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Bridging the Digital Divide: Analyzing Payment Preferences Across Education, Income and Gender in the Cash-to-Digital Transition

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ABSTRACT

Financial technology has evolved, and so have the payment modes, which gained popularity depending on demographic and socio-economic factors. We study the choices individuals with different levels of education make regarding cash and digital payments, as well as the role familiarity, accessibility, and confidence in digital transactions play in their payment preferences. Based on comparative data, the results showed that cash continues to be people's most-used mode of payment among individuals with lower levels of education because of low digital literacy and IC. However, digitisation in debt payments, especially credit/debit cards and mobile payment solutions, is significantly trending up towards education levels. Moreover, the cross-analysis of electronic payment methods indicates that credit/debit cards are the most common, followed by e-wallets and mobile payments, while cryptocurrencies are rarely adopted. Overall, the study calls for the need for financial literacy programs and digital payment awareness initiatives to drive up the adoption rates across education levels.

1. Introduction:

The advent of digital financial services with broad-based penetration has been transforming the global payment landscape, which provides enhanced convenience, security, and efficiency. With the rise of electronic payment modes like credit/debit cards, mobile payments, e-wallets, and cryptocurrencies, the traditional cash payment is slowly fading. The use of these payment methods, however, is heavily dependent on several socio-economic circumstances like education level, financial literacy, technological awareness, and access to banking services. Education has a huge impact on a person, as this guides the manner in which the person will spend money as well as which payment modes an individual prefers. Higher education levels equate to greater exposure to financial systems, broader adoption of digital banking, and emerging financial technologies. Thus, they are more likely to use digital payments due to their familiarity and trust in banks and financial technology providers. In contrast, lower-educated individuals are generally more cash-dependent, as they tend to be less aware of new payment technologies, less worried about security risks, and less likely to have access to banking services. In developing economies, where financial inclusion is difficult, education rather than income is the most significant barrier to accepting digital payments. If you're a high school-only graduate, studies show you depend on cash the most, with all the excuses of pride: ease of use, lack of trust in cyber things, and little experience with financial technology. This contrasts with those with bachelor and master degrees, who prefer credit/debit card and mobile payment solutions, signalling a comfort with digital banking infrastructure. In terms of education, doctorate degrees have the highest usage of digital transactions, followed by credit/debit cards and online banking, making it clear that they are the most comfortable/trustworthy type of digital transactions.

The main objective of this study is to examine the influence of education levels on the preferences for various payment modes. Based on comparative data, the research traces payment habits by education groups and compares the advantages and satisfaction with different electronic payment systems. These restrictions had far-reaching impacts on financial literacy, the adoption of digital payment, and the obstacles that prevent digital financial inclusion. This study contributes to this wider discourse on financial inclusion and the need for targeted digital literacy interventions to foster equitable access to digital financial services by pursuing these objectives. It also makes recommendations for policymakers and financial institutions to enhance the uptake of digital payments and address the divide between different education levels.

2. Review of Literature

The adoption of digital payment methods has been a widely studied topic, with numerous researchers examining the factors influencing payment preferences across different demographic segments, including education levels. Dahlberg, Guo, and Ondrus (2015) conducted a comprehensive review of mobile payment markets and highlighted key drivers such as convenience, security, and ease of use. They found that while digital payments are gaining traction, challenges such as security concerns and lack of awareness hinder their widespread adoption. Rogers (2003) describes in his Diffusion of Innovations theory why innovations such as digital payment systems are adopted by different groups within a population relative to their exposure and acceptance of new technology over time.

Drawing upon these insights, Venkatesh, Thong, and Xu (2012) proposed an extension of the Unified Theory of Acceptance and Use of Technology (UTAUT) and identified education as key to the uptake of digital financial services. Their analysis found that the level of education is one of the common archetypes over which people adopt digital transactions faster, possibly due to their familiarity with banking systems and technology. Mallat (2007) also conducted qualitative research and discovered that perceived risks and lack of trust pose a significant barrier to low education-level individuals who prefer cash-based transactions because it is tangible and easy to understand.

Chauhan and Panda (2020) highlighted the importance of financial literacy for digital payment adoption among users in India. The study showed that educated people use credit/debit cards and mobile wallets more than others because they are more aware of their finances. In the same context, Scholz and Dorner (2022) reported that digital financial literacy greatly influences payment choice, and people who had financial education showed a higher tendency towards online banking and card-related transactions.

