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A Study on The Impact of Electronic Payment System on Financial Inclusion in Medchal

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Abstract: This research investigates the effect of electronic payment systems (EPS) on financial inclusion within Medchal, Telangana. Employing a structured questionnaire for 105 locals, the study recorded demographic information, mobile internet facility, EPS usage patterns, reasons for transactions, ease of use, and inclusion feelings. Descriptive analyses revealed almost-universal bank account holding (96.2%) and mobile internet connection (96.2%), and 94.3% of the respondents used EPS regularly—mostly UPI (89.5%)—and 77.1% made daily digital payments. Although 82.9% confirmed that EPS made financial transactions easy and 94.3% felt included in the organized financial system, major hindrances still existed: network unreliability (64.8%), apprehension about fraud (51.4%), and low digital literacy (45.7%). Interestingly, 77.2% of users needed help for making transactions. Regression analysis found that assistance need was the only significant predictor of the perception of inclusion ($p = 0.022$), while education and access to mobile internet were not statistically significant. ANOVA results showed no significant difference in perceptions of inclusion between demographic groups ($p = 0.839$). The results emphasize the need for a twofold strategy: augmenting digital infrastructure and simplifying interfaces to consumers, coupled with localized support and literacy programs, to achieve equitable and sustainable financial inclusion using EPS in semi-urban Indian settings.

Keywords: electronic payment systems, financial inclusion, digital literacy, mobile internet access, UPI, support mechanisms.

I. INTRODUCTION

The blistering evolution of digital technology and mobile connection has also revolutionized the financial environment of the world, changing the way people do their transactions, save and borrow money, and operate finances. The most outstanding of such developments has been the growth of Electronic Payment Systems (EPS) which have turned out to be the key drivers of financial inclusion particularly in the developing economies like India. With the migration of financial services to technology architecture rather than the physical manifestation of the services, the availability, convenience and cost of the services have also multiplied by hundreds of times.

The push towards the cashless system in India by the government and the encouragement of such projects as Digital India, Jan Dhan Yojana, Unified Payments Interface (UPI), Aadhaar-enabled Payment System (AePS), and BHIM have accelerated the process of the transformation to the electronic payment system. Beyond simply changing how transactions are being carried out, these systems are also becoming a spearhead towards financial inclusion, a state where people, as well as corporations, and even those with limited means of socioeconomic means have access to affordable and proper financial services.

Financial inclusion refers to the act of availing the right financial products and services to the individuals and businesses, the various concerning groups such as weaker sections and low income groups in a fair and reasonable cost and a transparent manner. Financial inclusion includes a wide set of services that include savings, credit, insurance, payments and remittance services. Despite the striking advancement, India still faces the challenge of accessing full scale financial inclusion especially the rural and semi urban periphery areas such as Medchal.

Electronic Payment Systems in India Electronic payment systems involve a wide range of electronic methods of transactions which includes debit card and credit card, internet banking, mobile banking, e-wallet payment system (Paytm, Google Pay, PhonePe), Aadhaar payment, and real-time gross settlement system. The systems reduce the use of cash, are efficient, increase security and transparency of financial transactions.

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The development and implementation of EPS in India would not have been made possible without major contributions by regulators like the Reserve Bank of India (RBI) and the National Payments Corporation of India (NPCI). Particularly, UPI that is operational since 2016 has revolutionized the digital payment system because instant money transfer is possible through mobile phones at a minimal cost. There has been explosive growth in the value and volume of tens of transactions in UPI just as the consumers draw more and more towards using digital modes of payment. However, the EPS adoption is not even across the whole of India and such districts like Medchal which is a fast growing district of the state of Telangana has their own unique dynamics which need to be investigated on a local scale. The city of Medchal that has both middle urban and peri-urban residents is an important case study to check the relationship between digital payments adoption and financial inclusion. Financial Inclusion: Advancements and the issues of financial inclusion in India have seen progress in the last few years. The world bank Global Findex database (2021) showed that the number of Indian adults with a bank account has now shot up to over 80 percent, much of it due to the Pradhan Mantri Jan Dhan Yojana (PMJDY). Nonetheless, financial inclusion encompasses different elements other than mere account ownership. Most accounts are inactive and a large part of the population has no access to a credit, insurance or any digital payment tool.

