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Factors influencing the development of the cashless payment system: Comprehending the function of the involved participants

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Abstract
Purpose: The prevalence of cashless payments has increased globally owing to their myriad benefits. Furthermore, the use of cashless payments has also increased. Nevertheless, there is a need for more comprehensive research on the acceptance and current methodologies of cashless transactions. This study aims to gain a thorough understanding by identifying the entities involved and their pivotal functions in the payment ecosystem.
Research Methodology: This report seeks to answer two research questions: i) Which factors are involved in the cashless payment ecosystem? What key elements influence the players in adopting a cashless payment ecosystem? Six key ecosystem players and their influencing elements were identified by comprehensively evaluating 63 publications published between 2015 and 2021.
Results: Several benefits are associated with cashless payments, which have led to their growing popularity worldwide. Furthermore, during the COVID-19 epidemic, there was a significant increase in the use of cashless payment methods.
Limitations: On the other hand, more holistic studies on the widespread use of cashless payment methods and their respective modern behaviors are needed.
Contribution: In addition to providing a foundation for further empirical research, this study contributes to resolving adoption-related concerns.
Novelty: This study's original approach to understanding the various elements driving cashless payment system development by focusing on participant roles and functions is unique. Unlike previous studies, this study examines human dynamics rather than technology or regulatory issues.
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1. Introduction

The advent of information technology in the contemporary banking industry has brought about substantial transformations in the operational practices of banking enterprises by redefining banking procedures. Hence, banks are compelled to embrace information technology, as it is crucial to maintain

their competitive advantage in domestic and international contexts. Fabris (2019) argues that the integration of information technology is closely linked to the financial operations of most banking institutions. The strategy, policy, and implementation of information technology have emerged as a primary concern for banks because of their direct influence on management choices, strategies, and the provision of products and services (Abbas, 2017). In contemporary times, the focus on the strategy, policy, and implementation of information technology has emerged as a primary priority for all banking institutions. There is a global trend among financial institutions to prioritize e-banking activities. These institutions actively seek to enhance their electronic banking operations by leveraging wireless networks and expanding their presence globally in emerging e-commerce areas (Abbas, 2017).

Financial institutions offer e-banking services to streamline operations and minimize reliance on physical documentation and human resources, resulting in cost efficiency. Additionally, these services sustain or enhance the institutions' market positions. Banks capitalize on the potential of the Internet to grow their customer base, transcending both their traditional and existing limitations (Srouji & Torre, 2022).

The retail industry in Bangladesh predominantly relies on hard money for most transactions, indicating that the country operates primarily as a cash-based society (Tanha et al., 2022). The government of Bangladesh is actively engaged in endeavors to digitize a diverse range of services, encompassing banking and payment services, in pursuit of its objective of materializing the vision of Digital Bangladesh. In Bangladesh, a wide range of digital payment methods have become increasingly prevalent and are witnessing notable traction (Lai & Liew, 2021). However, it is noteworthy that the mobile financial services sector in particular exhibits a remarkable pace of expansion. Furthermore, there has been a significant increase in the utilization of digital payment mechanisms within the government-to-person (G2P) framework. Currently, efforts are being made to fully transition G2P payment methods into digitalized formats (Achord, Chan, Collier, Nardani, & Rochemont, 2017).

Digital payments constitute approximately 69% of the aggregate payments executed by governmental entities. Several government ministries and offices, such as the Banking Sector, have initiated multiple digital technology integration projects (Fahim, Al Mamun, Hossain, Chakma, & Hassan, 2022). Among various projects, the implementation of new digital payment initiatives is of utmost importance. Implementing these proposed solutions would effectively enhance the scope and range of digital payment alternatives in Bangladesh, facilitating the transition towards a cashless society with reduced reliance on physical currency for monetary transactions (Lai & Liew, 2021).

Significant infrastructure components were constructed during this period, including an automated cheque-clearing system, an electronic fund transfer network, a card payment switch, and a real-time Gross Settlement System. Establishing the Mobile Financial Services (MFS) initiative led by banks was undertaken in conjunction with attaining financial inclusion. Microfinance institutions (MFS) have successfully facilitated the integration of over 72 million people into the formal financial services sector, even though a significant proportion of these individuals were previously barred from such services (Srouji & Torre, 2022).

The utilization of the Internet as a medium for delivering banking products and services has experienced notable expansion on a global scale. The Internet presents novel commercial prospects not only for clientele but also for financial institutions. These emerging opportunities are accompanied by inherent risks and prospective benefits (Srouji & Torre, 2022). E-banking exhibits notable differences from traditional payment methods in various significant aspects, such as utilizing distinct technology for inquiry and information processing, and employing a separate distribution route. The use of online banking is driven by various factors, such as the aim to enhance customer service and achieve cost reduction compared to industry rivals (Chike, Mbamalu, Oguanobi, & Egbunike, 2023).

Consequently, financial institutions must assess and enhance their e-commerce strategies. Banks offer e-banking services as a strategic approach to safeguard or expand their market share, or as a cost-effective measure to minimize reliance on physical documentation and human resources. The

significance of cashless banking is growing, as banks increasingly focus on this domain. Hence, cashless payment methods and instruments play a significant role in enhancing the efficiency and stability of a financial system (Uddin & Akhi, 2014).

Bangladesh bank users experience much longer wait times when conducting basic transactions than when conducting cashless banking methods. Fabris (2019) states that cashless banking has the potential to reduce transaction and processing times, provide several payment methods, and deliver immediate notifications for all user account transactions. Extended periods spent in banks and the need for cumbersome documents diminish customer satisfaction, while increasing transaction costs and other overhead expenses. The augmented operational expenses of banks can reduce their operational profit. There is a clear correlation between bank profitability and the adoption of cashless banking. With the Central Bank's directive, all banks in Bangladesh are now embracing a cashless policy. Consequently, it is imperative to evaluate the consequences of this policy (Lai & Liew, 2021).

