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Evolution of Payment System and Rises of Mobile Payment

Dr. Akhil Goyal, Ragini Tiwari, Mahipal

1.Akhil.goyal@nimsuniversity.org 2.raginit247@gmail.com 3. mahipalnnl128@gmail.com

Associate Professor, NIMS University, Jaipur, Rajasthan, India

MBA (Finance & HR) Student, NIMS University, Jaipur, Rajasthan, India

MBA (Finance & HR) Student, NIMS University, Jaipur, Rajasthan, India

ABSTRACT - The evolution of payment systems highlights humanity's pursuit of efficiency, security, and convenience. Starting with barter systems, societies transitioned to commodity money like livestock and metals, eventually adopting metal coins around 600 BCE for their durability and divisibility. Paper money emerged in China during the Tang Dynasty, spreading to Europe as a lighter alternative. The Renaissance era saw banking institutions introduce bills of exchange and promissory notes. The 20th century brought charge and credit cards, followed by electronic payments with ATMs and digital cash. The 21st century has seen a rise in mobile payments, driven by smartphones and technologies like NFC and QR codes, with systems such as Google Wallet and Apple Pay. Mobile payments offer convenience, enhanced security, and promote financial inclusion, evidenced by initiatives like Kenya's M-Pesa. Future advancements in blockchain, cryptocurrencies, and AI promise to further transform the payment landscape, driving economic growth and improving the global financial ecosystem.

KEYWORDS – Reserve Bank Of India, Unified Payment Services, Gross Domestic Price, Common Era, Year On Year .

INTRODUCTION

Throughout history, human societies have continuously evolved their methods of exchanging value, progressing from simple barter systems to sophisticated electronic payment methods. This evolution reflects humanity's quest for efficiency, security, and convenience in financial transactions. The journey began with bartering, where goods and services were directly exchanged without a standardized medium. As societies grew more complex, the limitations of barter systems—such as the need for a double coincidence of wants—led to the adoption of commodity money. Items such as livestock, grain, shells, and metals became standardized mediums of exchange due to their intrinsic value and wide acceptability. The introduction of metal coins, first used by the Lydians around 600 BCE, marked a significant advancement. Coins provided a durable, divisible, and widely accepted form of money, facilitating trade across greater distances and between diverse cultures. The subsequent development of paper money in China during the Tang Dynasty (618–907 CE) and its spread to Europe in the Middle Ages offered a lighter and more convenient alternative to carrying heavy. The establishment of banking institutions in the Renaissance era further revolutionized the payment landscape. Banks provided safekeeping for money and facilitated large transactions through the issuance of bills of exchange and promissory notes. The creation of charge cards in the early 20th century, and the subsequent emergence of credit cards such as the Diners Club card (1950) and the Bank Americard (1958, later known as Visa), introduced a new dimension of credit-based transactions, paving the way for the modern credit card industry The latter half of the 20th century witnessed the advent of electronic payments, beginning with the development of Automated Teller Machines (ATMs) and electronic funds transfer systems. The invention of digital cash by David Chaum in 1983 and the rise of online banking in the 1990s

marked the beginning of the digital payment era. PayPal, founded in 1998, revolutionized online payments by providing a secure platform for digital transaction The 21st century has seen a dramatic rise in mobile payments, driven by the proliferation of smartphones and advancements in mobile technology. Mobile payment systems, such as Google Wallet (2011) and Apple Pay (2014), have transformed the way consumers transact, offering unprecedented convenience and security. These systems leverage Near Field Communication (NFC), QR codes, and mobile banking applications to facilitate seamless, contactless payments.

OBJECTIVE OF THE STUDY

This study aims to identify and analyse key milestones and technological advancements in the evolution of payment systems, from traditional methods to modern digital and mobile solutions. It investigates the economic, technological, social, and cultural factors driving the global adoption and growth of mobile payment systems. Additionally, it examines how mobile payments influence consumer purchasing habits, preferences, and overall financial behavior. The research also explores how businesses have adapted to the rise of mobile payments, including changes in transaction processes, customer engagement, and operational efficiency. Lastly, it assesses the role of mobile payments in promoting financial inclusion, particularly among underserved and unbanked populations.

