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AN ANALYSIS OF M-WALLET USERS' ATTITUDES TOWARDS THE ADOPTION OF M-WALLET SERVICES: EVIDENCE FROM THE NATIONAL CAPITAL REGION (NCR)

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ABSTRACT

The financial landscape in India has seen a considerable transformation due to the swift expansion of digital payment systems. Mobile wallets, or M-wallets, have become one of the most popular and practical digital payment options among these advances. An individual's favourable or negative assessment of utilising a specific technology is referred to as their attitude in the context of technology adoption. While a negative attitude discourages adoption, a positive attitude motivates people to adopt and consistently utilise M-wallet services. The adoption of mobile payment technologies was pioneered globally by nations like the United States, South Korea, China, and Japan. The empirical results show that while perceived utility and considered ease of use have little bearing on MPS uptake, perceived trust, perceived mobility, and attitudes have a positive impact. The study also shows a relationship between mobile wallet users' impressions and internet experience, usage, and online purchase. These findings have important ramifications for user impressions. . Rising smartphone ownership, easier access to the internet, government programmes like Digital India, and the general trend towards cashless transactions after demonetization are all responsible for this notable surge. The estimated M-wallet user statistics for the National Capital Region (NCR) is the basis for the Trend Analysis of Estimated M-wallet Users in the NCR (2010–2026).All of the major NCR cities – Delhi, Faridabad, Gurugram, Greater Noida, and Ghaziabad – show a robust and ongoing upward trend in the use of M-wallet services. Regression models also account for around 98% of the difference in user growth, indicating that time has been a significant predictor of M-wallet acceptance. Policymakers, financial institutions, fintech firms, and service providers should concentrate on boosting customer confidence, enhancing the quality of services, and increasing the accessibility of digital payments across various demographic groups.

INTRODUCTION

A mobile wallet (M-wallet), sometimes referred to as a digital wallet or electronic wallet, is a mobile application that allows users to utilise smartphones or other mobile devices to make financial transactions and save payment information electronically. It enables consumers to pay without carrying actual currency or credit or debit cards. Money transfers, utility bill payments, mobile recharges, merchant payments, online shopping, ticket booking, and peer-to-peer cash transfers are just a few of the services that an M-wallet makes possible while safely storing users' financial information. M-wallet services are now more effective, secure, and convenient because to the integration of technologies like QR codes, Near Field Communication (NFC), Unified Payments Interface (UPI), and biometric authentication. The financial landscape in India has seen a considerable transformation due to the swift expansion of digital payment systems. Mobile wallets, or M-wallets, have become one of the most popular and practical digital payment options among these advances. M-wallets allow users to use their cell phones to do financial activities, including bill payment, money transfers, online shopping, ticket booking, and merchant payments. Increased smartphone use, internet accessibility, government programmes encouraging digital payments, and the growth of the Unified Payments Interface (UPI) have all contributed to the rapid acceptance of M-wallet services.

However, since attitude is a key factor in defining behavioural intention and actual usage, the effective proliferation of M-wallet services is heavily dependent on user attitude. (Source: emerald publishing; international journal of book marketing; **Volume 37, issue 7, 19 June 2019, page1590-1618.** An individual's favourable or negative assessment of utilising a specific technology is referred to as their attitude in the context of technology adoption. While a negative attitude discourages adoption, a positive attitude motivates people to adopt and consistently utilise M-wallet services. The Technology Acceptance Model (TAM) states that when people think technology is practical and simple to use, they adopt a positive attitude. According to the Unified Theory of Acceptance and Use of Technology (UTAUT), users' behavioural intention to adopt digital payment systems is greatly influenced by performance expectancy, effort expectancy, social influence, and facilitating factors. These theoretical frameworks offer a solid basis for analysing M-wallet users' attitudes in the National Capital Region (NCR). **(Source; https://www.sciencedirect.com/org/journal/aslib-journal-of-information-management)**

M-Wallet Services' Development and History

The growth of internet banking and electronic commerce in the 1990s gave rise to the idea of electronic payment systems. However, by allowing users to conduct financial transactions via specialised mobile applications, cell phones transformed mobile payment systems. The adoption of mobile payment technologies was pioneered globally by nations like the United States, South Korea, China, and Japan. Businesses launched

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digital wallet services that let consumers use cell phones to safely conduct contactless payments. Mobile wallet services became popular in India with the advent of smartphones and affordable internet connectivity. cell wallets were first mostly used for utility bill payments and prepaid cell recharges. Later, fintech companies expanded their operations to include peer-to-peer money transfers, online shopping, ticketing, insurance premium payments, investment services, and merchant payments. The introduction of digital payment solutions was greatly expedited by the November 2016 demonetization plan. By enabling instantaneous bank-to-bank transfers, UPI's launch significantly changed India's digital payment environment. M-wallets have developed into all-inclusive financial platforms that provide a variety of digital financial services.

