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ANALYZING CASHLESS PAYMENT SYSTEM ADOPTION BEFORE AND AFTER THE COVID-19 PANDEMIC

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ABSTRACT

The COVID-19 pandemic has introduced an essential transformation in consumer financial practices and, specifically, in the way payments are received and given. The paper under analysis examines the use of the cashless payment systems prior to and following the COVID-19 pandemic through the perspective of the changes in the usage patterns, demographic differences, and the preferences towards diverse payment methods. One thousand two hundred respondents were used to gather primary data in the form of a structured questionnaire and the research design was based on descriptive and comparative research to measure the level of pre- and post-pandemic adoption. The results demonstrate that the overall cashless adoption of payment grew significantly, and it was 50.75 before the pandemic and 80.42 after the pandemic. The adoption rates rose in all age groups though with significant improvement among persons aged 50 years and above which represented an improvement in age based digital exclusion. Also, the research notes a massive change in payment preferences, where the cash-based payment system has sharply declined and the UPI-based transactions are exceeding in rapid growth, this becomes a pointer to the increasing prominence of real-time digital payment systems. The findings indicate that the pandemic served as an essential stimulus that enabled the change towards cashless payments to accelerate, which indicates that digital payments now become not an additional but a fundamental part of the daily economic process.

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1. INTRODUCTION

The digital technology has introduced a lot of change in conducting financial transactions in the world due to its rapid growth. The payment methods that have gained popularity in the current economies, which is cashless payment systems, include debit and credit cards, mobile wallets, and real-time digital transfer systems which are convenient, efficient, and fast. Before the COVID-19 pandemic, cashless payments were becoming increasingly popular, but cash still remained a popular form of transaction, especially in emerging markets and with some population groups.

The COVID-19 pandemic became a new landmark in payment behavior. The necessity of contactless payments, health problems, and limitations of physical mobility promoted the process of changing to digital and cashless payments. Digital payment was encouraged by governments, financial institutions, and technology providers to guarantee the continuity of economic operations during lockdowns. Due to this, a significant number of people who were unwilling or still unfamiliar with the digital payment systems were forced to use cashless options.

The current study will examine the cashless payment system adoption prior to the COVID-19 pandemic and following the pandemic. The study intends to comprehend the impact the pandemic had on consumer behavior and whether the observed changes in the preferences towards the preferred methods of payment suggest long-term shift towards a cashless economy by comparing usage patterns across age groups and the changes in the latter. The results are set to offer useful insights to the policymakers, financial institutions, and providers of digital payment services in enhancing and maintaining the cashless payment system in the post-pandemic period.

2. LITERATURE REVIEW

Al-Qudah et al. (2024) investigated the use of mobile payments in times of the COVID-19 pandemic and discovered that the crisis posed a strong trigger that pushed users towards adopting digital payment technologies. As they noted, perceived usefulness, ease of use, and trust are particularly important in affecting the adoption behavior during the pandemic period. The authors

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noted that the fear of health issues and mobility limitations prompted consumers to move beyond cash-based transactions and to mobile payments even among those users who were initially reluctant. The results indicated that the pandemic was a powerful external factor that redefined the consumer attitudes and minimized the reluctance towards mobile payment systems.

Al-Sharafi et al. (2022) measured the sustainable usage of the contactless mobile payment technologies in the context of the COVID-19 pandemic and after it concluded with a hybrid SEMANN method. They proved their findings by showing that performance expectancy, facilitating conditions, and social influence played a significant role in the intention of the users to continue using contactless payments. The paper highlighted that although COVID-19 made people adopt it at the start of the pandemic because of safety and hygiene, long-term use relied on the reliability of the system and its security as well as perceived utility. The authors concluded that the pandemic enhanced more than a short-term adoption but also enhanced the institutions of continued use of digital payment in the post-pandemic period.

Amankwa et al. (2023) examined the connection between COVID-19 and the intention to use e-wallets in terms of a cashless economy with respect to formal and informal sector employees in Ghana. Their results showed that the pandemic had a positive impact on e-wallet adoption in both industries, the rate of adoption, and motivators was not even between industries. The researchers established that the fear of transmitting the virus by means of physical cash and availability of more opportunities to have a digital transaction was a strong catalyst of the intention to use the e-wallet. The authors took the conclusion that COVID-19 reduced the digital payment adoption gap between formal and informal workers, which led to the expansion of financial inclusions and strengthened the transition to cashless economy.

Coskun, Saygili, and Karahan (2022) conducted research on the effects of online payment systems in the Turkish banking sector and the adoption of these systems during a pandemic (COVID-19). Their research found out that ease of use, perceived security and trust in banking institutions played a crucial role in determining the desire of consumers to use online payment systems. The authors noted that the pandemic increased the level of awareness of digital banking services, since lockdowns and social distancing limited the ability to access physical branches of

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the bank. The results suggested that the COVID-19 was an external shock that accelerated the adoption of the digital payments as well as strengthening the significance of the system reliability and customer confidence to continue with the usage.