In this sense, EPS can serve as the intermediary between the formal financial institutions and the marginalized individuals. When well implemented, they are capable of overcoming traditional limits by offering cheaply available, convenient and accessible financial services, where properly used, where prevailing. But the potency of EPS will be maximized only when the people are interested and able to make better use of them. Relevance of Study Area: Medchal located on the fringe of Hyderabad in Telangana is a semi urban district that has well blended urban hustle and rural life.

Medchal has been under the Hyderabad Metropolitan Development Authority (HMDA) and hence its development rate in facets of infrastructural development, populous and business activity has been quite at a rapid pace. However, it is characteristic of most semi-urban areas in India: Medchal is affected by the problem of inclusive economic growth, and in particular over such areas as equitable access to financial services. Banking infrastructure in Medchal has been developed through efforts of banking industry and government itself by making available more and more branches, setting up ATM machines and affiliating banking correspondents. As the internet penetration and smart phone penetration increases, Medchal is also undergoing the change of digital payment system. Nevertheless, a lot of gap remains concerning the numbers of EPS provided and the actual consumption, especially by the disadvantaged classes and the poorer sections. This study is therefore imperative in understanding how far EPS are going in promoting financial inclusion in Medchal and whether or not its implementation is well replacing or supplementing the existent payment systems. Statement of the Problem Although the digital transformation of financial services is advancing as much as it is, the impacts of the EPS on financial inclusion remain inequitably produced. In places like Medchal where there might be wide variation in the digital infrastructure availability and the degree of digital literacy, it is important to look into whether the EPS truly allows people to gain any financially empowering use or whether they constitute an additional layer of exclusion to people who are already marginalized. Further, in the plunge of electronic transactions during and after the period of the COVID-19 pandemic, the issue of the sustainability, accessibility and inclusiveness of the given phenomenon is not legally discussed. Are the Medchal citizen members ready and equipped sufficiently to go all the way EPS? Are the electronic payments systems complement to the existing payment systems or a replacement to them? Are such tools actually causing a real financial inclusion or are they only benefiting those users which are digitally conscious?

The Significance of the Study: The current study has academic and practical value. It contributes to the body of knowledge on digital financial inclusion in India and specific attention is given to an aspect of semi-urban district.
It completes the gap in that literature on digital finance that is urban-biased and small-town experience. In practice, the findings can inform better product designs by policymakers, banks, and fintechs', which are more effective and universal. In other words, campaigns in terms of financial education could be reinforced, in case the results of the research stage show that the biggest obstacle is the absence of awarenessFurthermore, the relationships between traditional and electronic payment systems could be used to craft balanced financial strategies that are not based on locking non-digital consumers out and promoting expansion in the digital market by the same token.

II. REVIEW OF LITERATURE

Kempson, Atkinson & Pilley Kempson (2005) The construction of access to appropriate forms of financial services and products is referred to as financial inclusion. Their study highlighted that the exclusion is often the byproduct of poverty, distrust, and the lack of banking infrastructure that should be used in future Studies on digital financial.

Chakrabarty, K.C. (2008) stressed the activities of the RBI in the promotion of financial inclusion by altering policy like introduction of no-offence bank accounts and easing of KYC application. He was aware of the capabilities of

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technology but placed emphasis that digital infrastructures were still not developed adequately in rural regions.

Rangarajan Committee Report (2011) The Dr Rangarajan-led Committee on Financial Sector Reforms noted that financial solutions using technology like electronic payment and mobile payment were areas that could lead to inclusive growth, provided regulatory and literacy challenge could be addressed.