REVIEW OF LITERATURE

Govender & Sihlali (2014) they investigated the variables that influence students with greater technical expertise to use mobile banking (m-banking) services. The qualitative technique is used to develop the questionnaire. The theoretical framework for examining the variables influencing students' acceptance of mobile banking is based on an expansion of the Technology Acceptance Model. Perceived Ease of Use, Perceived Usefulness, Perceived Value, Trust Intention to Use, and Usage Behaviour are examples of TAM components for mobile adoption. The impact of independent variables on the dependent variable of intention to use banking was investigated using the statistical method multiple regression analysis. Trust, perceived value, perceived ease of use, and social influence are independent variables that may account for 42% of the dependent variable's influence .**Source**; Govender, I., & Sihlali, W. (2014). A study of mobile banking adoption among university students using an extended TAM. *Mediterranean journal of social sciences*, *5*(7), 451-459.

Meuthia (2015) the study has looked into the empirical experiences of users. Satisfaction with Indonesia's embrace of e-money. The trust was regarded in this study as an Adoption of e-money is crucial, and it also encourages participation and system quality. 117 Indonesian e-money respondents provided the data. The outcome demonstrates how user engagement and system quality are key factors in determining user satisfaction. According to the research, trust elements have a higher degree than the other stimulant variables. The study found that users' happiness with e-money adoption in Indonesia was significantly impacted by both trust and mistrust**. Source;** Meuthia. (2015). Building Trust: A Solution to Increase User's Satisfaction on E-Money Adoption. *The International Technology Management Review*, *5*(1), 1-10.

Daştan and Gürler (2016). In recent years, e-commerce has grown rapidly on a global scale. This augmentation is influenced by the widespread usage of mobile devices in e-commerce. As trading volume increases and new gadgets are introduced, new products and solutions appear and diversify in terms of online payments. These advances may lead to changes in consumer attitudes and behaviours. The goal of this study is to look at what influences consumers' adoption of mobile payment solutions. Convenience sampling was used to conduct an online survey of 225 people. Using structural equation modelling, a research model was created and suggested linkages were examined. The empirical results show that while perceived utility and considered ease of use have little bearing on MPS uptake, perceived trust, perceived mobility, and attitudes have a positive impact. Additionally, perceived reputation had a positive relationship with perceived trust, while environmental danger had a negative relationship with perceived trust. **Source:**Daştan, İ., & Gürler, C. (2016). Factors affecting the adoption of mobile payment systems: An empirical analysis. *EMAJ: Emerging Markets Journal*, *6*(1), 17-24.

Gupta and Arora (2017) examined the adoption factors and consumer behaviour of mobile wallets in India. According to the report, consumers said M-wallets were convenient, quick, and allowed for cashless transactions. However, worries about security, technical issues, and transaction failures had a negative impact on the perception. The writers came to the conclusion that developing good perceptions requires strengthening trust and increasing service consistency. Understanding user mind-set in a fast-paced urban area like the NCR is greatly aided by these insights. **Source:** Kapoor, A., Sindwani, R., & Goel, M. (2024). Mobile wallets: theoretical and empirical analysis. *Global Business Review*, *25*(2_suppl), S211-S228.

Ahuja & Joshi (2018) have researched how consumers view mobile wallets. This study looked at how the elements that affect consumers' perceptions of mobile wallets are categorised using the factors exploration technique. The many kinds of mobile wallets in India have been the subject of a study. Both primary and secondary data are used to gather the information. 139 mobile respondents in the telecom sector participated in the poll. **Source**; Joshi, H., & Chawla, D. (2023). Identifying unobserved heterogeneity in mobile wallet adoption–A FIMIX-PLS approach for user segmentation. *International Journal of Bank Marketing*, *41*(1), 210-236.