Fujiki (2025) analyzed the connection between cashless payment systems and COVID-19 based on Japanese consumer panel data. The survey revealed the significant growth of cashless payments that occurred during and after the pandemic with regard to the everyday retail transactions. Fujiki noticed that consumers that were cash-dependent moved to electronic payment because of the risk of infections and the presence of more contactless payment options. This analysis also indicated that the behavioral changes created by the pandemic had a long-term effect on the payment habits in Japan, and the changes were not completely eliminated during the immediate crisis period.

3. RESEARCH METHODOLOGY

The current research design is descriptive and comparative research, which will be applied to examine the difference in adoption of cashless payment systems prior to the COVID-19 pandemic and after it. This method is appropriate to investigate the changes in consumer behavior in two different time frames and discover the patterns associated with the demographic features and payment options.

3.1 Research Design

The survey design adopted was a cross-sectional survey using a retrospective comparison. The respondents were requested to provide the use of cashless payments (before and after the pandemic) to facilitate comparative analysis before and after the pandemic.

3.2 Population and Sample

The target group consisted of adult consumers aged 18 years and above having financial transactions that are of a regular nature. Stratified random sampling was used to select a sample of 1,200 respondents to provide sufficient representation of the respondents based on age (18 29, 30 49 and 50+). The sampling method was useful in minimizing bias and strengthening the external validity of the results.

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3.3 Data Collection Method

Primary data were gathered in structured questionnaire using online and offline method. The questionnaire was based on closed-ended questions that would help to define how much the respondents had adopted cashless payment systems, how often they used them, what was their preferred mode of payment (cash, cards, wallets, and UPI) and demographics. The survey was carried out post-COVID-19 whereby respondents made retrospective reports on their pre-pandemic usage patterns.

3.4 Variables of the Study

- **Dependent Variable:** Implementation of cashless payment systems (measured as usage/non-usage and the percentage adoption).
- **Independent Variables:** Age group, period of time (pre- and post-COVID-19), and payment method used.

3.5 Tools and Techniques of Analysis

The data obtained were coded, tabulated and analyzed using the descriptive statistical tools like percentages and frequency distributions. A comparative analysis was conducted to study the variation in the rate of adoption before and after the pandemic. The findings were given using tables and graphs to make it easy to understand and interpret.

4. RESULT AND DISCUSSION

The analysis shows that the adoption of cashless payment grew significantly post-COVID-19 pandemic and that there is a sharp increase in the overall usage between all age groups with older users being the most inclined towards digital payments. Also, it is evident that cash payments are being replaced by UPI and other electronic methods, which points to a long-term change in the direction of the technology-focused system of transactions during the post-pandemic period.

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4.1 Overall Adoption Rates

Table 1 shows the comparison between the overall cashless payments' adoption before and after the COVID-19 pandemic. In the pre-pandemic period, 609 participants out of the total respondents (50.75) responded that they use cashless methods of payments. In comparison, however, the number of adopters changed significantly after the pandemic, reaching 965 respondents, or 80.42% of the sample. This steep increase is graphically shown in Figure 1 that distinctly shows the upward movement in the level of adoption between the two periods.

Table 1: Overall adoption of cashless payments before and after the pandemic

Period	Adopters	Adoption %
Before COVID-19	609	50.75%
After COVID-19	965	80.42%

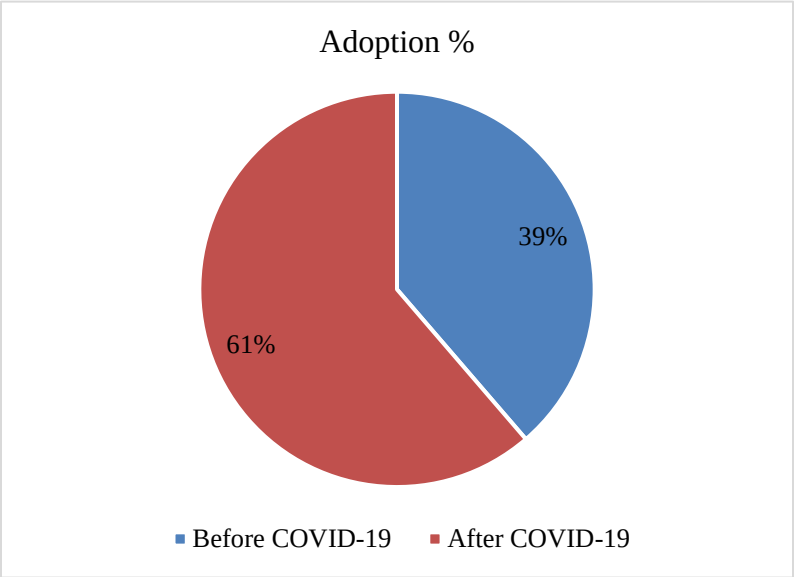

Figure 1: Graphical Representation of Overall adoption of cashless payments before and after the pandemic