Demirgüç-Kunt & Klapper 2012) In their Global Findex report, they showed how people accessed financial services across the globe and found that only 35 percent of adult Indians owned a formal bank account. The paper has shown that the digital channels can play a role in closing the gap.

Kapoor, (2013) S. Kapoor conducted empirical study to India on the digital banking and said that the digital services are increasingly becoming easy to access but the low digital literacy and technology mistrust retard their use.

Singh & Kaur(2014) Singh and Kaur evaluated the success of internet banking services in semi-urban India. In their opinion, the most important factors that provided development of EPS were convenience and cost savings, whereas habit of people toward cash was similar to usual one.

Reserve Bank of India (2015) The Financial inclusion Report (2015) issued by Reserve Bank of India RBI encouraged adoption of Aadhaar-based identification into digital KYC and EPS. It highlighted digital technologies as the means of bringing formal financial services to the final mile.

Sahu & Singh(2016) They said they discovered that digital wallets and mobile banking was participating in financial awareness and enhancing financial literacy to the rural youth and self-employed people in India suggesting the first indications of digital financial inclusion.

Alekhya, P., &Saritha, B (2016) Mutual funds are expected to become one of the key instruments for wealth creation and savings in the coming years, offering positive returns. Over the past decade, the mutual fund industry in India has witnessed significant growth and success. Financial innovations, often driven by intermediaries, play a vital role in safeguarding investors' interests and enhancing market efficiency. Mutual funds have emerged as crucial financial intermediaries, especially in India, where retail investors account for 97.7% of the 4.70 crore investor accounts. They not only mitigate downside market risks through diversification but also allow small investors to benefit from upward market movements. Additionally, mutual funds contribute significantly to capital inflows in financial markets. This paper analyzes the growth trends of the mutual fund industry in India.

Gupta & Agarwal (2017) Gupta & Agarwal Gupta and Agarwal analysed the increase in the use of EPS after demonetization. They concluded that initiatives like demonetization and the introduction of UPI accelerated the volume of digital transactions astronomically albeit on a short term scale.

Rani & Kaur(2018) They study the role that mobile banking plays in financial inclusion. The results showed that mobile penetration improved access although usage was highly dependent on gender and education.

Singh, T. (2019) Singh carried out research related to the proportion of traditional payment tools and digital payment tools applied in urban and semi-urban areas. The study cites that the number of EPS was increasing whereas cash was still king when it comes to dealing with old people.

Raveendranath, R., Reddy, R. S., & Ahammad, D. (2019). Individuals save and invest primarily to generate additional income and secure their future financial needs. Every investment avenue carries a certain level of return and risk, and investment decisions are typically based on the expected rate of return. However, actual returns may vary, making risk a critical consideration for investors. Risk tolerance varies from person to person and is influenced by multiple factors. This study aims to examine how demographic factors affect the risk tolerance levels of investors in Kurnool city. The findings indicate that age, education, occupation, income, and place of residence significantly influence risk tolerance, whereas gender and marital status do not.

Sultana & Kumar (2020) As the COVID-19 pandemic engulfed the world, the researchers found that the fear of the virus spreading increased the rates of digital payments. There was an extensive embrace of UPI, contactless cards and payments which used QR-codes even in the rural parts of India.

World Bank Findex Report (2020) The survey indicates a fundamental change in the number of Indian residents owning financial accounts owing to the presence of digital technology. However, active use was still less compared to the ownership of accounts which are representative of access-use mismatch.

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Mehta & Sharma (2021) They studied the form of digital financial services in India and highlighted UPI and its radical nature. The results of their findings emphasized EPS reduced the cost of transactions and time significantly.