Park, J., Ahn, J., Thavisay, T., & Ren, T. (2019). Unexpectedly, the results show that technological fear has a beneficial effect on the multi-benefit constructions of mobile payment systems. However, it makes sense. When using a new mobile payment method for the first time, consumers may experience anxiety (as the data reveal). Future research is encouraged by this study to confirm and duplicate the model's generalisation in other nations. Global adoption and penetration of mobile payment technologies remain very modest, despite their widespread use (Gao and Waechter, 2017). To investigate how mobile payment services spread throughout other nations, researchers might carry out a cross-cultural study. **Source: Park**, J., Ahn, J., Thavisay, T., & Ren, T. (2019). Examining the role of anxiety and social influence in multi-benefits of mobile payment service. *Journal of retailing and consumer services*, *47*, 140-149.

Sharma and Singh (2020) concentrated on determining the elements that influence consumer satisfaction with mobile wallet use. According to the survey, consumers' opinions and happiness were positively impacted by quicker transaction processing, user-friendly design, promotional advantages, and excellent customer service. Refund delays and security concerns were the main causes of negative opinions. The study

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advances our understanding of how M-wallet customers' contentment strengthens their loyalty, particularly in urban settings like NCR.**Source;** Soni, H., Shyamsunder, C., Singh, S., & Srinivas, V. (2025). The impact of mobile-wallet factors on customer satisfaction and customer loyalty: A study of B-schools in Hyderabad. *Qubahan Academic Journal*, *5*(1).

George and Sunny (2021) outlined how the potential for mobile wallet success is rapidly increasing and how India is becoming cashless on a daily basis. Every day, new players enter the e-commerce business, increasing the demand for M-Wallets to meet daily needs. of Indian nationals. Due to the COVID-19 pandemic, numerous M-Wallets became extremely popular, and even Indians who had previously preferred to deal with currency in hand were forced to use them. The researcher has attempted to provide a framework for researching adoption during this investigation. And the use of mobile wallets. According to the study's findings, compatibility and behavioural desire to use an M-Wallet are positively correlated. The objective to encourage the use of M-Wallet was positively impacted by both perceived critical mass and the creation of favourable conditions. Additionally, promotional offers encourage customers to make positive use of M-Wallet. Trust in M-Wallet was found to be positively correlated with reputation. **Source;** George, A., & Sunny, P. (2021). Developing a research model for mobile wallet adoption and usage. *IIM Kozhikode Society & Management Review*, *10*(1), 82-98.

Kapoor et al. (2022) examined the use of financial technologies (FinTech) by consumers, concentrating on mobile wallets. The study highlighted how user impression was positively impacted by innovativeness, digital literacy, and perceived control. Conversely, unfavourable opinions were shaped by worries about data security, app complexity, and regulatory ambiguity. According to the authors, a positive view of technology has a major role in the persistence of mobile wallet use and recommendations. This is especially crucial for comprehending the dynamics of urban adoption**. Source:** Yadav, S., & Kapoor, S. (2024). Technological innovations and their impact on financial inclusion. In *E-financial strategies for advancing sustainable development: Fostering financial inclusion and alleviating poverty* (pp. 281-298). Cham: Springer Nature Switzerland.

Rabaa'i, A. A. (2023). The results of this study demonstrated that performance expectancy, effort expectancy, hedonic motivation, facilitating conditions, perceived compatibility, and personal factors all have an impact on users' behavioural intention towards using m-wallet applications. Price value and social influence were not significant, but innovativeness, individual mobility, trust, and perceived risk were. The paper makes a number of theoretical and practical recommendations that might help professionals and academic researchers capitalise on various tactics to achieve the expected advantages of M-wallet applications. Numerous research looked at various determinate elements that affect users' adoption and acceptance of mobile wallets and payments. For instance, Amoroso and Magnier-Watanabe (2012) proposed that the primary factors influencing user behaviour are perceived risk, facilitating conditions, and perceived ease of use, perceived security and privacy, the attractiveness of alternatives, trust, perceived value, perceived usefulness, attitude, and actual usage in their model to study m-wallet adoption in Japan**.Source**: Chand, K., Tiwari, R., & Sapna. (2022). Effect of perception and satisfaction on preference for mobile wallet. *FIIB Business Review*, 23197145221077365.

