



Digital Payment System - A Way of Communication for Transaction: Impact of Mobile Applications in Rural West Bengal

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Abstract

The current era has witnessed a significant transformation in social and cultural engagement due to Information Communication Technology (ICT). Mobile phones, especially in rural areas, have become highly convenient and widely accepted communication devices, revolutionizing digital engagement. Additionally, the emergence of digital payment services under the Digital India initiative has propelled India towards becoming a cashless economy, offering numerous benefits in the global market. This research focuses on understanding the mobile infrastructure and the usage of mobile wallets in rural West Bengal. In order to accomplish this, a schedule was carried out in the East Midnapur district's rural areas. The major goals were to determine what extent people knew about the digital payment system and to investigate the factors influencing their acceptance or non-adoption. The study revealed that mobile phones have greatly benefited rural communities, and digital payment systems have gained popularity, particularly among the youth. However, challenges such as digital literacy, concerns about fraud and security, and lack of knowledge persist in rural areas. To ensure the successful implementation of e-payment services, the government should organize training programs tailored to rural communities. By addressing these challenges and enhancing digital literacy, the adoption of digital payment systems in rural areas can be further encouraged, contributing to India's progress towards a cashless economy.

Keywords: Digital Payment system, mobile wallets applications as communication media, West Bengal

Introduction

The advent of the Digital India initiative launched by the Indian government has led to a substantial increase in the utilization of mobile phones. This initiative aims to revolutionize India into a leading global digital hub by improving the underdeveloped digital sector through enhanced digital connectivity, skill development, and various other initiatives, ultimately ensuring the country becomes digitally empowered, secure, and technologically advanced. The emergence of new payment technologies in the past decade has brought about a significant

transformation in the lives of people, particularly in rural areas of India. The introduction of UPI-based apps via mobile media has significantly impacted social and cultural interactions, transforming the way people conduct transactions in public settings.

In West Bengal, the advancement of Information & Communication Technology (ICT) has brought noticeable changes in the use of mobile devices. Demonetization played a crucial role in driving the adoption of online payment systems, even in rural areas. However, the real transformative effect of new technology became evident during the declaration of the novel Corona virus as a pandemic and has acted as a catalyst for the widespread adoption of online payment systems, leading to a significant cultural shift in society. While there were initial challenges with the technology, the convenience and safety offered by digital transactions pushed people to embrace online payment methods. The Central government's UPI-based BHIM initiative, along with private organization apps such as Paytm, Phonepe, and Google Pay, has played a pivotal role in continuously enhancing the e-payment system landscape, particularly in rural areas of West Bengal.

Review of literature

After introducing of digital payment system, the usage of app based technology is growing and hugely acceptable by the financial sectors (Gayathry, 2019).¹With the implementation of online payment system, people are getting opportunity to empower and to overcome the old banking system (Shobha, 2020).²After demonetization, the growth of digital pathways especially internet, mobile phones, ATMs, biometric devices, electronic cards and other technologies has been increased (Kumar et al, 2019).³ Even the usage of banking transaction has been increased after execution of digitization in payment system (Salunkhe et al, 2019)⁴ and it is more accessible to the larger consumers (Divyapriya et al, 2020).⁵ India's rural sector is crucial to the country's economic growth. To gain market share, several IT businesses are concentrating on rural areas and implementing fresh approaches to draw customers to digital payment systems (Dennehi et al, 2015).⁶ Following demonetization, UPI-based apps are now being used at a faster rate across the nation. The development of new payment initiatives improved ICT and UPI-based rural apps have all accelerated the shift towards electronic payments (Byakod et al, 2018).⁷ Societies in rural areas, where access to banking resources is extremely limited, rely heavily on cash transactions. Cash transactions are still convenient and widely accepted, especially for persons in the lower middle class and middle class (Shakir Ali et al, 2015).⁸ Furthermore societal factors like age, gender, level of education, occupation, and money have a big influence on people using e-payment services (Gadge et al, 2019).⁹ Due to mobile devices, it has been able to receive help monetarily in any situation, which is vital for rural communities as it provides social stability, connectivity, and safety throughout the community (Mehta, 2016).¹⁰ After introducing digital payment system in India, various UPI based applications like Google pay, Paytm, Phone pay and other apps came into light. Among them, Google pay became more preferable application for making payment of high value as it works directly through the bank (Gupta & Yadav, 2020).¹¹ Even if the e-payment system has been expanding steadily, government organization is still needed to inform the public. Online payment systems are constantly aided and improved by the four major criteria of inducement, transformation, regulatory framework and customer pleasure (Roy et al, 2014).¹²

Objectives

- To comprehend the existing infrastructure for adoption of e-payment mechanism
- To assess the use and knowledge of several UPI-based applications in area of interest at West Bengal
- To describe the difficulties Digital Payment system has in achieving cashless India

Methodology

An interview schedule has been created with the goal of gathering data in mind in order to evaluate knowledge, usage, and challenges people may have when embracing e-payment. Using questionnaires, the survey was carried out. Purposive sampling procedures were used to pick 425 respondents overall from the East Midnapur District's rural districts. Cross tabulation and chi-square analysis of data have both been used.