The data show that cashless payment systems have gained significant popularity following the COVID-19 pandemic. The increase of almost 30 percentage points indicates that the pandemic

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became one of the primary factors that contributed to the faster shift toward digital-based transactions. Health considerations associated with physical cash manipulation, dependence on online services due to lockdown, and enhanced digital payment infrastructure, probably added to this change. On the whole, the results demonstrate a shift in the model of payment by consumers, where cashless payments start to dominate the post-pandemic period.

4.2 Adoption by Age Group

Table 2 presents the proportion of customers who use the system of cashless payments based on age groups prior to and after the COVID-19 pandemic. Before the pandemic, the highest adoption was recorded in 18 - 29 age group (70.0%), then the 30 – 49 age group (55.0%), with the 50+ age group recording relatively low adoption (20.0%). Following the pandemic, usefulness levels are significantly higher in all age groups, where respondents aged 18 - 29 (92.0%), aged 30 - 49 (84.0%), and aged 50 and older (60.0%), are more likely to use it. These changes are captured in figure 2 and the upward trend to all ages is evident.

Table 2: Respondents using cashless payments by age group before and after the pandemic

Age Group	Pre-Adoption %	Post-Adoption %
18–29	70.0%	92.0%
30–49	55.0%	84.0%
50+	20.0%	60.0%

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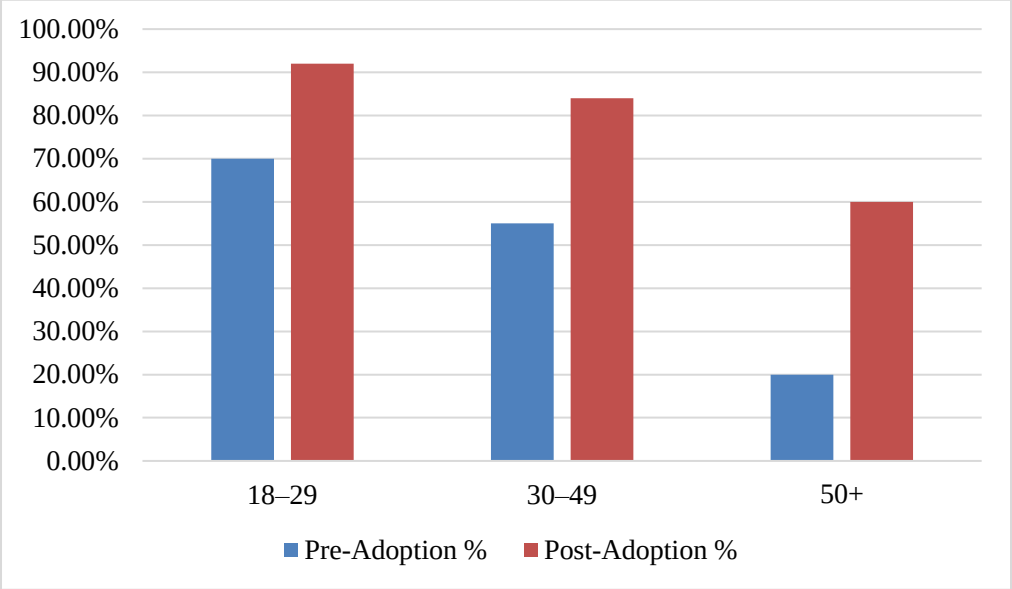

Figure 2: Graphical Representation of Respondents using cashless payments by age group before and after the pandemic

The findings suggest that younger respondents have been early adopters of cashless payments but the COVID-19 pandemic reduced the gap in ages by a wide margin. The most significant relative change is observed in the 50+ age group where the adoption went up by three times, rising to 60.0% to 20.0% implying that older people were pushed by need and external factors to use digital payment methods in the course of the pandemic. However, younger users remain on the top of the adoption rates demonstrating higher digital literacy and technological comfort. Altogether, the results indicate that the pandemic had a significant impact on increasing the use of cashless payments of all age groups, which facilitates digital transactions and makes them more inclusive and ubiquitous.

4.3 Payment Types Used

Table 3 shows the change in the nature of payment methods of the respondents prior to and after the COVID-19 pandemic. Before the pandemic, 60.0% of respondents used cash as the most common mode of payment, and cards (20.0%), digital wallets (15.0%), and UPI (5.0%) exhibited a relatively low prevalence. The cash usage as per the post-pandemic period has changed significantly to 20.0% and this is a sharp downward trend. Meanwhile, the use of card rose

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marginally to 25.0, wallet use did not change to 15.0 and UPI was used at an impressive rate of 40.0. This shift in payment preference has been illustrated graphically in Figure 3.

