelihood Ratio	52.949	6	0

**Interpretation:**

The analysis of the table reveals a Pearson Chi-Square value of 54.127 with 6 degrees of freedom, accompanied

by a significant p-value of 0.000. This outcome strongly suggests a there is an association between the monthly income of individuals and the average amount they spend on digital wallet payments.

**CORRELATION:**

Pearson's Correlation					
	Data Security	App Reliability	Risk Governance	App Efficacy	Customer Ecstasy
Data Security	1				
App Reliability	.701**	1			
Risk Governance	.676**	.689**	1		
App Efficacy	.544**	.635**	.514**	1	
Customer Ecstasy	.598**	.549**	.606**	.522**	1
**. Correlation is significant at the 0.01 level (2-tailed).					

**Interpretation:**

The table displays correlations between different elements and customer satisfaction in the context of digital wallet usage, assessed through Pearson's correlation coefficient.

The results show a strong positive relationship among various factors. Data Security and Compatibility have a robust correlation (Pearson's r = 0.588), indicating a strong positive connection between them. App Reliability

is significantly linked to Data Security with  $r$  values ranging from 0.546 to 0.701, both falling within a range that denotes a strong positive correlation. Additionally, Risk Governance shows strong associations with App Reliability, with  $r$  values between 0.478 and 0.689, suggesting a substantial positive relationship. App Efficacy also exhibits a strong connection with App Reliability, ranging from 0.517 to 0.635, further supporting a significant positive correlation.

Moreover, Social Influence is strongly correlated with App Efficacy ( $r$  values between 0.510 and 0.655) and Customer Ecstasy ( $r$  values between 0.445 and 0.623), indicating substantial positive associations. With the strongest association between App Reliability and Data Security, the data overall shows notable positive correlations between both parameters. Enhancing these features of a digital wallet service can lead to happier and more satisfied customers.

## 5. Suggestion:

These days, digital wallets are almost universal. By emphasising the application of artificial intelligence advancements to enhance digital wallet security measures, financial institutions and outside providers may secure the trust of customers and allay their fears about possible risks. Users may be more happy and adoption may spread more widely if AI-driven user interfaces simplify the registration and usage of mobile wallets.

Less concerns about additional expenses associated with digital wallets may boost usage and promote repeat business, but better analytics may be utilised to enhance pricing or incentives. Financial literacy programmes have the potential to enable safe and secure mobile transactions while also informing customers about the benefits and safety precautions of using mobile banking services.

Businesses may encourage the usage of mobile wallets and grow their user base by fostering customer loyalty and utilising their social media presence. Organisations may boost the use of mobile wallets by developing more intricate initiatives with their loyal client bases including social media followings, including behavioural targeting or personalised rewards.

### 5.1 Conclusions:

Digital wallets are a perfect representation of how technology can progress exceeding the limitations of current methods. These modern substitutes try to imitate every aspect of the initial design in an effort to equal or exceed the functionality of real wallets. Meanwhile, people need to actively understand and interact with any technological advancement for it to flourish and spread. Technology must be inclusive, helpful to people of every age and sexual orientation, and able to ease people's fears

and reluctance to adopt new technologies prior to their widespread usage.

Governments are engaged because it is their responsibility to implement strict security laws that promote usage. Sturdy security measures increase trust and reliability. This crucial element enables the smooth incorporation of digital wallets into everyday activities.

In a nutshell, until certain requirements are satisfied, digital wallets won't be the newest and greatest thing in technology. It seeks to encourage wider usage by developing user-friendly interfaces, educating the public about the advantages, and implementing stringent security measures to safeguard user data and transactions. Two advantages come from this intricate synchronisation: it boosts confidence and speeds up the seamless integration of digital wallets into daily life. This has had a huge impact on how financial transactions are carried out.

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