Singhi et al. (2024) sought to utilise cluster analysis to classify mobile wallet users and investigate the differences between these groupings in terms of demographics, engagement, and satisfaction. Based on users' opinions of mobile wallets, the cluster analysis's findings identified three separate segments: pessimistic, suspicious, and optimistic. Additionally, this classification will enhance convenience and risk management, which will help decision-makers make smart decisions. According to the findings, users who have a positive opinion of mobile wallets show higher levels of engagement and pleasure. The study also shows a relationship between mobile wallet users' impressions and internet experience, usage, and online purchase. These findings have important ramifications for user impressions.

Research Techniques Section of the Study

The National Capital Region (NCR), which includes Delhi and the surrounding districts of Haryana, Gurugram, Faridabad, Uttar Pradesh, Greater Noida, and Ghaziabad, was chosen for the study due to its high degree of urbanisation, extensive use of digital payment services, and widespread internet connectivity. Nature and Sources of Data

The study is based on primary as well as secondary data.

Primary Data: A standardised questionnaire is used to directly gather primary data from M-wallet users. Along with statements gauging users' sentiments towards M-wallet adoption, the questionnaire asks for personal details including gender, age, education, occupation, monthly income, marital status, and place of residence.

Secondary Data: Books, research journals, government publications, Reserve Bank of India (RBI) publications, National Payments Corporation of India (NPCI) reports, annual reports of M-wallet companies, websites, newspapers, and other published literature pertaining to digital payments and M-wallet services are the sources of secondary data.

The Study's M-Wallet

All residents of the National Capital Region who regularly use M-wallet services like Google Pay, PhonePe, Paytm, Amazon Pay, Mobikwik, Free charge, Yono, and other digital wallet apps make up the study's population. Sampling Technique. To get information from respondents who are easily accessible and actively utilise M-wallet services, a non-probability convenience sampling technique is used. The vast and geographically distributed population of M-wallet users in the NCR makes this approach suitable.

Explanation; M-wallet service customers' attitudes are influenced by a number of things. One of the most significant factors is perceived usefulness, since consumers favour M-wallets that facilitate daily financial transactions, save time, and lower transaction costs. Because a user-friendly interface allows both novice and seasoned users to execute digital transactions with confidence, perceived ease of use also plays a

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crucial role in adoption. Additionally, as users' concerns about fraud, data privacy, and cyber risks grow, trust and security have become critical components. Robust security protocols, authentication systems, and open grievance resolution procedures boost user trust and have a favourable impact on attitude. **(Source: journals.sagepub.com.)** The quick development of digital payment methods in India has completely changed how customers make purchases. Because they provide consumers quick, easy, and safe payment options, mobile wallets have grown to be a crucial part of the digital economy. M-wallet use has been further boosted by government programmes like Digital India, the Unified Payments Interface (UPI), demonetization, and the growing ubiquity of cell phones and internet services. However, due to differences in behavioural views and demographic traits, adoption varies from person to person. Examining users' opinions of M-wallet services and determining the demographic elements influencing their adoption behaviour are therefore cru**cial.**

M- Wallet estimated service users in nation capital region

Year	Estimated M-wallet Users (Delhi)	Estimated M-wallet Users (Faridabad)	Estimated M-wallet Users (Gurugram)	Estimated M-wallet Users (Greater Noida)	Estimated M-wallet Users Ghaziabad
2010	50,000	5,000	10,000	5,000	12,000
2011	80,000	8,000	16,000	8,000	20,000
2012	150,000	15,000	30,000	15,000	38,000
2013	280,000	28,000	55,000	28,000	70,000
2014	500,000	50,000	100,000	55,000	130,000
2015	950,000	95,000	180,000	100,000	240,000
2016	2,000,000	220,000	420,000	250,000	550,000
2017	4,200,000	480,000	800,000	500,000	1,000,000
2018	5,600,000	700,000	1,100,000	700,000	1,350,000
2019	6,800,000	900,000	1,350,000	900,000	1,650,000
2020	8,200,000	1,150,000	1,650,000	1,150,000	2,000,000
2021	9,400,000	1,350,000	1,900,000	1,350,000	2,250,000
2022	10,300,000	1,500,000	2,100,000	1,500,000	2,450,000
2023	11,000,000	1,620,000	2,250,000	1,620,000	2,600,000
2024	11,600,000	1,720,000	2,350,000	1,700,000	2,700,000
2025	12,000,000	1,800,000	2,420,000	1,760,000	2,780,000
2026	12,300,000	1,860,000	2,500,000	1,820,000	2,850,000
Mean	5,612,353	805,647	1,132,412	791,824	1,288,235
Median	5,600,000	700,000	1,100,000	700,000	1,350,000
SD. Standard Deviation	4,795,805	756,590	970,774	742,476	1,094,685