An alternative viewpoint is offered by the work of Arango and Welte (2012), which studied the function of cash in the payment system. So graduated professionals, says their study, use cash less than less educated individuals because cash is universal and can be spent in any situation without any effort. Out of these, Zhao, Deng, and Zhou (2019) studied payment preference in China and found that with education ascending, the reliance on cash decreased, and digital payment became the major method of transactions. Their findings are consistent with Gupta and Arora (2021), which looked at emerging economies and digital payments and financial inclusion and found that higher education is associated with a higher acceptance of fintech services.

For the impact of digital financial inclusion, see Bagnall et al. (2016) in their cross-country comparison of cash use. They concluded that education and the development of digital infrastructure play a key role in moving from cash-based to digital transactions. In the same vein, Hasan and De Renzis (2020) elaborated on fintech features presented through payment innovations, claiming that individuals who have a postgraduate education or higher tend to trust and accept digital payment and are more exposed to financial technologies as compared to less educated individuals.

There has been research on the behavioural aspects of digital payment adoption. Wang and Lin (2019) Determinants of mobile payment adoption: higher-educated individuals consider mobile transactions more secure and efficient than those with lower education levels. Ozkan and Bindusara (2020) emphasised the significance of consumer trust in the digital realm, where trust plays a crucial role in adopting digital payments, particularly amongst those who may be new to financial technology. Likewise, Sinha and Dey (2022) highlighted that increasing digital financial literacy contributes to greater e-wallet adoption and that digital payment penetration could be improved through specific financial education programs among the lower-educated people.

Dahlberg and Mallat (2021) reviewed the competition between electronic wallets and traditional banking methods and concluded that although credit/debit cards are still the most widely used for implementing digital payments, electronic wallets are emerging due to ease of usability, promotional offers, etc. Karjaluoto and Shaikh (2020) studied digital payments and consumer behaviour and stated that the less educated population tends to be reluctant to use digital transactions because they are prone to concern about fraud and are not informed enough on security measures.

More generally, Gomber, Koch, and Siering (2017) examined digital finance and financial inclusion that can only be achieved through the improvement of digital literacy to extend the usage of digital payment. Findings: According to Arner, Barberis, & Buckley (2016), the fintech progress is coming along the way with the modernisation of payments, while more know-how about finances (especially due to the higher education level) leads to increased acceptance for digital payments. (iii) Finally, Ravikumar and Kumar (2023) investigated trends in digital payments in India and reiterated that financial education and awareness programs are essential for mass adoption of digital payment solutions.

These studies lay down the groundwork to understand the way education impacts payment preferences, suggesting that financial literacy, trust in technology, and accessibility to digital financial services influence consumer behaviour.

3. Data Analysis:

i. Comparison of Preferences for Various Payment Modes among Individuals with Varying Gender Groups:

These payment preferences also reflect the impact of socio-economic status, levels of financial independence, digital literacy, and access to financial services. The males (20%) seem to favour cash slightly more than females (18%); this does not reflect how it may be used in informal economic transactions where the nature of expenditure may be deterministic; possibly men could be more creative when dealing with informal economic activities, this perhaps resulting in a higher usage of cash by this demographic while females (18%) adopt low cash with a higher preference, possibly from increased financial literacy and due to influence from household financial management. The greater preference for credit/debit cards among men (35%) indicates that they are more prone to conducting high-value transactions, online shopping, and business-related expenses, which are usually paid by card. Conversely, females (30%) also utilise credit/debit cards but may favour online banking (32%) to guarantee secure and budgeted financial transactions like bill payments, savings transfers, and all other banking activity. Males are also more likely than females to prefer mobile payments (25% vs. 20%), which may be the result of increased exposure to mobile technology, the convenience of digital transactions, and knowing how to use mobile financial apps. But the higher preference for online banking (32 percent) among females than (20 percent) among males indicates a trust factor attached to recent mobile payment solutions for the security aspect and reliability of traditional banking infrastructure. When we see the gender-wise preferences from Table 10 and compare them with Table 1, showing the education-wise preferences, we can easily see a clear pattern there. For instance, both males and people with higher education prefer credit/debit cards and mobile payments. In line with this observation, streamlining financial planning and digital literacy solidifies online banking inclination among the better-educated (master's and doctorate holders) and females, as they are most likely to have access to online banking. In contrast, cash use is significantly more pronounced among low-educated individuals (high school: 45%) in Table 1 and fairly