Based on our literature search, we found a need for a comprehensive model that encompasses the entire cashless payment ecosystem and emphasizes the crucial responsibilities of various participants. This study offers a comprehensive perspective on the significant role of actors in the cashless payment ecosystem and the factors that impact their adoption (Rozanna, 2023).

Using the scoping review technique, this study addresses two research questions.
1. Which actors are involved in a cashless payment ecosystem?
2. What determining variables influence actors to embrace a cashless payment ecosystem?

2. Literature Review

A substantial body of literature from many researchers examines the relationship between cashless banking and bank profitability. Cashless transactions refer to financial transactions conducted via electronic methods, such as ATMs, debit cards, credit cards, and other means without a physical currency. This may also be utilized for the remuneration of purchasing commodities and services. Currently, the world is experiencing the COVID-19 pandemic, which has caused an abrupt halt in economic activities. The epidemic has already inflicted significant harm on actual economic activity, and the extent of its impact remains unknown (Uddin & Akhi, 2014). Individuals are confined to their residences and cannot perform their daily activities. Many individuals rely heavily on digital tools, particularly mobile phones, to conduct various financial transactions during this challenging period.

These transactions include paying bills for essential consumer goods and utility services, transferring money, recharging mobile phones, donating, withdrawing money, paying loan installments, and paying insurance premiums. Mobile banking technologies (Uddin & Akhi, 2014). COVID-19 inflicts unparalleled harm to a country's economy compared to other natural and artificial catastrophes, such as climate change, nuclear warfare, natural disasters, and local tragedies. Furthermore, COVID-19 has significantly and extensively influenced several financial sectors, including banking and insurance, the stock market, and leasing (Zahedi & Piri, 2023). The virus can also be transmitted by exchanging paper currency such as banknotes and coins. Several central banks, including those of China, South Korea, Kuwait, and Kenya, have emphasized issuing virus-free banknotes to the public. Cashless payment methods can mitigate financial risks such as default risk, liquidity risk, and systematic risk by improving the efficiency of the payment system. Cashless and E-banking offer the advantages of cost reduction, time savings, and resource efficiency by delivering round-the-clock services to all stakeholders, as stated by DiFranco (2008).

The implementation of a cashless policy has the potential to stimulate economic growth and enhance banks' lending capability to underserved sectors by increasing liquidity. Additionally, it can help reduce financial corruption by guaranteeing the presence of appropriate infrastructure and fostering trust (Uddin & Akhi, 2014). Implementing an e-payment system benefits economic growth, specifically in the International Journal of Science and Business (IJSB).

Nigeria's Gross Domestic Product (GDP) and Automated Teller Machines (ATMs) for financial transactions positively impacts economic growth. Simultaneously, alternative electronic payment methods have a detrimental influence on economic growth. Implementing a cashless policy can attract more significant levels of foreign direct investment, provide employment opportunities, and decrease instances of robbery (Mashizha, Gumbo, & Chimwe, 2023).

2.1 E-Banking Profitability

Datta (2021) did research utilizing the Generalized Method of Moments (GMM) to investigate the factors that influence bank profitability in 23 countries. Their findings indicate that an increase in ATMs and POS terminals can enhance bank profitability. The use of mobile payment systems by merchants has several benefits. First, it leads to an increase in sales and a decrease in payment-processing expenses. Additionally, it positively affects a firm's overall sales growth. In Malaysia, e-payment systems have been found to have a detrimental effect on sales growth, but a favorable influence on customers' buying intentions, particularly when considering the perceived risk of using such systems. Cheng et al. (2011) draw this conclusion from a study conducted on adult consumers.

The cashless banking system is widely acknowledged as the most dependable and prosperous banking system in the world. According to Fabris (2019), banking organizations experience a more significant beneficial influence than the manufacturing sector (Mahmod, 2022). An empirical study of Nigerian commercial banks revealed that introducing e-banking services significantly enhanced banking efficiency in customer service delivery. The study also discovered that mobile banking enhances the efficiency of banks in terms of convenient transactions, time savings, and prompt transaction notifications, which contributes to customer satisfaction and relationship improvement. In a separate study conducted in Nigeria, a cluster sample approach was employed to determine that most banks in Nigeria had enhanced customer connections and satisfaction by implementing efficient electronic banking systems.

Datta (2021) examined the factors influencing the use of three mobile financial services in Kenya: mobile payments, mobile money transfers, and mobile banking. This study utilized a multinomial logit model and considered variables such as age, gender, education level, service tariff, and transaction volume as explanatory factors. The study found that the adoption of mobile payments and banking is influenced by gender, education level, wealth, service prices, and transaction volume.

Berkimbayeva (2019) performed research that examined the relationship between information and communication technology (ICT), financial inclusion, and economic growth in African countries. The researchers used a sample of African nations from 1988 to 2007 to demonstrate the correlation between adopting information and communication technologies (ICT) and economic growth, specifically focusing on expanding mobile phone usage. In a study by Datta (2021), the researchers compared customers of different banks to assess their satisfaction with internet banking services. The study found no notable distinction between the public sector, private sector, and foreign banks regarding the facilities provided for customers to use internet banking services in India (Chow & Singh, 2022). In a study conducted by DiFranco (2008) in Malaysia, the Technology Acceptance Model (TAM) was utilized. This study focused on several elements: performance expectancy, effort expectancy, social impact, enabling conditions, trust, and behavioral intent. The study revealed that individuals' perceptions of how easy it is to use online banking positively impact their intention to do so. However, their self-efficiency and trust hurt their intentions towards online banking (Obinabo, 2017).