SCOPE OF STUDY

This study explores the significant impact of mobile payments on the financial industry, benefiting consumers with convenience and businesses with streamlined operations and global market access. Financial institutions must innovate to compete with fintech startups. The research traces the evolution from barter to digital transactions, focusing on technological advancements like the internet and smartphones. It analyzes market trends, security measures, and regulatory landscapes influencing mobile payments. Additionally, the study examines the social and economic benefits, including financial inclusion and reduced transaction costs, while identifying emerging trends such as blockchain, contactless payments, and AI in payment systems**.**

REVIEW OF LITERATURE

Author

1. **Malhotra, N. K., & Dash, S., (2011) Marketing Research, An Applied Orientation. 6th Edition, Pearson, India.** Marketing Research: An Applied Orientation" by Malhotra and Dash is a renowned textbook in the field of marketing research. It provides a comprehensive overview of the principles and practices of marketing research with a focus on practical application. The book covers various topics such as research design, data collection methods, sampling techniques, data analysis, and reporting. It is widely used by students, researchers, and professionals to understand how marketing research can be used to make effective business decisions.
2. **Kothari, C.R. & Garg, G. (2014). Research Methodology: Methods and Techniques (3rd edition). New Delhi: New Age International (P) Ltd.** The book "Research Methodology: Methods and Techniques" by Kothari and Garg is a comprehensive resource that covers various aspects of research methodology, including literature reviews. In the context of a literature review, here are some key points that might be covered in the book

3. **Bhattacherjee, Anol. (2012). Social Science Research: Principles, Methods, and Practices Textbooks Collection. Book3** "Social Science Research: Principles, Methods, and Practices" by Anol Bhattacherjee is another valuable resource for understanding research methodologies, including literature reviews. The book likely discusses the role of literature reviews in social science research, highlighting their importance in providing a theoretical framework, contextualizing the research problem, and identifying gaps in existing knowledge.

4. **Creswell, J. W. (2009). Research Design: Qualitative and Quantitative Approaches (Second Edition). Thousand Oaks, CA, USA: SAGE "**Research Design: Qualitative and Quantitative Approaches" by John W. Creswell is a highly regarded book that covers various aspects of research design, including literature reviews. Here are some insights you might find regarding literature reviews in this book

5. **Pallant, J. (2005). SPSS survival manual: a step by step guide to data analysis using SPSS. Allen & Unwin Publication** The "SPSS Survival Manual" by Julie Pallant focuses on data analysis using SPSS software, so it may not delve deeply into literature review methodologies. However, understanding how SPSS and statistical analysis tools fit into the research process can be beneficial when conducting literature reviews.

6. **Mack, N., Woodsong, C., MacQueen, K.M., Guest, G., & Namey, E., (2005), Qualitative Research Methods: A Data Collector's Field Guide. ISBN: 0-939704-98-6. "**Qualitative Research Methods: A Data Collector's Field Guide" by Mack, Woodsong, MacQueen, Guest, and Namey is a valuable resource for understanding qualitative research methodologies, although it may not extensively cover literature reviews in the traditional sense.

7. **Turowski, K., & Pousttchi, K. (2004). Mobile Commerce: Basics and Techniques. (Mobile Commerce: Grundlagen und Techniken), Springer, Heidelberg, Germany. "**Mobile Commerce: Basics and Techniques" by Turowski and Pousttchi is likely to provide insights into mobile commerce research, but it may not delve deeply into literature review methodologies specifically. However, within the context of mobile commerce research, here are some aspects related to literature reviews that you might find in the book