Ahammad, D., & Keerthi, M. K. (2021) The emergence of new digital payment technologies has introduced both opportunities and challenges across various sectors. This study aims to examine the key factors influencing the adoption of e-payment technologies, with a focus on urban centers like Hyderabad. Drawing from prior research, a comprehensive theoretical framework was developed, incorporating factors such as perceived usefulness, trust, personal innovativeness, ease of use, and risk. The study's findings reveal that while all identified factors significantly influence e-payment adoption in Hyderabad, perceived usefulness plays a comparatively less critical role than trust, ease of use, innovativeness, and risk perception.

Kumar, A. (2021) Kumar, in his research among Tier-2 and Tier-3 cities, allocated peer influence and mobile availability as the decisive factors - the utilization of digital payments.

Sharma & Reddy(2022) The article they had done focused on the relationship that exists between digital payments and financial behaving of small traders. The results showed an increased tendency to save and the reduction of the dependence on informal lending following the EPS adoption.

Roy & Ghosh(2022) The authors have given an argument on the issue of interoperability in digital wallets. The authors argue that lack of standardization is affecting the user experience and financial inclusion in the lower digitally equipped districts.

Jain & Bansal(2023) In their work, the authors undertook some research to investigate the phenomenon of digital financial inclusion through the used FinTech platforms. The findings showed that access gaps were closed through FinTechs, but awareness and security were still large barriers.

RBI Digital Payments Report(2023) RBI focused on the unprecedented level of growth in digital payments through the use of UPI, IMPS, and AePS. The other focus of the report was that of facilitating expansion in rural and semi urban locals through incentives and awareness.he RBI drew attention to all-time high growth in digital payments via UPI, IMPS, and AePS. The report also emphasized deepening usage in rural and semi-urban areas by way of incentives and awareness.

2.1 Objectives of the study:

1. To study the influence of Electronic payment system on financial inclusion.
2. To assess the relationship between electronic payment system and the traditional payment system

2.2 Hypothesis of the study:

H_0: Electronic payment system services do not have a significant impact on financial inclusion.

H_1: Electronic payment system services have a significant positive impact on financial inclusion.

III. RESEARCH METHODOLOGY

3.1 Research design

The current research uses a descriptive and analytical research design to explore the association between Electronic Payment Systems (EPS) and financial inclusion in the Medchal area. The descriptive design is adopted to gather information from respondents regarding their use patterns, preferences, and issues concerning EPS. Analytical techniques are also used to analyze the relationship between socio- demographic factors and digital payment use. The framework facilitates close examination of how EPS affects access to and utilization of formal financial services in the research area.

3.2 Area of investigation

The study's geographical area of interest is Medchal district in the Telangana state, India. Medchal is a mix of urban, semi-urban, and rural areas with mixed socio- economic groups, where the levels of financial inclusion and EPS usage can be studied suitably. The district houses various income groups, occupations, and education levels, enabling the study to obtain various insights at different income levels, occupations, and educational levels

3.3 Sampling technique and sample size

The research uses a stratified random sampling method. The population is stratified in terms of important demographic indicators like age, gender, income, occupation, and urban-rural residence. The respondents are then randomly drawn

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from every stratum to provide balanced representation.

3.4 Sample Size:

105 respondents were chosen for the study. The sample size is deemed adequate to make sense while being manageable and time-efficient for data collection and analysis.

3.5 Statistical tools

Regression analysis is a statistical method applied to analyze the relationship between an independent variable and one or more independent variables. It is utilized to determine how the average value of the dependent variable varies when any one of the independent variables is changed while the others are kept constant.

ANOVA (Analysis of Variance) is an analysis method that is employed to find out if there are any significant differences between the means of three or more independent groups. It determines whether the variation in group means is larger than could be expected by chance, and helps researchers to understand how a categorical independent variable affects a continuous dependent variable.

3.5 Data analysis techniques

Quantitative data (from questionnaires) will be statistically compared using percentage analysis, mean scores, and potentially Regression or Anova tests to compare public and private sector responses. Qualitative data, collected through use of interviews and open questions, will be theme analyzed to uncover patterns, issues, and strategic implications.