According to Abdullah, Redzuan, and Daud (2020), customers in emerging countries often refrain from using digital channels because they need more trust and confidence in these new channels, even if they have the necessary credentials for digital banking. The lack of trust among customers in digital finance channels has a detrimental impact on financial inclusion programs driven by digital finance in emerging and developing nations. This issue is exacerbated in these countries because of the need for robust consumer protection institutions and frameworks (Obinabo, 2017). The results show that possessing extensive financial data (or digital banking credentials) does not automatically enhance the ability of impoverished people to obtain financial services if they lack confidence in digital platforms.

Numerous studies have been conducted in Nigeria and Bangladesh on the correlation between cashless policy implementation and bank profitability. Hidayah, Waspada, and Sari (2023) examined the impact of a cashless economic policy on Nigerian banks, explicitly focusing on comparing profits between banks operating under a cash-based policy and those operating under a cashless regime. The findings indicate that implementing a cashless economic policy has a positive effect on bank profitability. Additionally, the policy was found to reduce operational costs and promote financial inclusion by reaching previously unbanked individuals. In their study, Fabris (2019) employed automated teller machines (ATMs), Point of Sale (POS) systems, and web-based transactions (WBT) as means of examining the impact of cashless banking on the overall return on equity (ROE) of deposited funds. A study conducted on banks in Nigeria revealed that automated teller machines (ATM) and point-of-sale (POS) systems are positively correlated with return on equity (ROE). However, web-based technologies (WBT) have a negative correlation with the ROE. Fachrudin and Silalahi (2022) investigated the relationship between the adoption of a cashless policy and the profitability performance of commercial banks in Nigeria. They utilized ATM and POS as indicators of cashless policy, and ROA and ROE as profitability measures.

The findings indicate that the use of Automated Teller Machines (ATMs) and point-of-sale (POS) systems has a positive impact on Return on Assets (ROA) and Return on Equity (ROE). A body of study exists in Bangladesh regarding the e-banking and mobile banking domains. Berkimbayeva (2019) conducted a study that demonstrated the influence of many aspects on customer experience in mobile banking in Bangladesh. These elements include the convenience and responsiveness of the system, security of transactions in ATM booths, and technological challenges associated with mobile banking. This study suggests that legislators and regulators should prioritize the security and technical complexity aspects of ATM booths while developing a convenient and responsive system for mobile banking transactions. These reasons have impeded the progress of mobile banking services in Bangladesh, potentially resulting in a negative consumer experience during mobile banking transactions. According to Abdullah et al. (2020), consumers need more certainty regarding mobile-banking security. Perceived risk factors, including performance, security/privacy, time, and social and financial risks, primarily influence this uncertainty. These risk factors are negatively related to the adoption and usage of mobile banking services. The desire to utilize mobile banking services is positively associated with several aspects including honesty, ability, perceived utility, kindness, perceived simplicity of use, relative cost, and time advantages. This study reveals that security and trust emerge as the primary influential elements, whereas poor marketing negatively impacts consumer satisfaction in mobile banking. Much research has been conducted on e-commerce, banking, digital finance, financial inclusion, and mobile banking in Bangladesh. However, there is a need for more studies specifically examining the correlation between bank profitability and the implementation of cashless banking policies.

In a recent research by Fabris (2019), an examination was undertaken to establish the correlation between e-banking and the performance of commercial banks in Bangladesh. The findings revealed that Internet banking alone exhibited statistical significance and influenced return on assets (ROA) and return on equity (ROE). The literature evaluation indicates that more research needs to be conducted on the influence of cashless banking on the profitability of banks in Bangladesh, except for the study conducted by Hidayah et al. (2023). However, the study conducted by the researchers focused solely on the state-owned and private commercial banks of Bangladesh, excluding international commercial banks and other specialized institutions from their sample. The study employed a limited dataset spanning approximately five years, failing to encompass the entirety of the banking industry. To address these disparities, this study utilized a dataset spanning seven years, encompassing the entire banking sector of Bangladesh. This study investigates the correlation between cashless banking and profitability of the banking business in Bangladesh (Achord et al., 2017).

Banking refers to the financial system that encompasses various institutions and activities involved in the business landscape. There have been significant transformations due to revolutionary advancements in information technology, leading to a paradigm shift in the banking sector's operations. Banks may need to help keep pace with their rivals in local and global banking markets, thereby neglecting the

necessary adaptations. Given the direct influence of information technology on banks' decision-making processes, particularly in terms of policy and strategy, these institutions must incorporate it into their operations to effectively and intelligently conduct their business in the contemporary period characterized by advancements in science and technology. A significant number of banks worldwide are transitioning towards e-banking and electronic banking and employing wireless networks to establish a new global business paradigm (Achord et al., 2017). Banks prioritize paperless banking practices and cost-reduction measures to facilitate market expansion. Banks are implementing sustainable digital infrastructure to enable clients to surpass conventional practices and limitations (Lai & Liew, 2021).

Bangladesh is primarily a cash-based economy, in which most transactions are conducted using physical currency. Bangladesh actively embraces the digitization process to achieve digital transformation. The government of Bangladesh is diligently engaged in digitizing banking and payment systems. The popularity of digital payment systems has become widespread, with particular attention given to the rapid rise in the mobile financial services industry. Digital payment systems are now facilitating the disbursement of various forms of government-to-person (G2P) payments, including allowances and stipends. Currently, digital payment accounts for 69% of all transactions. In the current era of digitization, government ministries and offices have placed significant emphasis on adopting and implementing digital payment systems. To facilitate the transition towards a cashless society, the government will implement a digital payment system, encouraging widespread use among the population. By this juncture, Bangladesh has successfully implemented several cashless systems, including the automated cheque-clearing system, electronic fund transfer network, card payment switch, and real-time gross Settlement System. The Mobile Financial System (MFS) has successfully established connections with over 72 million individuals, a significant proportion of whom were previously excluded from accessing financial services (Achord et al., 2017).