Results and analysis**1. Mobile wallet user in East Midnapur**

			Q1. Do you utilize mobile payment application?		Total
			Yes	No	
Residence	Rural	Count	230	111	341
		% within Residence	67.4%	32.6%	100%
		% within Q	75.9%	91.0%	80.2%
	Sub-Urban	Count	38	4	42
		% within Residence	90.5%	9.5%	100%
		% within Q	12.5%	3.3%	9.9%
	Urban	Count	35	7	42
		% within Residence	83.3%	16.7%	100%
		% within Q	11.6%	5.7%	9.9%
Total	Count	303	122	425	
	% within Residence	71.3%	28.7%	100%	
	% within Q	100%	100%	100%	

Chi-Square Test Result**Degree of Freedom – 2****Table critical Value – 12.990^a**

Ho- The difference between the usage of mobile payment application and respondent's residence is not significant

Ha - The difference between the usage of mobile payment application and respondent's residence is significant

The question is related to the audience about utilization of e-wallets at East Midnapur. The data analysis has revealed that the chi-square value 12.990 exceeds the table critical value of 5.99 at 0.05 level of significance for 2 df. Thus, the null hypothesis of the difference between the usage of mobile payment application and respondent's residence is not significant, has rejected. This indicates that the place an independent variable is associated with the respondent utilization of online wallets. However, place is the key factor to understand the processes.

2. How do you make online payments?

			Q2 various mobile phone		Total
			Smartphone	GSMA	
Residence	Rural	Count	321	20	341
		% within Residence	94.1%	5.9%	100%
		% within Q	79.3%	100%	80.2%
	Sub-Urban	Count	42	0	42
		% within Residence	100%	0.0%	100%
		% within Q	10.4%	0.0%	9.9%
	Urban	Count	42	0	42
		% within Residence	100%	0.0%	100%
		% within Q	10.4%	0.0%	9.9%
Total		Count	405	20	425
		% within Residence	95.3%	4.7%	100%
		% within Q	100%	100%	100%

Chi-Square Test Result**Degree of Freedom – 2****Table critical Value – 5.170^a**

Ho – The difference between using various types of devices during e-payment and respondent's residence is not significant

Ha – The difference between using various types of devices during e-payment and respondent's residence is significant

The question is related to uses of different types of mobile phone by the audience. The computed data has revealed that chi-square value of 5.170 is below the table critical value of 5.99 at 0.05 level of significance for 2 df. Correspondingly, alternative hypothesis of the difference between using various types of devices during e-payment and respondent's residence is significant, has rejected null hypothesis. This indicates that place an independent variable is influenced the respondent who has smart phones to use e-wallets.

3. Major mobile wallet user**A. BHIM (Bharat Interface for Money)**

			Q A. Use of BHIM application		Total
			No	Yes	
Residence	Rural	Count	310	31	341
		% within Residence	90.9%	9.1%	100%
		% within Q	83.1%	59.6%	80.2%
	Sub-Urban	Count	32	10	42
		% within Residence	76.2%	23.8%	100%
		% within Q	8.6%	19.2%	9.9%
	Urban	Count	31	11	42
		% within Residence	73.8%	26.2%	100%
		% within Q	8.3%	21.2%	9.9%
Total		Count	373	52	425

	% within Residence	87.8%	12.2%	100%
	% within Q	100%	100%	100%

Chi-Square Test Result**Degree of Freedom – 2****Table critical Value – 15.996^a**

Ho – The difference between usages of BHIM mobile application and respondent's residence is not significant

Ha – The difference between usages of BHIM mobile application and respondent's residence is significant

The audience's usage of the central government's effort, the BHIM mobile application for online payments, is being questioned with reference to the recipient. The calculated data showed that, at a significance level of 0.05 for 2 df, the chi-square value of 15.996 is greater than the table critical value of 5.99. Therefore, null hypothesis, the difference between usages of BHIM mobile application and respondent's residence is not significant, has rejected. This shows that knowledge of how to utilise the BHIM application by the responder is not influenced by domicile as an independent variable. In other words, the comprehension of how to utilise the BHIM application does not depend on where one may live.