IV. DATA ANALYSIS

Objective 1: Regression

Table 1: Regression analysis Results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.297[a]	0.088	0.061	0.227

a. Predictors: (Constant), 18.Do you require assistance to complete digital transactions? 4. Education level, 8. Do you have access to the internet on a mobile phone?

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.498	3	0.166	3.219	.026[b]
	Residual	5.156	100	0.052		
	Total	5.654	103			

a. Dependent Variable: 16. Do you feel more included in the formal financial system because of digital payments?

b. Predictors: (Constant), 18.Do you require assistance to complete digital transactions? 4. Education level, 8. Do you have access to the internet on a mobile phone?

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Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.608	0.173		3.507	0.001
	Education level	0.034	0.028	0.119	1.229	0.222
	Do you have access to the internet on a mobile phone	0.212	0.118	0.175	1.798	0.075
	Do you require assistance to complete digital transactions	0.066	0.029	0.222	2.323	0.022
a. Dependent Variable: 16. Do you feel more included in the formal financial system because of digital payments?						

Source: Compiled data

To examine the effect of electronic payment system services (education level, access to a computer/internet, and requirement for help) on financial inclusion – as measured by the respondents' sense of being more included in the formal financial system due to digital payments. Model Summary a low to moderate correlation between the predictors and the dependent variable is shown by the R-value of 0.297.The R Square of 0.088 means that about 8.8% of variance in financial inclusion (being included in the financial world) is accounted for by the predictors together: education level, internet availability, and help needed. Though the model is accounting for a fairly limited degree of variation, it is statistically significant, as is evident from the ANOVA table. ANOVA (Analysis of Variance)The regression model is statistically significant at the 5% level, as indicated by the-statistic = 3.219 and the p-value = 0.026.This suggests that financial inclusion is significantly impacted by the factors taken together. Coefficients Table The constant term of 0.608 reflects the base level of financial inclusion when all predictors are set to zero. Education level is not a statistically significant determinant (p = 0.222), indicating that education in itself does not have a strong effect on the sense of inclusion via digital payments. Mobile phone access to the internet has a positive effect (B = 0.212) but is statistically marginally significant (p = 0.075)—providing evidence of but not conclusive evidence for an impact. Need for help in online transactions is a significant predictor statistically (p = 0.022). The positive coefficient (B = 0.066) indicates that those who need help might still perceive themselves as included, possibly because of effective support networks or peer assistance.

Objective 2: ANOVA

ANOVA					
Do you feel more included in the formal financial system because of digital payments					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.080	4	0.020	0.356	0.839
Within Groups	5.574	99	0.056		
Total	5.654	103			

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ANOVA Effect Sizes[a,b]				
		Point Estimate	95% Confidence Interval	
			Lower	Upper
Do you feel more included in the formal financial system because of Digital payments	Eta-squared	0.014	0.000	0.044
	Epsilon- squared	-0.026	-0.040	0.005
	Omega-squared Fixed-effect	-0.025	-0.040	0.005
	Omega-squared Random-effect	-0.006	-0.010	0.001
a. Eta-squared and Epsilon-squared are estimated based on the fixed-effect model.				
b. Negative but less biased estimates are retained, not rounded to zero.				

Source: Compiled data

An Analysis of Variance (ANOVA) was conducted to determine if statistically significant differences in understanding financial inclusion as a result of digital payments exist among various demographic segments. The ANOVA provided an F- value of 0.356 and a related p-value (Sig.) value of 0.839. As the p-value is significantly greater than the standard alpha level of 0.05, the outcome is not statistically significant. This suggests that no significant variation in the sense of financial inclusion through digital payments exists between the compared groups.

In addition, estimates of effect sizes assist in determining the practical relevance of the differences observed. The eta-squared estimate was 0.014, meaning that only 1.4% of total variance in financial inclusion is explained by group differences—this is a very small effect. The rest of the measures—epsilon-squared and omega-squared (fixed- and random-effects)—are also negligible or negative. Although these negative values are kept for statistical purposes, they indicate that any differences seen are not only small but might even be sampling variability artifacts instead of actual effects.