Nevertheless, there has been a significant global expansion of Internet-based banking goods and services. However, they have both advantages and disadvantages. E-banking and traditional payment methods exhibit several distinctions owing to the use of distinct channels. Banks increasingly prioritize adopting cashless and paperless banking practices because of their potential to enhance efficiency and cut expenses, thus generating higher profits and market share. The use of cashless payment systems and their associated instruments has been shown to enhance the efficiency and stability of the financial system. Implementing a cashless banking system reduces the transaction processing time, increases the availability of payment options, and provides quick notifications for all types of client accounts. The operational profit of banks is negatively affected by increased operating costs, which can mitigate the use of e-banking systems. The implementation of cashless banking significantly influences bank profitability (Achord et al., 2017). Bangladesh Bank has issued directives to all scheduled banks and non-bank financial institutions (NBFI) to promote the use of cashless banking to facilitate automated transactions.

Consequently, Bangladesh is now seeing a significant shift towards cashless banking. Bangladesh Bank also provides help to banks through the design of new rules aimed at facilitating their complete digitalization. This study examines the correlation between the adoption of cashless banking and the profitability of banks in Bangladesh's banking industry, considering prevailing economic conditions (Ong & Chong, 2023).

The concept of a cashless society has gained significant attention and is presently a pressing need in contemporary times. The notion of a cashless society has seen significant growth and expansion owing to the advancements and proliferation of contemporary technology and the Internet. A cashless society refers to a societal structure whereby goods and services are acquired primarily via digital payment platforms such as debit cards, credit cards, online platforms, electronic banking, innovative banking, and mobile financial services. This mode of transaction supersedes traditional reliance on physical currency, coins, and checks for financial exchanges. Cashless banking refers to a financial system that restricts or eliminates the use of physical currency and checks, instead of relying on electronic or digital platforms for conducting transactions. These platforms include debit cards, credit cards, web-based

online transactions, electronic funds transfers (EFT), real-time gross settlement (RTGS), app-based online transactions, and mobile financial services (MFS), among others. Cashless banking is a crucial component of cashless society. Cashless banking refers to conducting transactions without requiring physical currency, instead of relying on digital banking tools to facilitate financial transactions. The advent of the COVID-19 pandemic sparked significant interest in cashless banking, prompting nearly all financial institutions to implement and introduce digital banking products and services. These offerings empowered users to access cashless services without physically visiting the bank offices.

Furthermore, amid the COVID-19 pandemic, financial institutions proactively undertook measures to allocate resources to invest in fintech solutions. This strategic decision aimed to mitigate the requirement of clients to physically visit bank branches for various financial transactions and other banking services. Each financial institution made significant investments to modernize its operations, including electronic and digital platforms. This was done to provide consumers with convenient and cost-effective banking services, thus eliminating the need for physical visits to traditional branches. The rationale for this substantial expenditure stemmed from recognizing that failure to align with contemporary banking services would result in a competitive disadvantage vis-à-vis rival banks, perhaps leading to market exclusion.

The organization initiated the implementation and introduction of digital banking goods and services to facilitate financial transactions. Bangladesh Bank, the central bank of Bangladesh, has implemented many measures to facilitate the adoption of cashless banking. The organization provided policy support, introduced electronic cashless products, and granted authorization to launch and enable e-banking services. These initiatives aimed to extend banking services to both banked and unbanked individuals, thereby promoting financial inclusion. The organization has offered a variety of goods and services, as well as providing instructions to scheduled banks for the use of online platforms to enhance the efficiency of cashless banking and related services. Over time, Bangladesh Bank has implemented several groundbreaking measures that have promoted a cashless society. The central bank has implemented several digital technologies to facilitate the transition towards a cashless banking system. In Bangladesh, the concept of a cashless society has transitioned from mere aspiration to tangible reality owing to the proliferation of many digital banking products that facilitate cashless transactions. These products are elaborated below:

2.2 E-Payment Systems in Bangladesh

The Bangladesh Automated Clearing House (BACH) was created in October 2010. The establishment aimed to streamline interbank clearing of financial products. Previously, interbank instruments were cleared using manual processes facilitated by the central bank. Following the establishment of the BACH system, there was no longer a need for the physical submission of checks, pay orders, dividend warrants, and similar documents. Financial institutions utilize the central bank's server to process financial instruments, employing digital pictures of those instruments rather than relying on actual checks and other tangible forms. The Central Bank, after that, conducts a procedure of matching the photographs and inspecting the flaws of the instruments, followed by electronically settling the instruments within the designated cut-off period.

The central bank established the Bangladesh Electric Fund Transfer Network (BEFTEN) in February 2011. The technology described above is the initial implementation of a paperless electronic interbank money transfer system within the country. This system enables processing of both debit and credit transactions. This system facilitates various credit transfers including wages, social security payments, firm dividends, domestic and overseas remittances, corporate payments, bill payments, and person-to-person payments. Similarly, it has enabled debit transactions encompassing bill payments, insurance premium payments, club association payments, EMI payments, and other related activities. In addition to the payments above, the BEFTN system also supports the processing of government wage disbursements, social benefits, other social safety net payments, and other government-related payments.

The National Payment Switch Bangladesh (NPSB) financial system facilitates electronic transactions nationwide. This service was launched in 2012. The organization offers many services, including interbank transactions facilitated by automated teller machines (ATMs), Points of Sales (POS), Internet banking Fund Transfer (IBFT) transactions, and Mobile Financial Services. The National Payment Switch of Banks (NPSB) has facilitated the interconnection of 53 banks to conduct ATM transactions. Currently, the NPSB offers four distinct services, including interbank ATM transactions, which encompass activities such as cash withdrawals, balance inquiries, money transfers, and mini-statements. As of October 2021, the Central Bank of Bangladesh has reported that 53 banks have achieved interoperability for point-of-sale (POS) transactions, while 30 banks have established interconnectivity for their interbank fund transfer (IBFT) operations.