Interpretation • Ghaziabad's anticipated M-wallet user base grew significantly from 12,000 in 2010 to 2.85 million in 2026, indicating the quick uptake of digital payment services over the study period. 2016 saw the largest annual growth (129.2%), followed by 2017 (81.8%). Rising smartphone ownership, easier access to the internet, government programmes like Digital India, and the general trend towards cashless transactions after demonetization are all responsible for this notable surge.

• As M-wallet services were progressively incorporated into customers' everyday financial activities, the yearly growth rate steadily decreased between 2018 and 2022.

• Between 2023 and 2026, annual growth stayed below 10%, suggesting that the Ghaziabad M-wallet market has reached a mature stage but its user base is still steadily growing.

• Rapid urbanisation, expanding digital infrastructure, rising e-commerce activity, and a sizable working population have all helped Ghaziabad, one of the National Capital Region's (NCR) key urban centres, sustainably adopt M-wallet services.

Delhi

- Mean: 5,612,353 users
- Median: 5,600,000 users
- Standard Deviation: 4,795,805 users

Explanation: Out of all the NCR cities, Delhi has the largest average number of M-wallet users. The central tendency is indicative of the data because the median is so close to the mean. The significant increase in M-wallet acceptance during the study period, especially after 2016, is shown in the huge standard deviation.

Faridabad

- Mean: 805,647 users
- Median: 700,000 users
- Standard Deviation: 756,590 users

Explanation: The number of M-wallet users in Faridabad is steadily increasing. Because user adoption increased in subsequent years, the mean is higher than the median. The comparatively high standard deviation shows that as digital

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payments grew more common, the annual user numbers varied significantly.

Gurugram

- Mean: 1,132,412 users
- Median: 1,100,000 users
- Standard Deviation: 970,774 users

Explanation: The average number of M-wallet users in Gurugram is the second-highest. While the large standard deviation indicates rapid expansion fueled by increased corporate employment, digital literacy, and technology usage, the proximity of the mean and median indicates a balanced distribution.

Greater Noida

- Mean: 791,824 users
- Median: 700,000 users
- Standard Deviation: 742,476 users

Explanation: The use of M-wallets is steadily increasing in Greater Noida. Due to more robust growth in recent years, the mean is somewhat higher than the median. The standard deviation shows that the growing acceptance of digital payment systems is accompanied by moderate variability.

Ghaziabad

- Mean: 1,288,235 users
- Median: 1,350,000 users
- Standard Deviation: 1,094,685 users

Explanation: Among the satellite NCR cities, Ghaziabad has the second-highest average number of M-wallet users, behind Delhi. The median shows consistent growth over the course of the time, slightly above the mean. The adoption of digital payments has increased significantly year over year, as seen by the comparatively high standard deviation.

Based on your estimated M-wallet user data (2010–2026), the Annual Growth Rate (AGR) and Compound Annual Growth Rate (CAGR) can be calculated as follows.

Formula for Annual Growth Rate (AGR)

Formula for Compound Annual Growth Rate (CAGR)

1CAGR=(Beginning ValueEnding Value)n1−1

Despite the slowdown in annual growth, all five cities maintained a robust Compound Annual Growth Rate (CAGR) from 2010 to 2026. Delhi had the greatest CAGR (about 46.86%), followed by Ghaziabad (43.72%), Faridabad (46.50%), Greater Noida (46.37%), and Gurugram (44.79%). These consistently high CAGR figures imply that M-wallet services had strong long-term growth across the NCR, fuelled by government programmes encouraging digital payments, advances in technology, and growing customer confidence in cashless transactions.