Combined, these findings indicate that electronic payments, as ubiquitous as they may be, fail to substantively shift consumers' sense of being included in the formal financial environment according to the grouping variable explored here (presumably age, sex, or some other demographic).

V. FINDINGS, SUGGESTIONS & CONCLUSION

5.1 Findings of the study

1. Another huge proportion of respondents (94.3%) acknowledged that they have used 1 or more types of electronic payments such as UPI, mobile wallets, or debit card since the acceptance of digital payment in Medchal is at the mainstream level.
2. Among the different forms of EPS, UPI emerged as the most popular platform as 89.5 percent of its users used it regularly; hence its excellence in terms of convenience of use, speed, and compatibility.
3. As demonstrated by a significant proportion (77.1) of the respondents, the use of electronic payment systems in the daily life has been highly inculcated into habitual money-related activities.
4. 96.2 percent of the respondents reported that they have an access to the internet through a mobile phone, which is a propitious backdrop against the utilization of EPS.
5. A high percentage (96.2) of the respondents that were included in the poll possessed a bank account, which was a pointer to good base financial inclusion and readiness to utilize EPS.
6. The usage of EPS was wide in education-related payments (43.8%), business transactions (51.4%), utility payments (63.8%), and food-buying (76.2%), thus pointing to the versatility of the EPS in financial activities.
7. There was an agreement or strong agreement that EPS had eased the financial transactions (82.9 percent) in terms of positive customer experience and increased convenience.
8. 94.3 percent of the respondents believed that they are more a part of the formal financial system through digital

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payments, meaning that EPS plays a very strong role in finding inclusion in the perception of people.

9. The respondents stated that they had to seek help either always or occasionally to make digital transactions 77.2 percent of the time as an indicator of a sustained lack of digital self-efficacy.
10. With 45.7 percent of the respondents citing a barrier of duration literacy in the digital world, there is also potential in user training in ensuring the greatest benefits of the EPS.
11. The most frequent obstacle to the implementation of EPS was network-related issues (64.8%), characterizing the infrastructural weaknesses capable of discouraging constant access.
12. The fear of fraud has been cited by more than half of the participants (51.4%) in one respect, showing enduring concerns in the online financial sphere and staying safe or being trusted.
13. The regression analysis indicated that factors connected to EPS accounted to perceived financial inclusion variance of 8.8 percent. Although the sample was modest, the model was significant ($p = 0.026$) justifying the use of the predictors in question.
14. Among the predictors, none met the criteria of significant difference except one factor having a significant difference at $p = 0.022$, which is the need to have support to complete the finalization of digital transactions, which is an indicator that support structures are instrumental towards financial inclusion.
15. There was no meaningful difference among demographic characteristics in terms of perceived financial inclusion based on the ANOVA test ($p = 0.839$), and, therefore, demographic characteristics such as the age or gender did not represent a significant influence on the inclusion outcomes in this sample.