8. **Rogers, E. M. (2010).Diffusion of innovations (4th ed.). Simon and Schuster. "**Diffusion of Innovations" by Everett M. Rogers is a seminal work in the field of communication and sociology, particularly focusing on how new ideas and technologies spread within societies. While the book itself may not delve deeply into literature review methodologies, it does provide a rich theoretical framework that is often cited and discussed in literature reviews related to diffusion theory and innovation adoption. Here are some aspects related to literature reviews that you might find relevant within the context of Rogers' diffusion theory:

RESEARCH METHODOLOGY

outlines the research methodology for analyzing the evolution of payment systems and the rise of mobile payments. The study employs a mixed-methods approach, integrating both qualitative and quantitative research methods for a comprehensive analysis. Data collection involves secondary data analysis, including the review of historical documents and literature on payment systems, and primary data collection through online surveys, structured questionnaires, semi-structured interviews, and case studies. Quantitative data will be analyzed using statistical tools such as SPSS or R to conduct correlation, regression, and factor analysis, while qualitative data will undergo thematic and content analysis to identify recurring themes and insights. The study uses purposive sampling for interviews and random sampling for surveys to ensure a representative sample. To ensure validity and reliability, the study employs triangulation and pilot testing of data collection instruments. Ethical considerations include

obtaining informed consent, maintaining confidentiality, and ensuring data security. The study acknowledges potential limitations such as data availability, response bias, and generalizability. This methodology provides a structured framework for investigating the historical and current trends in payment systems, offering a comprehensive analysis of the rise of mobile payments.

DATA ANALYSIS AND INTERPRETATION

1.1 Descriptive analysis

1.1.1 Age

AGE	PARTICULARS	PERCENTAGE
20-30	40	33.33%
31-40	34	28.33%
41-50	24	20.00%
51 & above	22	18.33%
TOTAL	**120**	**100.00%**

Table 5.1.1: Table showing the Age of the Respondents

Interpretation: The data indicates that the largest group of respondents is aged 20-30 (33.33%), followed by 31-40 (28.33%). The 41-50 age group represents 20%, while 51 and above constitute 18.33%. This suggests higher mobile payment adoption potential among younger adults, with older groups showing more cautious adoption.

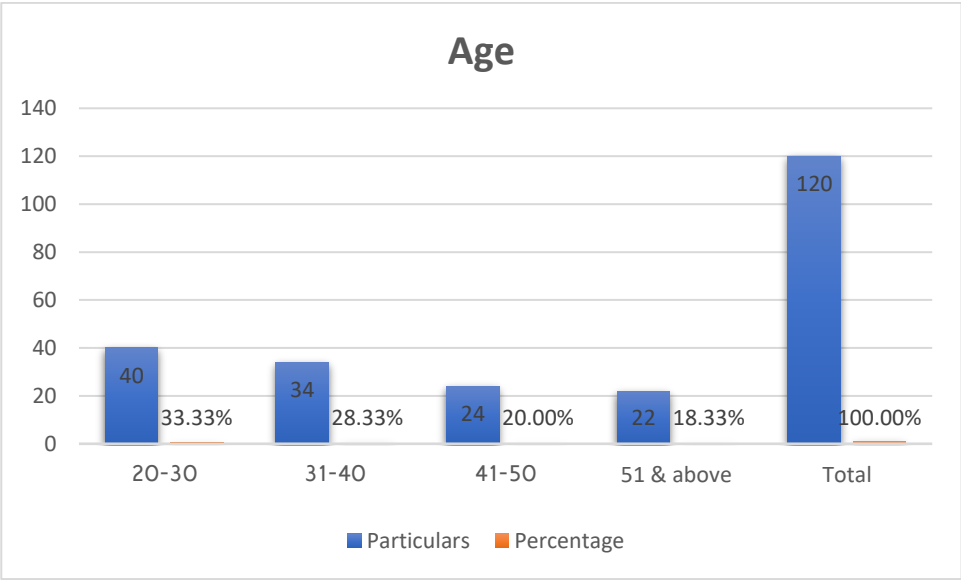

Chart 5.1.1: Chart showing the Age of the Respondents

1.1.2 Gender of respondents

Gender	No. Of respondents	Percentage
Male	90	75
Female	30	25
Total	120	100

Table 5.1.2: Table showing the Gender of the Respondents

INTERPRETATION: The data shows a gender imbalance, with 75% males and 25% females among respondents. This suggests a potential gender gap in mobile payment usage or interest in payment system evolution. Addressing this disparity is essential for inclusive strategies in mobile payment adoption and system development.