B. Paytm

			Q B Use of Paytm application		Total
			No	Yes	
Residence	Rural	Count	303	38	341
		% within Residence	88.9%	11.1%	100%
		% within Q	86.8%	50.0%	80.2%
	Sub-Urban	Count	27	15	42
		% within Residence	64.3%	35.7%	100%
		% within Q	7.7%	19.7%	9.9%
	Urban	Count	19	23	42
		% within Residence	45.2%	54.8%	100%
		% within Q	5.4%	30.3%	9.9%
Total	Count	349	76	425	
	% within Residence	82.1%	17.9%	100%	
	% within Q	100%	100%	100%	

Chi-Square Test Result**Degree of Freedom – 2****Table critical Value – 58.540^a**

Ho - The difference between usages of Paytm mobile application and respondent's residence is not significant

Ha - The difference between usages of Paytm mobile application and respondent's residence is significant

Concerning the beneficiary's use of the Paytm mobile application, a question has been raised. Based on the calculated data, it can be shown that the chi-square value of 58.540 is more than the table critical value of 5.99 at a significance level of 0.05 for 2 df. However, null hypothesis the difference between usages of Paytm mobile application and respondent's residence is not significant, has rejected. This shows that knowledge of how to utilise

the Paytm app is not influenced by domicile as an independent variable. In order to understand how to utilise the Paytm application for transaction online, residence is not a factor.

C. Google pay

			Q C Use of Google pay application		Total
			No	Yes	
Residence	Rural	Count	187	154	341
		% within Residence	54.8%	45.2%	100%
		% within Q	87.4%	73.0%	80.2%
	Sub-Urban	Count	16	26	42
		% within Residence	38.1%	61.9%	100%
		% within Q	7.5%	12.3%	9.9%
	Urban	Count	11	31	42
		% within Residence	26.2%	73.8%	100%
		% within Q	5.1%	14.7%	9.9%
Total	Count	214	211	425	
	% within Residence	50.4%	49.6%	100%	
	% within Q	100%	100%	100%	

Chi-Square Test Result

Degree of Freedom – 2

Table critical Value – 15.078^a

Ho – The difference between usages of Google pay mobile application and respondent's residence is not significant

Ha – The difference between usages of Google pay mobile application and respondent's residence is significant

The audience is asked about using the Google Pay smartphone application for online transactions. The calculated data showed that, at a significance level of 0.05 for 2 df, the chi-square value of 15.078 is greater than the table critical value of 5.99. Thus, null hypothesis the difference between usages of Google pay mobile application and respondent's residence is not significant, has rejected. This shows that the respondent's understanding of how to utilise the Google Pay application is unaffected by domicile as an independent variable. So, the comprehension of how to use Google Pay does not take residency into account.

D. Phonepe

			Q3 D Use of Phonepe application		Total
			No	Yes	
Residence	Rural	Count	121	220	341
		% within Residence	35.5%	64.5%	100%
		% within Q	76.1%	82.7%	80.2%
	Sub-Urban	Count	15	27	42
		% within Residence	35.7%	64.3%	100%
		% within Q	9.4%	10.2%	9.9%
	Urban	Count	23	19	42
		% within Residence	54.8%	45.2%	100%
		% within Q	14.5%	7.1%	9.9%
Total	Count	159	266	425	

	% within Residence	37.4%	62.6%	100%
	% within Q	100%	100%	100%

Chi-Square Test Result**Degree of Freedom – 2****Table critical Value – 5.992^a**

Ho – The difference between usages of Phonepe mobile application and respondent's residence is not significant

Ha - The difference between usages of Phonepe mobile application and respondent's residence is significant

The audience's use of the Phonepe mobile application for online payments is mentioned in the query. The calculated data showed that, at a significance level of 0.05 for 2 df, the chi-square value of 5.992 is more than the table critical value of 5.99. Thus, null hypothesis the difference between usages of Phonepe mobile application and respondent's residence is not significant, has rejected. This shows that the respondent's understanding of how to utilise the Phonepe is unaffected by domicile as an independent variable. However, the comprehension of how to use the application is not influenced by the place.

4. What prevents people from using mobile wallets to make online payments?**I. Insufficient understanding of utilization**

			Q4 I. Insufficient understanding of utilization		Total
			No	Yes	
Residence	Rural	Count	274	67	341
		% within Residence	80.4%	19.6%	100%
		% within Q	77.8%	91.8%	80.2%
	Sub-Urban	Count	42	0	42
		% within Residence	100%	0.0%	100%
		% within Q	11.9%	0.0%	9.9%
	Urban	Count	36	6	42
		% within Residence	85.7%	14.3%	100%
		% within Q	10.2%	8.2%	9.9%
Total	Count	352	73	425	
	% within Residence	82.8%	17.2%	100%	
	% within Q	100%	100%	100%	

Chi-Square Test Result**Degree of Freedom – 2****Table critical Value – 10.421^a**