The acronym RTGS refers to a real-time gross settlement system. In 2015, Bangladesh Bank introduced various services to facilitate high-value interbank settlement. The central bank's decision to enable the real-time and instantaneous settlement of interbank and corporate transactions is commendable. Real-time gross settlement (RTGS) technology facilitates the immediate settlement of individual client transactions. As of October 2021, over 10,810 online branches of the scheduled bank have been connected to the BD RTGS.

4.3 Mobile Financial Services in Bangladesh

In 2011, the Bangladesh Bank authorized the introduction of Mobile Financial Services (MFS). Because of extensive mobile network coverage and a significant number of mobile phone users, the central bank introduced mobile financial services to facilitate the participation of both banked and unbanked individuals in the financial system. Mobile financial services are advantageous for those residing in rural areas, because they provide them with more financial empowerment. In rural areas, individuals now receive financial support from their family members within a significantly shorter timeframe than the previous duration of two to three days or longer. The utilization of Mobile Financial Services (MFS) for payment transactions is characterized by its simplicity and convenience. Because of the introduction of Mobile Financial Services (MFS), the processes of cash deposits and withdrawals have become significantly more accessible and easier.

Individuals no longer need to visit distant bank locations to withdraw cash. Various services may be accessed via Mobile Financial Services (MFS), including cash in, cash out, Person to Person (P2P), Person to Business (P2B), Business to Person (B2P), Person to Government (P2G), and Government to Person (G2P) payment services nationwide. Local distribution can be facilitated by using mobile financial services (MFS) for inward remittances received via banking channels. Opening an MFS (Mobile Financial Services) account is straightforward because individuals can independently create their accounts using their smartphones or seek assistance from authorized agents. In Bangladesh, many mobile financial services companies play a crucial role in facilitating financial inclusion for the unbanked population (Achord et al., 2017).

Bkash is a subsidiary of Bank Limited, which commenced its activities with the central bank's approval on July 21, 2011. The enterprise's inception was created through a collaborative effort between BRAC Bank Limited and Money in Motion LLC, a technological company in the United States. Customers can deposit funds into their mobile wallet and utilize various services, such as money transfers, commercial transactions, bill payments, mobile recharge, and receipt of overseas remittances through Bkash financial services. Briefly, Bkash successfully attracted international investment because of its substantial user base as a mobile financial service provider. The International Finance Corporation (IFC), a constituent of the World Bank Group, made equity investments in the company in 2013.

The Bill and Melinda Gates Foundation acquired a stake in the company in 2018. Ant Financial, the operator of Alipay (an affiliate of the financial group Alibaba), also holds an equity partnership with Bkash. In addition to the aforementioned advantages, it is essential to acknowledge certain drawbacks associated with the use of bash. Firstly, it is worth noting that this service is not universally accessible throughout the whole nation. Furthermore, instances of money laundering have been reported in

connection with the use of bkashes. Finally, it is pertinent to highlight that the service costs for cash withdrawals are excessively high.

Nagad is a mobile financial service provided by the Bangladesh Post Office. This digital mobile financial service proliferated since its introduction on March 26, 2019, attracting a client base of 70 million over four years. This achievement can be attributed to its competitive pricing and user-centric approach—currently, Nagad's daily transactions amount to over 700 crore-taka. The company facilitates cashless transactions nationwide through its many services, including cash in-and-out, mobile wallet functionality, payment processing, and bill payment capabilities (Obinabo, 2017).

QR code-based transactions have become increasingly common in recent years. This payment method allows users to make purchases by scanning a Quick Response (QR) code on their mobile devices. On January 23, 2023, Bangladesh Bank introduced Bangla Quick Response (QR)-based transactions to realize a cashless society. This initiative witnessed the participation of ten banks and mobile financial service providers. Quick Response (QR) is a standardized platform for settling app-based transactions across various institutions and mobile financial services (MFS). Customers linked to this platform via banks or mobile financial services (MFS) can conduct their transactions simply and quickly using the Bangla QR code. QR code-based transactions aim to promote a society that relies less on cash and improves several aspects, such as transparency, risk mitigation, cost efficiency, and transaction speed (Obinabo, 2017).

Financial institutions provide a secure website for conducting financial transactions, which is commonly referred to as online banking. To use online banking or internet banking services, consumers must complete a registration process with their respective financial institutions. Subsequently, customer verification is conducted either via the use of a user ID and password or through fingerprint authentication methods. Online banking offers customers a wide range of services, including instantaneous transfer and receipt of funds between intra- and inter-bank accounts, expedited payments via the BEFTEN system, transactions for goods and services, e-commerce payments, bill payments, credit card bill settlements, access to bank account statements, mobile top-up capabilities, QR code transactions, and the ability to open various banking products and services. To offer specialized services, banks in Bangladesh have introduced mobile applications to facilitate seamless financial transactions. Numerous features are incorporated into mobile banking applications to enhance the ease and security of transactions (Obinabo, 2017).

A digital wallet, often known as an e-wallet, refers to the storage of monetary funds on a bank or mobile financial services platform, allowing cashless transactions to be conducted. Digital wallets, also known as e-wallets, have become tangible and practical phenomena in contemporary society. Most banks currently offer digital wallet services in addition to traditional banking institutions. Mobile Financial Services such as Bkash and Nagad offer digital wallet capabilities (Obinabo, 2017).

A debit card is a plastic card that facilitates the electronic storage of funds directly associated with a bank account. Debit cards play a pivotal role in establishing and functioning in a cashless society. Debit cards can be used to make cashless purchases. Utilization in Bangladesh has shown significant exponential growth over the past few years. As of January 2023, the total number of debit cards had increased to 386,375,515 from 180,320,004 in January 2019.