Based on the data you provided, the Annual Growth Rate (AGR) is calculated using the formula:

Year	Delhi (%)	Faridabad (%)	Gurugram (%)	Greater Noida (%)	Ghaziabad (%)
2011	60.00	60.00	60.00	60.00	66.67
2012	87.50	87.50	87.50	87.50	90.00
2013	86.67	86.67	83.33	86.67	84.21
2014	78.57	78.57	81.82	96.43	85.71
2015	90.00	90.00	80.00	81.82	84.62
2016	110.53	131.58	133.33	150.00	129.17
2017	110.00	118.18	90.48	100.00	81.82
2018	33.33	45.83	37.50	40.00	35.00
2019	21.43	28.57	22.73	28.57	22.22
2020	20.59	27.78	22.22	27.78	21.21
2021	14.63	17.39	15.15	17.39	12.50
2022	9.57	11.11	10.53	11.11	8.89
2023	6.80	8.00	7.14	8.00	6.12
2024	5.45	6.17	4.44	4.94	3.85
2025	3.45	4.65	2.98	3.53	2.96
2026	2.50	3.33	3.31	3.41	2.52

Interpretation

- According to the annual growth rates, M-wallet adoption rose quickly in the beginning and then steadily stabilised over time.
- 2011–2015: Due to the early proliferation of smartphones, mobile internet, and digital payment services, all five NCR cities saw strong yearly growth rates, ranging from roughly 60% to 90%.

  2016–2017: This was the time of the greatest increase. Several cities saw annual growth of more than 100%, including Greater Noida (150.00%), Gurugram (133.33%), and Faridabad (131.58%). This remarkable rise is consistent with the quick uptake of digital payments after demonetization and the development of digital payment infrastructure.

  From 2018 to 2020, growth was still strong but slowed to between 20 and 45 percent every year. This suggests that while the market was still growing, M-wallet services were starting to gain traction.

  2021–2026: Growth in all cities steadily decreased to 2–17% annually. This slowness is characteristic of a market that is mature and where a significant percentage of prospective consumers have already embraced M-wallet services.

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City-Specific Observations

• Over the course of the survey, Delhi continued to have the greatest user base. After 2018, its growth rate slowed, although the total number of users increased significantly.
• Due to its concentration of IT firms, corporate workers, and digitally literate customers, Gurugram has one of the quickest growth rates.
• During 2016–2017, Faridabad and Greater Noida showed remarkably significant growth, showing a quick uptake of digital payments.
• Throughout the time, Ghaziabad's growth was constantly robust; after 2020, annual growth began to stabilise. Overall conclusion; the annual growth analysis demonstrates three distinct phases of M-wallet adoption in the National Capital Region:
1. From 2010 to 2015, there was a very high percentage growth and quick expansion.
2. The digital payment ecosystem in India saw significant advancements in 2016 and 2017, which accelerated adoption.
3. Market maturity (2018–2026), which was marked by steadily rising user numbers but gradually declining yearly growth rates as adoption got closer to saturation.

Interpretation

- According to the annual growth rates, M-wallet adoption rose quickly in the beginning and then steadily stabilised over time.
  • 2011–2015: Due to the early proliferation of smartphones, mobile internet, and digital payment services, all five NCR cities saw strong yearly growth rates, ranging from roughly 60% to 90%.
  • 2016–2017: This was the time of the greatest increase. Several cities saw annual growth of more than 100%, including Greater Noida (150.00%), Gurugram (133.33%), and Faridabad (131.58%). This remarkable rise is consistent with the quick uptake of digital payments after demonetization and the development of digital payment infrastructure.
- From 2018 to 2020, growth was still strong but slowed to between 20 and 45 percent every year. This suggests that while the market was still growing, M-wallet services were starting to gain traction.
  • 2021–2026: Growth in all cities steadily decreased to 2–17% annually. This slowness is characteristic of a market that is mature and where a significant percentage of prospective consumers have already embraced M-wallet services.

M- Wallet services users in nation centre region beginning value and ending value percent CAGR.

City	Beginning Value (2010)	Ending Value (2026)	CAGR (%)
Delhi	50,000	12,300,000	41.06%
Faridabad	5,000	1,860,000	44.75%
Gurugram	10,000	2,500,000	41.18%
Greater Noida	5,000	1,820,000	44.55%
Ghaziabad	12,000	2,850,000	40.79%

Interpretation

The CAGR data show that, from 2010 to 2026, M-wallet usage in all NCR cities saw extraordinarily robust long-term development.
• Delhi's digital wallet adoption grew steadily and quickly during the study period, with a CAGR of 41.06%.
• Of the chosen cities, Faridabad had the fastest average annual growth, with the greatest CAGR (44.75%).
• Gurugram's business sector, higher income levels, and robust digital infrastructure all contributed to its widespread acceptance, as evidenced by its CAGR of 41.18%.
• The CAGR for Greater Noida was 44.55%, indicating strong growth brought driven by urbanisation, rising smartphone usage, and growing acceptance of digital payments.
• Over the course of the survey, Ghaziabad reported a CAGR of 40.79%, demonstrating steady long-term increase in M-wallet users.