Table 3: Shift in types of payment methods used before and after the pandemic

Payment Method	Pre-Pandemic %	Post-Pandemic %
Cash	60.0%	20.0%
Cards	20.0%	25.0%
Wallets	15.0%	15.0%
UPI	5.0%	40.0%

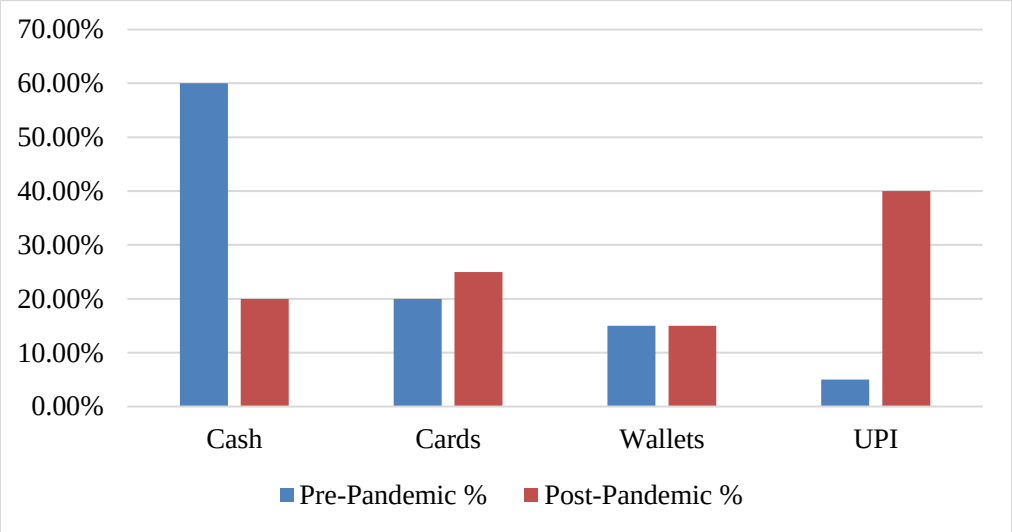

Figure 3: Graphical Representation of Shift in types of payment methods used before and after the pandemic

The results indicate that the payments behavior of consumers have changed dramatically after the pandemic. The strong decrease in the use of cash suggests the decreased use of the physical currency, probably because of the hygiene reasons and limitations on the physical mobility. The most vivid transformation is the active development of UPI, which became a favorable method of payment because of its convenience, fast nature, and its popularity. The wallet usage remained

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stable and card payments remain moderate, which are the facts that allow stating that the traditional digital methods did not lose their relevance, but real-time mobile-based systems became the main stimuli of cashless transactions. In general, the findings outline a significant organizational change of technology-oriented and efficient payment systems during the post-pandemic period.

4.4 Discussion

The results clearly indicate that the COVID-19 pandemic was a strong driving force, as it hastened the shift towards the involvement of cashless payment systems, which resulted in the significant change in consumer behavior during transactions. The overall increase in the rates of overall adoption, as well as the growth in the usage, by all age groups will denote that the digital payment has ceased to be an option-driven solution and become a need during the pandemic. The large adoption of older respondents is an indicator of the importance of external influences, including mobility limitations and health issues, in reducing initial technology resistance. Besides, the radical drop in cash payments and the high-speed advancement of UPI payments highlight a structural shift in the preferences of payment to the accelerated, secure, and convenient online systems. All these tendencies imply that the impact of the pandemic on behavioral changes can be characterized as long-lasting and therefore the long-term inclusion of technology-based payment systems in the daily economic life.

5. CONCLUSION

The current research finds that the COVID-19 pandemic has heavily stimulated the speed of cashless payment-system adoption and acceptance, which has already left a permanent mark on the consumer payment behavior. The significant growth of the total adoption rates, as well as the prevalence of its use among all the age groups, shows that digital payments are now a part of the daily transactional behavior. The significant increase in the number of older age cohorts indicates the role of necessity, health issues, and the inability to travel as a consequence of the pandemic in breaking the barrier of resistance to digital technologies. Moreover, the strong decrease in cash usage and the blistering development of UPI as a more popular means of payment point to the structural change of the real-time payment system to quicker, safer, and more convenient systems. These tendencies can indicate that the new behavioral patterns that were caused by the pandemic

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are expected to be maintained over an extended period, which supports the shift towards a technology-based and inclusive cashless economy. To keep this momentum going, further work is necessary to build up digital infrastructure, financial literacy, and cybersecurity, and build confidence in digital payment systems, especially in vulnerable and underserved populations.

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