3. Methodology

This study followed the scoping review methodology proposed by Fachrudin and Silalahi (2022). A scoping review is a suitable method for systematically searching and organizing data in a wide range of subject areas, specifically to discover and analyze elements associated with a specific notion. The objective was to systematically identify and outline the fundamental ideas that form the foundation of the study field, particularly in cases where the field is intricate or requires a complete past examination. By employing a scoping review, we can ascertain a model of best practices and discern the ideas within the research, enabling us to systematically document, report, or debate the resulting concepts (Ravi, 2018).

The original search used two scientific databases: Web of Science and Scopus. Subsequently, the search was expanded using Google Scholar to encompass grey literature sources, such as business white papers and reports. The search string combines keywords related to cashless payments using operators to ensure precision and broad coverage. The wildcard '*' was used to include possible variations in the phrases. The resulting search strings were: ("cashless payment*" OR "digital payment*" OR "electronic payment*" OR e-payment* OR "contactless payment*" OR "mobile payment*" OR "paperless payment*") AND (factor* OR determinant*) AND (society* OR ecosystem*). We used these keywords in the title to ensure that the search results were accurate. The articles were chosen according to the following five criteria: i) Our review will primarily focus on recent literature, specifically journal articles and conference proceedings, published between 2017 and 2023. We also considered the most recent whitepaper companies. ii) The analyzed literature will be written in English. Third,) our review specifically address the factors that determine the success of cashless payment systems. iv) We examine studies exploring the adoption, use, and acceptance of cashless payment systems. v) We will have full-text access to the content, allowing us to read and download it.

A total of 183 items were retrieved during the initial search. Following the elimination of duplicate articles, 104 articles remained for further inspection. Criteria iii, iv, and v were utilized by examining the titles and abstracts of the articles. Consequently, we omitted 25 articles that met the established criteria. In addition, we deleted seven articles because of the unavailability of their entire material for reading. Seventy-two complete articles were evaluated using criteria iii and (iv). This involved comprehensively analyzing the articles' entire content and scrutinizing the aims and objectives, methods, findings, and conclusions to evaluate the quality of the paper. Sixteen papers were omitted because they were irrelevant to the purpose of this study, as they focused on technical features or variables related to the 'continuance usage intention' of digital payment). Fifty-six articles met the inclusion criteria. Definitive compilation of articles was obtained using snowball sampling, which examined the references to the 56 articles mentioned above. Seven new articles were included, resulting in 63 articles for this review and a previous batch of relevant articles.

This study aims to generate concepts by synthesizing prior research on the adoption of cashless payment systems. The scoping review, known as "charting the results," extracted data from 63 selected papers. The data were collected and recorded in a draft charting table, an Excel sheet specifically designed to capture the features of the included studies, and primary information related to the research questions. This includes study goals, actors, determinants or variables, key ideas, and conclusions (Ravi, 2018).

This study employed idea mapping as a universal approach to depict the cashless payment ecosystem in a complete and more holistic visual and diagrammatic format.Therefore, the necessary ideas to clarify and depict the payment ecosystem were organized and displayed as a visual representation of data in a table and diagram style (refer to Figure 1). We employed open coding to thoroughly examine the selected articles and document the aspects that determine the outcomes. We then compared these concepts and categorized them according to their relevance and linkage with the identified players.

4. Result and discussions

Goel, Sahai, Vinaik, and Garg (2019) state that actors can encompass human and nonhuman entities, such as technical artifacts connected through networks of diverse interests, including individuals, organizations, and standards. Within each ecosystem, a central participant can employ their structural talent to engage in inventive and original interactions to generate value collaboratively. An ecosystem is a complex network of interconnected individuals and elements that work together in a certain manner to facilitate innovation. It has been observed that digital payments have emerged as a prominent area for innovation. Not only have Internet giants such as Google, Apple, Facebook, Alipay, and FinTech businesses such as PayPal, Square, and iZettle entered the market, but other significant actors have also contributed to the entire ecosystem. Consequently, we identified the six actors who participated by combining the gathered pieces.

Consumers encompass the final recipients of goods or services, including individuals, organizations, and other entities who derive advantages from utilizing cashless payment methods. Fachrudin and

Silalahi (2022) argue that they are seen as the catalyst for a cashless ecology. Their adoption and utilization may motivate additional participants to embrace non-cash transactions. According to Goel et al. (2019), cashless payments can enhance convenience, save time, and enable individuals to explore new technological advancements.

Merchants are enterprises that accept payment methods other than cash, including physical stores. The digital payment industry operates on a multisided platform. Service providers have a vested interest in substituting cash payments with electronic payments. The industries encompassed in this list are traditional banks, nonbanks, fintech companies, card providers such as Visa and Mastercard, telecom companies such as Apple and Samsung, e-commerce companies such as Alibaba and Amazon, cryptocurrency providers, and providers of hardware and software solutions for electronic payments (Ong & Chong, 2023).

Media and content promoters are critical stakeholders in an ecosystem that have significant power to promote and advance cashless payments. Most Internet users use a novel platform, known as 'social media, ' to communicate, share, interact, and cooperate with their peers, fostering enduring connections in the digital realm. Popular social media platforms include mainstream social networking sites such as Facebook and Google, professional networking sites such as LinkedIn, blogs such as WordPress and BlogSpot, video-sharing websites such as YouTube, and microblogging sites such as Twitter.

Regulators and policymakers play a crucial role in the cashless payment ecosystem. The players involved in this context include regulatory authorities and policymakers, namely, central banks and other governmental financial organizations associated with regulating payment services. These actors establish secure and favorable circumstances for other ecosystem members to flourish (Ravi, 2018).
Infrastructure plays a crucial role in ecosystems by establishing a robust and dependable physical network that enables widespread cashless payment systems. It significantly contributes to the growth of cashless payment services, encompassing Internet connectivity, power supply, cloud computing, blockchain, cybersecurity, and more.

Cashless payment is a form of technology that eliminates the use of actual currency as transactions are conducted electronically (Ong & Chong, 2023).

Infrastructure has become pivotal as customers and merchants increasingly require protective measures against fraud and identity theft.