Ho – The difference between insufficient understanding of utilization of mobile payment applications and the respondent's residence is not significant

Ha – The difference between insufficient understanding of utilization of mobile payment applications and the respondent's residence is significant

The audience's lack of comprehension of using e-wallets on mobile phones is addressed in the question. According to the calculated data, the chi-square value of 10.421 is more than the table critical value of 5.99 at a significance

level of 0.05 for 2 df. Respectively, null hypothesis of the difference between insufficient understanding of utilization of mobile payment applications and the respondent’s residence is not significant, has rejected. This shows that domicile is an independent factor that affects the fact that people are unaware of how to use e-wallets on their mobile devices for online payments anywhere. To put it another way, respondents are unsure about how to use e-wallets in various residential groups.

II. Lack of trust in online money transaction

			Q4 II. Lack of trust in online money transaction		Total
			No	Yes	
Residence	Rural	Count	288	53	341
		% within Residence	84.5%	15.5%	100%
		% within Q	79.3%	85.5%	80.2%
	Sub-Urban	Count	41	1	42
		% within Residence	97.6%	2.4%	100%
		% within Q	11.3%	1.6%	9.9%
	Urban	Count	34	8	42
		% within Residence	81.0%	19.0%	100%
		% within Q	9.4%	12.9%	9.9%
Total	Count	363	62	425	
	% within Residence	85.4%	14.6%	100%	
	% within Q	100%	100%	100%	

Chi-Square Test Result

Degree of Freedom – 2

Table critical Value – 5.943^a

Ho – The difference between lack of trust in online money transaction and respondent’s residence is not significant

Ha – The difference between lack of trust in online money transaction and respondent’s residence is significant

The audience's faith in mobile applications for online payments is the subject of the question. The calculated data shows that, at a 0.05 level of significance for 2 df, the chi-square value of 5.943 is less than the table critical value of 5.99. Respectively, alternative hypothesis of the difference between lack of trust in online money transaction and respondent’s residence is significant, has failed to reject null hypothesis. This suggests that respondents' faith in mobile applications for online payments is not influenced by domicile as an independent variable. Therefore, domicile is not a consideration while using a mobile application to make an online payment.

III. Enhances the likelihood of fraudulent activity

			Q4 III Enhances the likelihood of fraudulent activity		Total
			No	Yes	
Residence	Rural	Count	319	22	341
		% within Residence	93.5%	6.5%	100%
		% within Q	81.8%	62.9%	80.2%
	Sub-Urban	Count	38	4	42
		% within Residence	90.5%	9.5%	100%

		% within Q	9.7%	11.4%	9.9%
	Urban	Count	33	9	42
		% within Residence	78.6%	21.4%	100%
		% within Q	8.5%	25.7%	9.9%
Total		Count	390	35	425
		% within Residence	91.8%	8.2%	100%
		% within Q	100%	100%	100%

Chi-Square Test Result**Degree of Freedom – 2****Table critical Value – 11.202^a**

Ho – The difference between enhances the likelihood of fraudulent activity and the respondent's residence is not significant

Ha – The difference between enhances the likelihood of fraudulent activity and the respondent's residence is significant

The query relates to the audience's perception of the likelihood of online payment fraud increasing. The calculated data show that the chi-square value of 11.202 is greater than the table critical value of 5.99 at 0.05 level of significance for 2 df. Respectively, null hypothesis of the difference between enhances the likelihood of fraudulent activity and the respondent's residence is not significant, has rejected. This suggests that the respondent's place of residence is an independent variable.

Conclusion

The rapid proliferation of Information & Communication Technologies (ICT) is evident worldwide, and India is currently undergoing a profound transformation with the advent of digitization. The Digital India programme aims to revolutionize the country by providing high-speed 4G/5G network connectivity and robust internet access through mobile devices, particularly focusing on connecting rural areas and enhancing digital literacy among the population.

In rural West Bengal, a survey was conducted with 425 respondents. The majority of these respondents was male and worked as professionals in the private sector. It was found that most of them preferred using e-wallets for online payments. Interestingly, even though 94.1% of the total population owned smartphones, only 67.4% of rural respondents were users of mobile wallets. Among these users, 9.1% preferred BHIM, 11.1% used Paytm, 45.2% used Gpay, and 64.5% used Phonepe in the rural East Midnapur district of West Bengal.

Despite the presence of adequate ICT infrastructure in rural areas, the prevalent preference for cash transactions over online payment services persists. The major obstacles hindering the successful implementation of digital payment services include insufficient digital knowledge, apprehension regarding fraud, and concerns about security and trust. To address this issue, the state government must initiate a comprehensive training program aimed at overcoming digital illiteracy within rural communities, thereby fostering a smooth adoption of digital payment services.

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