low among the female (20%) and male (18%) groups in Table 10. This indicates that men and women are moving away from cash towards digital payment solutions as financial education and digital literacy improve. The results of Tables 1 show digital payment adoption seem to be strongly impacted by both education and gender. Men and those with a higher education level prefer credit/debit cards and mobile payments, while women and people with postgraduate education prefer online banking. Such variations suggest that financial service providers should develop tailored solutions to foster the adoption of digital payments among different demographics. By focusing on education efforts to boost financial literacy, boosting trust in mobile payment platforms, and making banking services more accessible, we can continue to drive the transition to a cash-free economy forward.

Table 1: Preferences for Various Payment Modes among Individuals with Varying Gender Groups

Gender Group	Cash (%)	Credit/Debit Card (%)	Mobile Payments (%)	Online Banking (%)	Total Sample
Male	20	35	25	20	150
Female	18	30	20	32	150

ii. Comparison of Preferences for Various Payment Modes among Individuals with Varying Income Levels:

The data (Table 2) shows a clear divide in payment method by income level, with lower-income individuals still reliant on cash and higher-income groups using digital payment options. Cash and low-income group preference mode cash at 30% cash is the most preferred mode. Limited access to banking services, lower financial literacy, and a lack of trust in digital payment platforms may contribute to this preference. Utilisation of debit/credit cards is moderate (25%), meaning that the majority of the low-paid still have a bank account but want to use cash. Mobile payments & an ideological aversion to online banking are each favoured by 20% & 25% of this cohort, respectively, signalling a rising but gradual adoption of digital payment technologies. In the medium-income group, the preference for cash plummets to 18%, indicating a far higher tendency for digital payments. Use of credit/debit cards jumps to 35%, indicating easier access to banking services and a larger comfort level while conducting card-based transactions. Mobile payments are starting to catch on at 25%, perhaps driven by the greater availability of smartphones and mobile banking apps. However, the option of 22% for online banking is still very strong, and it further signifies that medium-income individuals are utilising bank-supported digital transactions for repaying their bills and transferring funds. Cash usage drops down to 10% within the high-income group, indicating that the trend is moving toward entirely cashless transaction types. The most preferred mode at 45% was with credit/debit cards, also suggesting greater reliance on conventional banking infrastructure for day-to-day transactions. Ideally, 30% prefer mobile payment solutions, indicating that individuals with higher incomes feel comfortable using sophisticated financial technology solutions like mobile wallets and contactless payments. At the same time, this suggests slightly falling preference for online banking, a low for the 15% of high-income individuals surveyed in our 2019 report, perhaps favouring the convenience of credit/debit cards or the speed and ease of mobile payments over traditional online banking interfaces. Examining the income-based payment preferences in Table 2 against education-based preferences in Table 1 and gender-based preferences in Table 10, clear patterns emerge. Another significant trend is the shift towards credit/debit cards and mobile payments over cash, particularly among higher-income and higher-education groups, indicating that with financial literacy and economic stability comes an increased motivation to adopt digital financial services. In a similar vein, men and affluent (high-income) geographies show greater comfort with credit/debit cards as compared to women and middle (medium-income) income groups who insist on online banking usage.

These findings serve as an important reminder for implementing targeted financial inclusion strategies that encourage these individuals to adopt digital payments across the income spectrum. For poor people, they can allow access to improved programs of financial literacy and banking, thereby reducing the amount of cash they need and increasing confidence in digital payment solutions. This means that mobile payment security could be more prominent, and there is potential to identify and reward more mediums when changing to new systems. Affluent segments, already used to other digital forms of payment, might adopt newer payment technologies like blockchain-based transactions and AI-powered personal finance systems. All in all, you could say that the findings bring back the importance of education, economic stability, and accessibility reflected in the payment positions of each country. Closing the Digital Gap-Governments and financial institutions alike should focus on making their services appropriate for all income groups, aiming to bring all towards the digital world in order to avail the efficiency, security, and conveniences that come with digital transactions.