These six players are interconnected and each actor plays a role in the ecosystem through collaboration and cooperation. Their roles are crucial as they define the elements that influence the adoption of cashless payments. The following section outlines the elements that influence the decision to embrace a cashless payment environment.

4.1 Key determinants influencing the development of a cashless payment environment

4.1.1 Consumers

Among the 63 papers examined, 31 focused on analyzing the elements influencing customer adoption. The primary focus of the studies cited by Fachrudin and Silalahi (2022), Ebole, Kuyoro, and Aremu (2016), and Hidayah et al. (2023) is the role of 'trust' and 'security' in influencing consumers' acceptance of cashless payment systems. The impact of trust and security on the adoption of cashless payment methods has been widely acknowledged in e-commerce research. This is primarily because transactions are conducted electronically, utilizing technologies such as cryptocurrencies, Bitcoin, and others that do not require physical cash. Hence, it is inevitable that "perceived risk" is linked to cashless payment systems and affects consumers' decisions to use them.

User trust is influenced by several aspects that contribute to their adoption, including system, service, and information quality. Trust associated with payments is intricately connected to customers' information security and data privacy during e-commerce transactions. Consumers are more likely to embrace cashless payment methods when they are confident in the security of their personal information

transmitted through these systems. Hence, cybersecurity is of utmost importance, as payment data become more adaptable in the next era of open finance. Moreover, previous encounters influenced individuals' perceptions of security and trust. Consumer confidence is influenced by their familiarity with electronic payment technologies, as stated by Goel et al. (2019).

Previous studies have extensively utilized established technology diffusion theories such as TAM and UTAUT to investigate consumers' adoption of cashless payments. The characteristics of 'perceived utility' and 'ease of use' were shown to have a strong correlation with the adoption of cashless payment systems (Ong & Chong, 2023).

One example is the influence of "perceived ease of use" on customers' adoption of tap-and-go payments in the USA.

4.1.2 Merchants

Among the 63 studies analyzed, ten specifically examined the characteristics that affect businesses' use of cashless payment methods. Merchants, mostly profit-driven enterprises, base their selection of payment services primarily on the direct costs and revenues associated with each service. Other significant factors influencing their decision to accept cashless payments include merchants' demographic characteristics (such as age), financial behavior (number of credit cards held), technological proficiency (use of computers), and business attributes (e.g., industry affiliation, monthly transaction value, average transaction value, profit margin, and business location). Merchants' perception of customer card usage and competitors' involvement in the card scheme can also impact their decisions. A correlation exists between merchants' expressed preferences and consumers' actual preferences. Research on small- and medium-sized businesses (SMBs) investigating their use of contactless payment apps such as Apple Pay, Masterpass, WeChat Pay, and Alipay reveals that merchants commonly view credit cards as the most expensive option because of fees. Consequently, the decision of SMBs to adopt cashless payments is greatly influenced by cost and revenue considerations (Ong & Chong, 2023).

4.1.3 Service providers

Among the 63 publications analyzed, 16 specifically addressed the many aspects that influence service providers' decisions to implement cashless payment methods, as indicated in Table 3. Payment service providers prioritize user-friendly operations, customer satisfaction, account security against fraud, and affordable payment options to encourage consumers and other stakeholders to adopt their services (Ravi, 2018). Recent technological advancements have allowed service providers to participate in cashless payment systems. Hence, the primary determinant for their acceptance of cashless payments would predominantly hinge on their "innovation capability." This aspect of the development of novel products and services is driven by changes in rules and the existence of a payment infrastructure.

An instance of this may be observed in Sweden, where the implementation of the second Payment Service Directive (PSD2) mandated by the European Union is causing significant alterations in the payment industry. The primary objective of PSD2 is to enhance competition and foster innovation by establishing open banking practices in the payment industry. The open banking idea facilitates the creation of open platforms where payment service providers, including traditional banks and Fintech businesses, provide competitive services. Consumers and merchants may choose payment services based on their preferences. Therefore, service providers must prioritize satisfying the satisfaction levels of both consumers and merchants by offering competitive services to participate in a cashless payment ecosystem. Service providers play a crucial role in building trust among merchants, as trust is essential for merchants to embrace digital payments. This trust has been identified as a critical factor in the adoption of digital payments by researchers such as Reddy, Indraja, and Nikhil (2017) and Hidayah et al. (2023).

4.1.4 Media and content promoters

Media and content promoters play crucial roles in the payment ecosystem by promoting and marketing cashless payment solutions. Eight studies examined the factors influencing adoption. Goel et al. (2019)

utilized Twitter analytics to examine the adoption of digital payments in India. Their findings revealed that social media marketing promotes digital payment systems. Payment service companies frequently use Twitter to inform consumers about their goods and to promote their brands (Ong & Chong, 2023).

In addition to social media networking, cashless payment service providers utilize various communication channels to convey messages, including 'Point-of-Purchase Communication.' This involves the display of banners, posters, and billboards by payment service providers such as banks, FinTech companies, and Telcos to emphasize the benefits of cashless payments. The promotion of digital payment goods and services is facilitated by distributing catalogs, brochures, and pamphlets that provide explicit information about available services. These promotional materials are strategically placed in retail stores, banking offices, shopping malls, theaters, and mobile phone stores. Additionally, promotions are disseminated through television advertisements and radio broadcasts. Cashless payment providers strategically integrate their services into television programs, movies, and financial and technical events to engage effectively with their consumers and promote various payment technologies. For example, research has discovered that people's attitudes towards digital payments are adversely affected by their perceptions of danger and trust. Consequently, service providers employ television advertising to demonstrate that digital payment systems are being embraced by different shops and utilized by other consumers. The effectiveness of this advertising campaign was enhanced by the fact that sociocultural factors also have a significant role in shaping people's attitudes toward cashless payments (Ong & Chong, 2023).