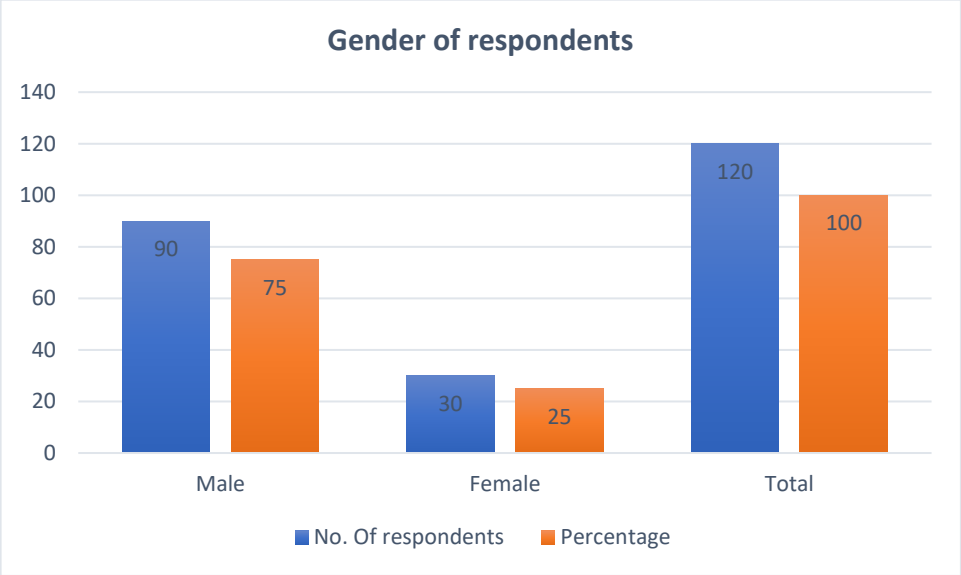

Chart 5.1.2: Chart showing the Gender of the Respondents

5.1.3 Payment method use

PAYMENT METHOD USE	NO. OF RESPONDENTS	PERCENTAGE
Cash	10	8.33%
Debit/Credit Cards	27	22.50%
Bank Transfers	34	28.33%
online payment	49	40.83%
TOTAL	**120**	**100.00%**

Table 5.1.3: Table showing the Payment method use by Respondents

Interpretation: The data shows varying degrees of usage among different payment methods. Cash is the least used at 8.33%, followed by debit/credit cards at 22.50%. Bank transfers are more common, used by 28.33% of respondents. Online payments, including mobile payments, are the most popular, with 40.83% usage. This suggests a trend towards digital and online payment methods over traditional cash transactions.