5.2 Suggestions of the study

1. Improve Digital Literacy Initiatives In response to the almost 46 percent of users who name limited digital literacy as a constraint, local government agencies and banks need to jointly provide focused digital-skills training courses. These initiatives should be meaningfully localized—utilizing local lingo and hands-on training—to increase user confidence in using payment apps and platforms.
2. Improve Mobile Network Infrastructure. Since almost two-thirds of the respondents face network problems while trying digital transactions, investment in good and high-speed mobile coverage is essential. Public– private partnerships may be established to provide 4G/5G connectivity to semi-urban and peri-urban areas, thus minimising transaction failures and related frustrations.
3. Simplify User Interfaces and Workflows "Complicated interfaces" were mentioned as a disincentive by one-third of respondents. Bank software teams and fintech developers must implement user-centred design principles—large icons, minimal text, straightforward transaction pathways—to enable even non-tech-savvy consumers to make payments on their own.
4. Set Up Local Digital Support Centres. With more than 77 percent of users needing assistance of some sort, community-based support centres can offer on-demand assistance. These centres—possibly manned by trained banking correspondents or "digital champions"—ought to provide one-to-one assistance with procedures like UPI registration, QR-code scanning, and error-resolution.
5. Put in place Strong Fraud-Prevention Mechanisms and Awareness Campaigns As more than half of respondents fear fraud, banks and payment platforms must deploy real-time fraud alerts, two-factor authentication, and transaction-limit notifications. Concurrently, sustained public-service messaging can educate users about safe practices (e.g., never sharing OTPs) and built-in security features.
6. Promote Inclusive Financial Products for Marginalized Segments. The small but important remaining minority not to have taken up EPS (5–9 percent) could low-income, older, or disabled individuals. Targeted products—e.g., zero-balance wallet accounts with facilitated enrolment—can be used to incentivize take up by these groups and leave no one behind.
7. Take advantage of Peer-Education and Referral Incentives Peer influence was found to initiate adoption in neighbouring areas. An organized referral program—where current customers educate a friend or relative to make payments digitally as a reward for small cash backs—can hasten diffusion of digital payment behavior within social networks.
8. Embed Feedback Loops in Service Enhancement. There should be regular surveys and focus-group meetings institutionalized to pick up emerging user issues. These feedback loops can inform incremental improvements to technology (app versions) as well as support mechanisms (helpline scripts, training modules).

5.3 Conclusion of study

This research has shown that electronic payment systems (EPS) are deeply entrenched in the financial culture of Medchal's residents. Almost universal ownership of a bank account (96.2%), high penetration of mobile internet coverage (96.2%), and high levels of EPS usage (94.3%) confirm a strong infrastructural and behavioral underpinning for digital payments. Users predominantly state that EPS make their everyday financial behavior easier and contribute to a greater sense of belonging in the formal banking system.

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In spite of this integration, pervasive challenges—chief among them network instability, security issues, and an acute reliance on outside help—moderate the trajectory toward autonomous digital engagement. Regression analysis named the requirement for help as the only predictor of perceived inclusion, highlighting the importance of user support and digital self-efficacy. Additionally, ANOVA findings showed no statistical differences in perceived inclusion across demographic categories, indicating that these obstacles cut across age, gender, or educational levels.

Given these results, a twofold strategy is called for. On the one hand, upgrading technical infrastructure and streamlining user interfaces will diminish transactional friction and foster trust. On the other hand, institutionalizing locally based support mechanisms—like community digital assistance centers and customized literacy programs—will enable users to go it alone with EPS. By overcoming both the pragmatic and perceptual hurdles revealed in this study, stakeholders can capitalize on EPS to attain equitable and sustainable financial inclusion in Medchal and similar semi-urban settings. Furthermore, the evidence indicates that policy interventions need to be both multi-dimensional and subtle. For example, although the coverage of 4G/5G networks will overcome the technological hurdle, one must also roll out vernacular, visual user manuals and in-app tutorials to counteract language and literacy barriers.

Similarly, cooperation between banks, fintech companies, and local self-help groups can encourage a viable ecosystem of "digital ambassadors" that coach less confident consumers and offer real-time troubleshooting. Integrating EPS kiosks or mini-bank correspondents in village markets and community centers would establish clear, trusted first points of contact for first-time users.

Lastly, strict monitoring and evaluation mechanisms must be put in place to measure important performance indicators like rates of transaction success, customer satisfaction ratings, and changes in patterns of informal borrowing. These data-based insights will facilitate adaptive policy design and incremental upgrading of EPS services. In total, as Medchal has moved so dramatically toward a digitally inclusive financial environment, securing these gains will take ongoing investment in human and technological capital.

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