One aspect associated with Media and Content Promoters is the concept of 'Social Influence' This' which encompasses both extrinsic and interpersonal social impacts. External social influence includes impersonal sources of information such as mass media reporting and expert opinions. Interpersonal social impact pertains to word-of-mouth communication within peer groups. For instance, the study conducted by Hidayah et al. (2023) found that social influence has a beneficial effect on the usage of e-payment among Serbian customers. Similarly, Goel et al. (2019) discovered that social influence decreased young French consumers' perceived risk of adopting mobile payments (Ravi, 2018).

4.1.5 Regulators and Policymakers

Fourteen studies examined the involvement of regulators and policymakers in a cashless payment environment. They play a crucial role in maintaining the seamless operation of the ecosystems. These individuals establish and oversee the policies of the payment system (Ravi, 2018).

The 2022 report from the US Federal Reserve asserts that the population must trust and have faith in the nation's currency and payment systems for an economy to operate well. As regulators, central banks aim to uphold public trust and confidence by promoting monetary and financial stability and establishing secure and efficient payment systems. Therefore, it is essential for the central bank to be considered a public utility to ensure a reliable and efficient payment-policy framework. This requires direct participation by the state's regulatory authority. The government, functioning as a legal entity, upholds a consistent measure of worth and standard for recording transactions. It also guarantees the security, effectiveness, and accessibility of the payment systems. In addition, the government is responsible for safeguarding personal privacy by ensuring that the personal data collected by commercial entities during transactions are not retained and used for commercial gain.

Policymakers, such as governments or central banks, should be attuned to individual circumstances, respond, and have a beneficial influence on other participants in the ecosystem. They collaborate with other stakeholders, such as commercial and governmental financial institutions and payment service providers, to establish rules regarding cutting-edge technological systems.

Regulators and policymakers have implemented a universally applicable payment system that caters to all members of society. They enforce rules to provide ICT infrastructure that enables payment service providers to offer cost-effective and secure cashless solutions. Similarly, politicians facilitate the creation of favorable conditions for new enterprises to enter the market and promote the use of cashless payment systems through legislative changes. In addition, they prioritize the establishment of an

adequate legal framework that minimizes the time and resources required to resolve issues related to cashless payment systems. Financial inclusion is a crucial consideration for policymakers when implementing policies on cashless payment systems. The issue of financial inclusion policies and regulatory matters is present in poor countries and industrialized nations that have adopted cashless systems. Specific segments of the population, such as the elderly and individuals with various disabilities, encounter difficulties in using digital payment methods.

In addition, it has been observed that in certain countries, most shops have ceased to accept cash as a payment method. Hence, governments and policymakers are responsible for formulating policies that guarantee the financial inclusion of all members of society. The presence of a digital gap that results in financial exclusion is considered undesirable. Moreover, the functioning of payments relies on trust. Therefore, it is imperative to implement regulations and legislation that guarantee privacy and integrity for individuals using digital payments. As an illustration, the Thai government introduced 'PromptPay,' a nationwide electronic payment effort, to decrease cash usage and promote the acceptance of electronic payments. The central bank has helped Fintech enterprises in Ghana by implementing a licensing scheme to control the payment ecosystem.

4.1.6 Infrastructure

Eight studies emphasized the significance of infrastructure as an active participant in a cashless payment ecosystem. The term ‘infrastructure’ in digital platforms refers to extensive socio-technical initiatives that strive to ensure a service's widespread and dependable delivery. Infrastructure such as the Internet, network connections, smartphone penetration, power supply, biometrics, tokenization, cloud computing, blockchain, cybersecurity, wearable technology, and the Internet of Things are critical for facilitating cashless payments.

As emphasized by several studies, internet connectivity is a crucial requirement for the successful development of a cashless society. As an illustration, the 'Chinese Internet' is mainly controlled by the search engine Baidu, e-commerce platform Alibaba, and messaging program Tencent. These three Internet businesses serve several infrastructural sectors, including artificial intelligence, cloud computing, mobile payments, and financial services. They are comparable to the Alphabet, Amazon, and Facebook in the USA.

5. Conclusion

The exploratory literature analysis identified six interconnected actors within the cashless payment ecosystem: customers, merchants, service providers, media and content boosters, regulators and policymakers, and infrastructure. The six core actors are regarded as fundamental components of a cashless payment ecosystem. The study revealed that customers and merchants were most affected by perceived trust, privacy, security, and dangers. On the other hand, adopting media and promoting content played a role in social influence and point-of-purchase communication. Furthermore, the selection of service providers is based on their ability to develop novel payment methods. Regulators and policymakers play crucial roles in implementing cashless payment systems. Their responsibility is to create effective and reliable payment rules that promote a favorable environment. Meanwhile, infrastructure should prioritize establishing a secure and dependable physical network.

This study enhances the current body of knowledge by introducing an ecosystem that offers a comprehensive perspective on cashless payments. The adoption factors and analytical ecosystem insights offer a thorough perspective and comprehension of the vital role of each participant in the cashless payment ecosystem.

These findings offer valuable information for policymakers to effectively tackle existing issues of adoption to facilitate a smooth transition towards a cashless society. Furthermore, the suggested ecosystem may function as a foundation for additional empirical examination and verification by future scholars.

5.1 Limitations

This study is limited in scope because it focuses solely on identifying the actors within the ecosystem and their involvement in the adoption process. Further research should be undertaken to analyze each actor thoroughly using empirical evidence. An in-depth analysis of the factors influencing the actors may be conducted by examining the mediating and moderating effects of the independent and dependent components. Additionally, there are prospects for future research. The Covid-19 epidemic has significantly heightened the problem of embracing cashless payment methods. Nevertheless, this study must address its impact on adoption. Hence, forthcoming researchers might direct their attention toward analyzing the alterations in determining elements or the shifting roles of actors as a consequence of the pandemic.

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