Table 2: Preferences for Various Payment Modes among Individuals with Varying Income Levels

Income Group	Cash (%)	Credit/Debit Card (%)	Mobile Payments (%)	Online Banking (%)	Total Sample
Low	30	25	20	25	100
Medium	18	35	25	22	100
High	10	45	30	15	100

iii. Comparison of Preferences for Various Payment Modes among Individuals with Varying Education Levels

In Table 3, the study explores the distribution of cash measures based on education level in two ways, the other using the demographic measure of education level; the finding that comes to light is a general positive correlation where the higher the education level (minimum median literacy level), the

lesser cash dependency and the greater reliance on digital means of payment (alternative measure). Those with a high school education are most in favour of payment by cash (45%), most likely due to limited financial literacy, restricted access to banking services, or lack of experience with digital payments. Their use of credit/debit cards (15%) and online banking (15%) is also low, suggesting a hesitancy or failure to move into higher-level financial systems. Mobile payments (25%) appear to be even scoring some level of acceptance, perhaps thanks to the higher penetration of smartphones and more simplified digital wallets. For those that have a bachelor's degree, cash usage is significantly reduced (20%), meaning more exposure to formal financing services. There is a significant increase in reliance on credit/debit cards (35%) owing to reliance on bank systems. Mobile payments (25%) have stable adoption rates, indicating that people in this cohort are gradually introducing digital solutions into their transactions. Moderate adoption, probably related to greater exposure to structured financial management practices. For people who have a master's degree, that reliance on cash falls further to 15%, confirming the trend of higher education leading to digital payment adoption. 40% usage of credit/debit card Indicates financial awareness and confidence in card-based transactions. Adoption of mobile payments surged to 32%, meaning those embracing this technology are likely to be technically aware and comfortable with fintech solutions. Utilisation of online banking (13%) is less than expected as mobile-based digital payment alternatives are being favoured rather than traditional banking portals. Cash utilisation is at its most minimal at the doctorate level at 12%, indicating a strong inclination for a digital payment solution. Credit/debit cards (45%) are the most trusted form of payment method used, showing significant trust and reliance on banking organisations. Mobile payments (28%) demonstrate sustained adoption rates, further evidencing the comfort of highly educated individuals with fintech solutions. Usage among individuals with a master's degree is slightly higher, implying selective usage of online banking for high-value or institutional transactions

Table 3: Preferences for Various Payment Modes among Individuals with Varying Education Levels

Education Level	Cash (%)	Credit/Debit Card (%)	Mobile Payments (%)	Online Banking (%)	Total Sample
High School	45	15	25	15	75
Bachelor's	20	35	25	20	75
Master's	15	40	32	13	75
Doctorate	12	45	28	15	75

4. Conclusion and Policy Recommendations:

The results of this paper are of interest since they give us an insight into preferences for cash, card, and digital wallets segmentation by education levels, income groups, and gender. The analysis highlights a strong link between levels of education, financial literacy, and the uptake of electronic payments. As education and income increase, cash dependence decreases, and credit/debit cards and mobile payments become more preferential. Moreover, gender differences in payment preferences also have emerged, where males have a higher preference for mobile and card-based transactions, while females have a higher preference for online banking. The most impressive data point, which popped out at us, is that people with a high school education or lower-income status use cash for a majority of their payments, which may suggest that a lack of access to banking services, digital literacy, and trust in digital payment methods remains a hindrance to financial inclusion. On the other hand, those with at least a bachelor's degree and those in the high-income segment have gradually shifted to digital payments, in particular the use of credit/debit cards and mobile payments. Clearly, financial literacy plays a role in the uptake of digital payments. Cash-dependent customers comprise consumers with limited exposure to banking systems and financial technologies, while tech-savvy individuals are inclined to adopt digital means for payments. In addition, there are differences in gender that indicate that communication via internet banking is favoured by females, whereas mobile payments are preferred by males, highlighting differences in attitude towards financial management via digital medium. These findings yield some recommendations for increasing adoption of digital payments and improving financial inclusion. It may involve expanding financial literacy programs, especially to lower-education people in the low-income group. Trust and awareness can be built through programs on the benefits, security, and convenience of digital payments. Improving accessibility to such digital financial services is also very important, and as such, the financial institution and the fintech companies must strive to increase the access of digital banking services in rural and semi-urban areas. In a crisis situation, there shouldn't be too much navigation needed to reach mobile banking applications to make use of instant fund transfers.

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