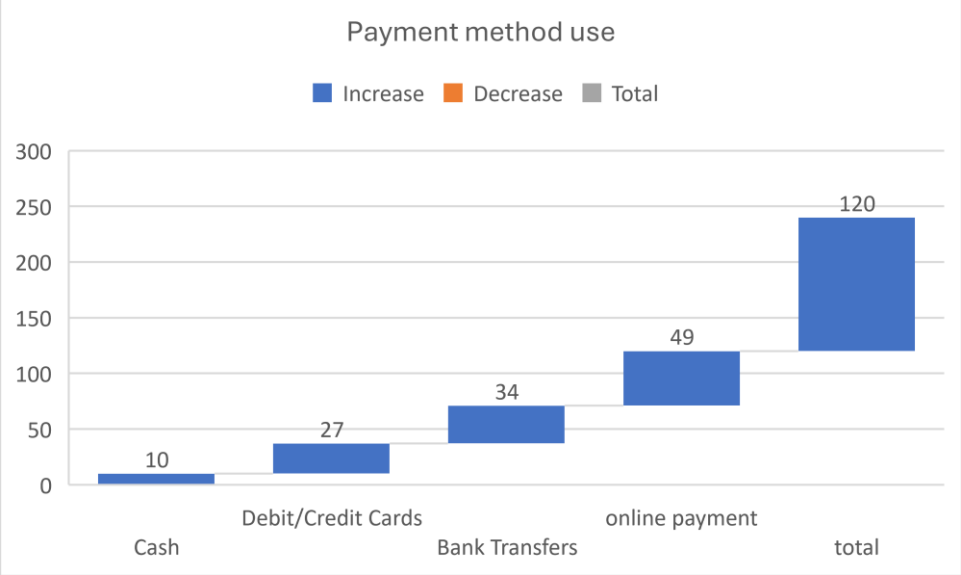

Chart 5.1.3: Chart showing the Payment method use by Respondents

1.1.4 How often use mobile payment app

HOW OFTEN USE MOBILE PAYMENT APP	NO. OF RESPONDENTS	PERCENTAGE
Daily	39	32.50%
Weekly	42	35.00%
Monthly	36	30.00%
Rarely/Never	3	2.50%
TOTAL	**120**	**100.00%**

Table 5.1.4: Table showing the How often use mobile payment app by the Respondents

INTERPRETATION:
The data reveals that a significant portion of respondents use mobile payment apps frequently, with 32.50% using them daily and 35.00% using them weekly. This indicates a high level of adoption and integration of mobile payment apps into daily or regular financial transactions for the majority of respondents.

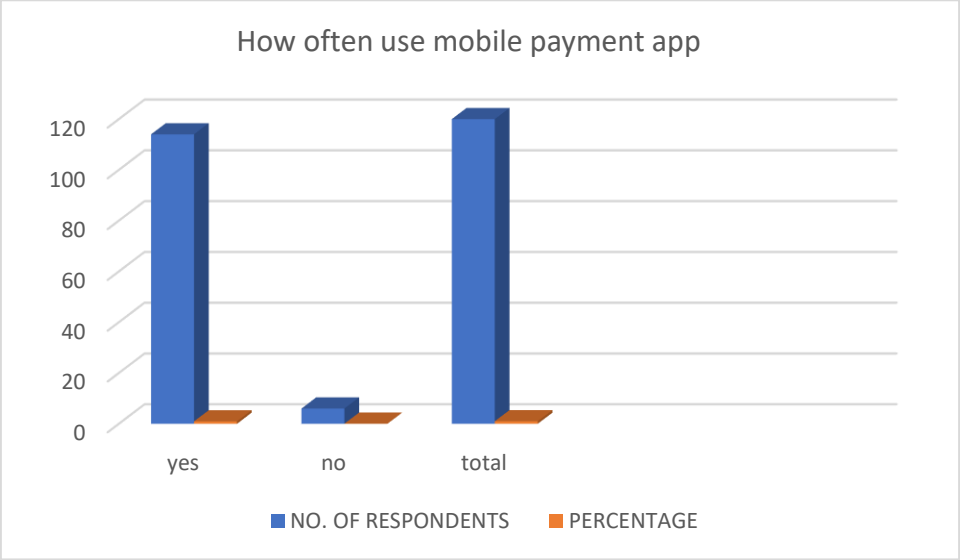

Table 5.1.4: Table showing the How often use mobile payment app by the Respondents

5.1.5 Factors influence your choice of payment method

FACTORS INFLUENCE YOUR CHOICE OF PAYMENT METHOD	NO. OF RESPONDENTS	PERCENTAGE
Convenience	5	4.17%
Security	44	36.67%
Speed of transaction	38	31.67%
Reward points/cashback	28	23.33%
Other	5	4.17%
TOTAL	**120**	**100.00%**

Table 5.1.5: Table showing the Factors influence your choice of payment method

INTERPRETATION:

The data highlights that security is the most influential factor in choosing a payment method, with 36.67% of respondents prioritizing it. Speed of transaction is also significant, with 31.67% considering it important. Reward points/cashback (23.33%) and convenience (4.17%) are also factors but to a lesser extent. This suggests that consumers prioritize security and efficiency when selecting payment methods, with some also valuing incentives like rewards or cashback.