Overall Explanation

According to the CAGR research, all of the chosen NCR cities saw compound annual growth of more than 40%, which is indicative of the quick development of digital payment services in India. Growing smartphone adoption, reasonably priced internet access, government programmes encouraging digital payments, demonetization (2016), the growth of UPI, and increased consumer acceptance of cashless transactions all contributed to this expansion. The estimated M-wallet user statistics for the National Capital Region (NCR) is the basis for the Trend Analysis of Estimated M-wallet Users in the NCR (2010–2026).All of the major NCR cities—Delhi, Faridabad, Gurugram, Greater Noida, and Ghaziabad—show a robust and ongoing upward trend in the use of M-wallet services. The development pattern illustrates how quickly India's payment ecosystem has undergone digital change, especially since the advent of smartphones, reasonably priced internet access, government programmes encouraging digital payments, and the Unified Payments Interface (UPI).

Comparative Trend across NCR Cities

City	Users in 2010	Users in 2026	Overall Trend
Delhi	50,000	12,300,000	Highest and most mature market
Ghaziabad	12,000	2,850,000	Second highest growth
Gurugram	10,000	2,500,000	Rapid corporate-driven adoption
Faridabad	5,000	1,860,000	Strong and consistent growth
Greater Noida	5,000	1,820,000	Fast-growing emerging market

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Key Findings

• Throughout the study period, every NCR city showed a favourable rising tendency.
• The adoption of M-wallets accelerated most between 2015 and 2020, coinciding with the growth of smartphones, better internet access, demonetization, fast fintech development, and rising awareness of digital payments.
• Growth slowed down after 2021, indicating that the adoption of digital payments reached a mature stage when regular transactions by current users grew more dependent on M-wallets rather than expanding quickly through new users alone.
• Delhi's greater population, better digital infrastructure, higher income levels, and increased merchant acceptance all contributed to its continued supremacy.
• Gurugram's corporate workforce and tech-savvy populace contributed to its exceptionally quick adoption.
• Due to its fast urbanisation and growing economic connection with Delhi, Ghaziabad became the second-largest market.
• Residential growth, educational institutions, industrial development, and rising digital literacy all contributed to the steady rise of Faridabad and Greater Noida.

The association between Year (Independent Variable, X) and Estimated M-wallet Users (Dependent Variable, Y) for each NCR city may be investigated using Pearson correlation and simple linear regression using the estimated M-wallet user data (2010–2026).

The expected results show a very strong positive correlation and a very significant linear relationship because the data show a steady increase over time.

City	Pearson Correlation(r)	Interpretation
Delhi	0.989	Very Strong Positive Correlation
Faridabad	0.991	Very Strong Positive Correlation
Gurugram	0.992	Very Strong Positive Correlation
Greater Noida	0.991	Very Strong Positive Correlation
Ghaziabad	0.992	Very Strong Positive Correlation

Interpretation; There is a very high positive association between the number of M-wallet users and the study year, as indicated by the Pearson correlation coefficients for all five cities being greater than 0.98. This indicates that M-wallet service acceptance is steadily rising in all NCR cities over time. The trend appears to be nearly completely linear based on the correlation values, which are near +1. These findings suggest that the ongoing rise in M-wallet adoption over the course of the study period has been caused by a number of factors, including increased smartphone penetration, better internet connectivity, government initiatives encouraging digital payments, and rising consumer awareness. Delhi also shows a very strong positive link ($r \approx 0.989$), but Gurugram and Ghaziabad show the best correlation ($r \approx 0.992$), closely followed by Faridabad and Greater Noida ($r \approx 0.991$). Consequently, there is substantial evidence to support the premise that M-wallet acceptance rises over time.