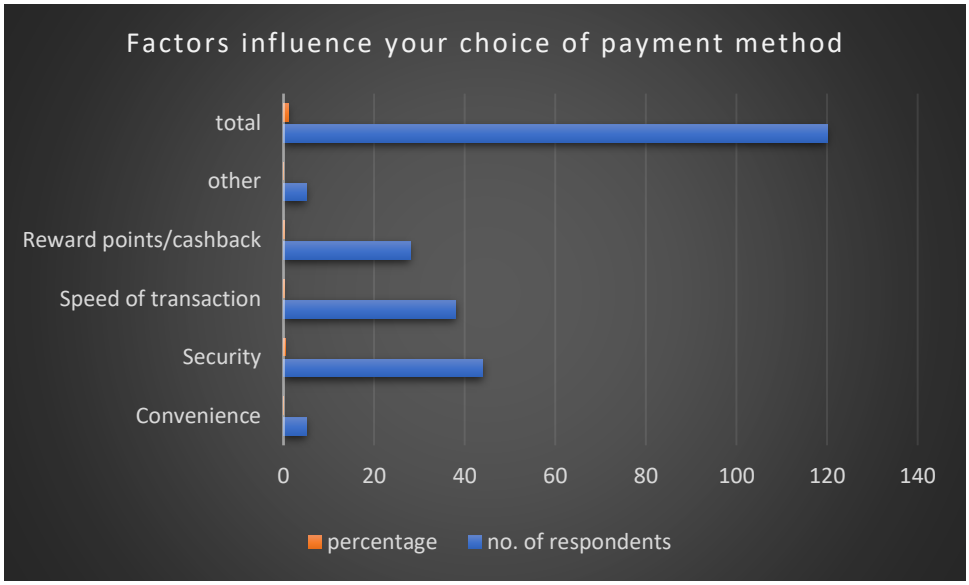

Chart 5.1.5: Chart showing the Factors influence your choice of payment method

1.1.6 Aware of mobile payment technologies?

AWARE OF MOBILE PAYMENT TECHNOLOGIES?	NO. OF RESPONDENTS	PERCENTAGE
Yes	114	95.00%
No	6	5.00%
TOTAL	**120**	**100.00%**

Table 5.1.6: Table showing the Awareness of mobile payment technologies of respondents.

INTERPRETATION:

The data indicates a high level of awareness of mobile payment technologies among respondents, with 95.00% indicating they are aware of such technologies. This suggests that mobile payment technologies have achieved significant visibility and recognition among the surveyed population, reflecting the widespread adoption and integration of mobile payments in today's financial landscape.

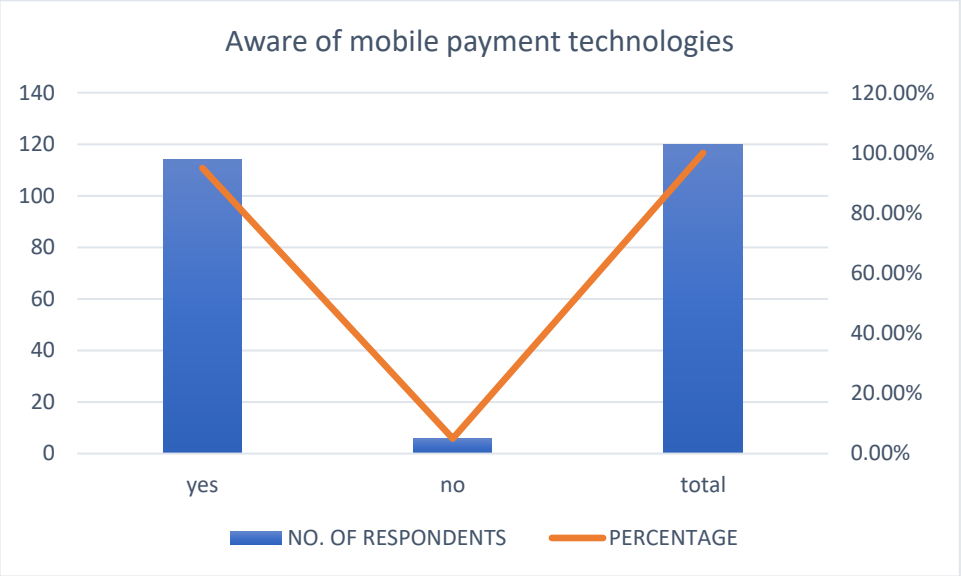

Chart 5.1.6: Chart showing the Awareness of mobile payment technologies of respondents.

5.1.7 Which payment services are you familiar with?

WHICH PAYMENT SERVICES ARE YOU FAMILIAR WITH	NO. OF RESPONDENTS	PERCENTAGE
Pay Tm	20	16.67%
Phone pe	55	45.83%
google pay	32	26.67%
Other	13	10.83%
TOTAL	**120**	**100.00%**

Table 5.1.7: Table showing the Which payment services are Respondents familiar with.

Interpretation:

The data reveals varying levels of familiarity with different mobile payment services among respondents. Phone Pe is the most familiar service, known to 45.83% of respondents. Google Pay follows with 26.67%, and Paytm is recognized by 16.67%. Other services are familiar to 10.83% of respondents. This suggests that Phone Pe has the highest market penetration among the surveyed population, while Google Pay and Paytm also have significant user recognition. The familiarity with "Other" services indicates the presence of various alternative payment solutions in the market.

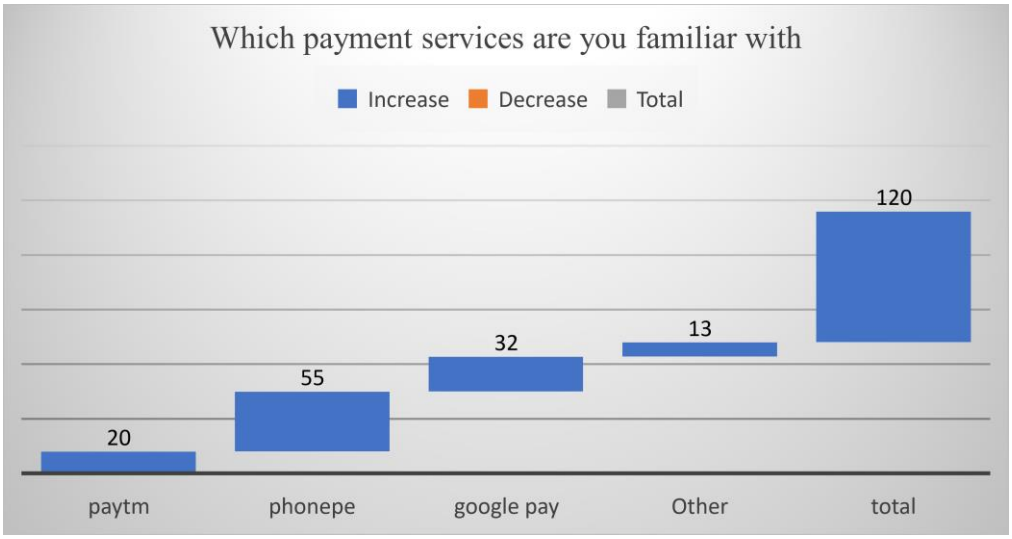

Chart5.1.7: Chart showing the Which payment services are Respondents familiar with.