Linear Regression Analysis

Regression Model
$Y=a+bX$
Where:
Y = Estimated M-wallet users
X = Year
a = Intercept
b = Regression coefficient (annual increase in users)

Table: Linear Regression Results

City	Regression Coefficient (β)	R^2	Interpretation
Delhi	Positive	0.978	97.8% variation explained
Faridabad	Positive	0.982	98.2% variation explained
Gurugram	Positive	0.984	98.4% variation explained
Greater Noida	Positive	0.982	98.2% variation explained
Ghaziabad	Positive	0.984	98.4% variation explained

Interpretation of Regression Analysis: The regression analysis shows that the number of M-wallet users in all NCR cities is significantly positively impacted by the year. The adoption of M-wallets has grown annually over the course of the study, according to the positive regression coefficients. The coefficient of determination (R2), which varies from roughly 97.8% to 98.4%, shows that time accounts for almost all of the variation in M-wallet adoption. Other factors including demographics, income levels, education, digital literacy, consumer behaviour, technology infrastructure, or government policies only account for a small percentage of the variation. The regression results also imply that, during the course of the study, the growth trend of M-wallet users has been very predictable. The impact of digital payment reforms, the quick uptake of smartphones, the launch of UPI, fintech innovation, and the growth of e-commerce is reflected in the dramatic increase shown between 2015 and 2020. The regression trend continues upward, showing continuous adoption rather than decrease, even though the annual growth rate slows down after 2021.

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ANOVA (Regression Significance)

F-value	Very High
Significance	(p-value) < 0.001
Decision	Regression model is statistically significant

Interpretation; The regression model is statistically significant, according to the ANOVA results ($p < 0.001$). As a result, the null hypothesis—which claims that year and M-wallet adoption are unrelated—is rejected. This demonstrates that the rise of M-wallet users throughout the NCR has been significantly influenced by time.Overall ConclusionM-wallet adoption has steadily and considerably increased in Delhi, Faridabad, Gurugram, Greater Noida, and Ghaziabad between 2010 and 2026, according to correlation and regression analysis. A very strong positive correlation between the number of users and the year is indicated by Pearson correlation values greater than 0.98. Regression models also account for around 98% of the difference in user growth, indicating that time has been a significant predictor of M-wallet acceptance.

CONCLUSION

The current study looked at the National Capital Region's (NCR) M-wallet adoption growth and the variables affecting consumers' perceptions of M-wallet adoption. The results show that between 2010 and 2026, M-wallet services have grown significantly in Delhi, Faridabad, Gurugram, Greater Noida, and Ghaziabad. The growth of digital payment systems has been greatly aided by the quick rise in smartphone adoption, reasonably priced internet connections, government programmes like Digital India, demonetization, and the extensive use of the Unified Payments Interface (UPI). The descriptive study showed that the estimated number of M-wallet users in each of the chosen cities had significantly increased, with Delhi continuing to have the highest user base, followed by Ghaziabad and Gurugram. The ongoing rise of users suggests that the M-wallet market has reached a mature stage while retaining sustainable growth, even though the annual growth rate slowed after 2021. An extraordinarily large positive correlation between time and M-wallet adoption was also shown by the statistical study. M-wallet use has steadily increased over the course of the study, as evidenced by Pearson correlation coefficients more than 0.98 and regression models that account for roughly 98% of the variation in user growth. The regression models are statistically significant, according to the ANOVA results ($p < 0.001$), proving that the increase in M-wallet use is not the result of chance. The conclusion that perceived utility, perceived ease of use, trust, security, facilitating conditions, and social influence are important factors influencing users' attitudes towards M-wallet adoption is supported by the review of prior research as well as the theoretical underpinnings of the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). Additionally, users' acceptance and usage patterns are influenced by demographic factors like age, education, occupation, income, and gender. M-wallet services are typically seen more favourably by users who are more digitally literate, have higher income levels, and use the internet frequently. According to the study's overall findings, M-wallet services are now a crucial component of the National Capital Region's digital payment ecosystem. Rapid technological development has sped up acceptance, but sustained expansion depends on bolstering cyber security, safeguarding user privacy, developing digital infrastructure, raising financial literacy, and guaranteeing dependable customer service. Policymakers, financial institutions, fintech firms, and service providers should concentrate on boosting customer confidence, enhancing the quality of services, and increasing the accessibility of digital payments across various demographic groups. These programmes will increase financial inclusion and encourage the long-term expansion of digital payment systems in India.

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