5.1.8 Mobile payment system keep your financial information secure

MOBILE PAYMENT SYSTEM KEEP YOUR FINANCIAL INFORMATION SECURE	NO. OF RESPONDENTS	PERCENTAGE
Strongly agree	48	40.00%
Agree	63	52.50%
Strongly disagree	1	0.83%
Disagree	8	6.67%
TOTAL	**120**	**100.00%**

Table 5.1.8: Table showing the Mobile payment system keep your financial information secure of respondents.

Interpretation:

The data indicates that the majority of respondents trust mobile payment systems to keep their financial information secure. Specifically, 40.00% strongly agree, and 52.50% agree with this statement, making a combined total of 92.50% expressing trust in the security of mobile payments. Only a small minority, 6.67%, disagree, and an even smaller 0.83% strongly disagree. This high level of trust suggests that security concerns, while present, are largely addressed for most users of mobile payment systems.

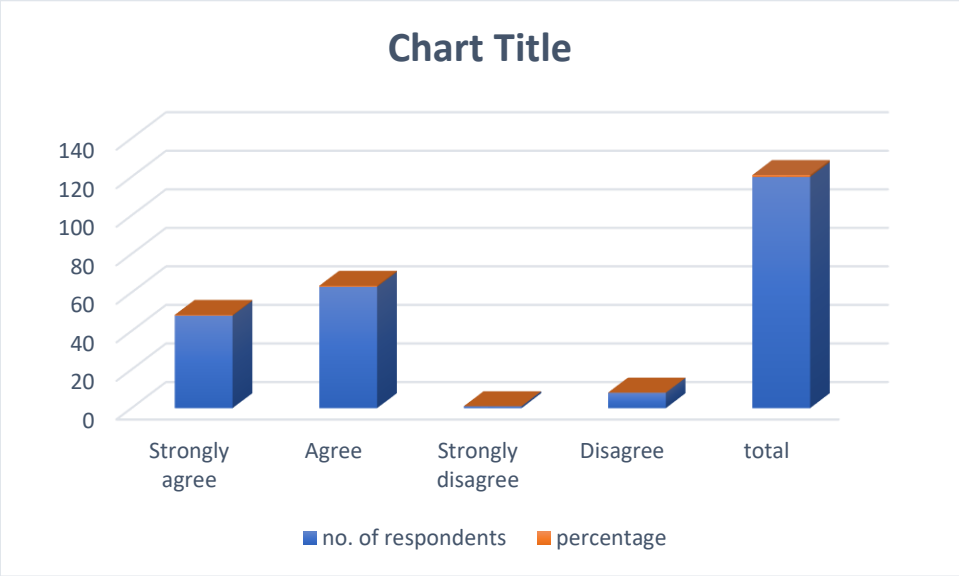

Table 5.1.8: Table showing the Mobile payment system keep your financial information secure of respondents.

CONCLUSION

The analysis of age demographics, gender distribution, payment method preferences, frequency of mobile payment usage, factors influencing payment choices, awareness of mobile payment technologies, familiarity with payment services, and trust in mobile payment security reveals significant trends in the evolution of payment systems and the rise of mobile payments. Younger adults (20-40) show higher adoption rates, while older groups are more cautious. There is a gender disparity with more males using mobile payments, highlighting the need for inclusive strategies. Preferences are shifting towards online payments, with many respondents using mobile payment apps daily or weekly. Security, transaction speed, and incentives are key factors influencing payment choices. High awareness and familiarity with services like Phone Pe, Google Pay, and Paytm indicate strong market penetration. Trust in mobile payment security is generally high, reflecting effective security measures. The historical evolution from bartering to digital payments underscores the drive for efficiency, security, and convenience. Mobile payments have revolutionized consumer transactions, enhancing convenience, security, and financial inclusion, and driving economic development. These findings illustrate the transformative impact of technology on financial behaviors and the potential for continued advancements in mobile payment systems.

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