International Journal of Contemporary Business and Economics 2025, Vol. 03 (01) 1-18 ©TARC-2023. ISSN-Print: 3005-5350, ISSN-Online: 3005-5369

Embedded Banking: An Inclusive Governance Framework for Non-Financial SMEs

Muddassir Sayeed Siddiqui [1] * I Dr. Junaid Rehman[2] I Dr. Shahida Suleman[3] I

[1]* Mohammad Ali Jinnah University, Karachi, Pakistan
fa22phms0003@maju.edu.pk

[2] Mohammad Ali Jinnah University, Karachi, Pakistan
University of Technology Sydney, Australia
junaid.rehman@jinnah.edu.pk
junaid.rehman@alumni.uts.edu.au

[3] Mohammad Ali Jinnah University, Karachi, Pakistan
shahida.suleman@jinnah.edu.pk

Article History

Received: 15-04-2025
Accepted: 19-05-2025
Online: 25-06-2025

ABSTRACT:

The Small and Medium Enterprises (SMEs) account for nearly 90% of the businesses globally and play a phenomenal role in driving innovation, creating employment and achieving economic growth as a whole. As the global financial landscape continues to undergo rapid technological transformations, the Embedded Finance has emerged as a game-changer for the global corporate sector, reshaping the way financial services are delivered and consumed. Based on an extensive review of extant literature and supporting theoretical frameworks, this research presents the concept of Embedded Banking and suggests a novel Conceptual Framework for the SME sector. Drawing theoretical basis from Diffusion of Innovation (DOI) Theory and Platform Ecosystem Theory, the proposed conceptual framework suggests non-financial service provider SMEs to become an active providers of banking services to be embedded into their core products, services and operations. By leveraging digital platforms, Application Programming Interfaces (APIs) and supporting regulatory mechanism, the suggested framework discusses how SMEs can offer tailored financial products & services in order to meet customer needs effectively. In addition, the framework emphasizes on the strategic role of partnerships, data-driven personalization and other required facilities in promoting the adoption of Embedded Banking. Particularly, the framework would assist SMEs in promoting financial inclusions and improving customer experience, thereby enhancing their financial performance and contributing to an overall economic growth. Last but not the least, from the SDGs perspective, the framework would directly contribute to the achievement of SDG 1 (No Poverty), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure) and SDG 10 (Reduced Inequalities).

Keywords: Embedded Banking, Embedded Finance, Economic Growth, Sustainable Development Goals, SMEs.

How to cite this paper: Siddiqui, M.S., Rehman, J., & Suleman, S. (2025). Embedded Banking: An Inclusive Governance Framework for Non-Financial SMEs. *International Journal of Contemporary Business and Economics*, 03(01), 1-18.

INTRODUCTION

About 90% of the world's population is employed by Small & Medium Enterprises (SME). The governments in different countries have long been focusing on enhancing the performance of the SMEs so that the impact can be transferred to the common masses, including the economy (Carvajal & Didier, 2024). Given that the SMEs represent a major portion of the world's businesses (Bruhn et al., 2017), they are considered the backbone of any economy (Challenge Fund for SME Banking, 2024). It is thus crucial for the SMEs to review their current business development strategies aimed at achieving an overall growth of the SME sector.

Various online models are being utilized by SMEs all over the world to improve their performance, which includes Mobile Money, P2P Lending, Digital Payments, etc. (Sanga & Aziakpono, 2023). According to Carvajal & Didier (2024), governments need to promote the use of FinTech and its applications in deploying the Embedded Banking platforms in SMEs to enhance their capabilities and performance. Besides Fintech, there are several other models available, such as blockchain and Embedded Finance (Sanga & Aziakpono, 2023).

Embedded Finance is the integration of financial services within the platforms of non-financial firms (Dresner et al., 2022). According to Juniper Research, Embedded Finance is any use case that offers financial services within the platform of non-financial firms (Payments Next, 2021). The idea of offering financial services by non-financial firms is not new. It has been implemented by many organizations for a long time, but it has not remained a focus of attention (Ozili, 2022). The German automotive banks have been working for 100 years and could be considered the pioneers of Embedded Finance (Solarisbank AG, 2024). Embedded Finance is now becoming popular among non-financial firms. It is thus important to examine this concept from the research viewpoint. The potential research in the area of embedded finance could include: the coexistence of Embedded Finance and transformation of traditional finance, the impact of Embedded Finance on human welfare, the risk involved, relations with financial stability, regulatory suggestions, etc. (Ozili, 2022). Moreover, several new use cases could also be developed for better implementation of Embedded Finance within the business model of the SMEs, according to unique customer needs and requirements.

The global Embedded Finance market is expected to capture a 26% global SME banking market by 2025. This fast-paced growth is owing to the growing interest of the global SMEs, especially the ones in the developed countries, in utilising various use cases of the Embedded Finance (Accenture, 2021). According to Plaid & Accenture (2021), 47% of the companies in the USA have plans to invest in Embedded Finance. Those who have already adopted have seen a significant boost in their performance.

Embedded Banking has great potential for SMEs. It was revealed by Woo (2021) that not only are individuals interested in using the banking services of non-financial platforms, but SMEs are also interested in using the Embedded Banking services. Approximately 41% of the SMEs showed that they preferred using banking services offered by the non-financial firms. Furthermore, they also revealed that 44% of the firms that included both SMEs and micro firms wanted to integrate Embedded Banking services into their core businesses.

Accordingly, the primary objective of this paper was to suggest a Conceptual Framework of Embedded Banking for the SMEs, which could be implemented to accelerate the performance and growth of the global SME sector. Grounded on Diffusion of Innovation (DOI) theory and Platform Ecosystem

theory, the proposed framework pictorially highlights the role of key stakeholders, including the relevant processes, activities, and resources to be deployed, governing the successful implementation of the Embedded Banking model within the SMEs. The rest of this paper is organized such that the subsequent section presents a detailed Literature Review, followed by the Methodology that led us to propose a Conceptual Framework. The paper then progresses to the Discussion and then to the Implications section. Afterwards, the limitations & future work recommendations are presented, followed by the Conclusion.

LITERATURE REVIEW

According to Narang et al. (2023), embedded finance is the integration of financial services into non-financial businesses to enhance the customer experience, loyalty, and customer engagement. Embedded Finance has become a major disruption force in the financial industry. However, even though various advantages increase the importance of Embedded Finance, a list of challenges is also associated with Embedded Finance, for example, the importance of security and privacy necessities, safeguarding against data and fraud, the complexity of the embedded business models, and regulatory requirements. Embedded Finance is a new field of study, which is why the literature is in the initial development stage (Ozili, 2022).

Types of Embedded Finance

The different types of embedded finance, as explained by Laurer (2021), are discussed below.

Embedded Payments

Embedded payment is the type of embedded finance that allows the non-financial firms to integrate payment services within their platforms. E-wallets are also included in the service of embedded payment. Among all the adoption of embedded finance, embedded payment holds the highest share.

Embedded Lending

It is the use case that could be used to offer various lending options by non-financial firms which could be utilized by the customers to fulfill their shortage of cash. Furthermore, this integration also helps the firms to maintain their relationship with the customers. Embedded lending could be done in both cases that are B2B and B2C to enhance the relationship with the customers and generate new revenue streams.

Embedded Banking

This use case of embedded finance allows the non-financial platforms to offer various banking services like accounts, cards, etc., to their customers without being a bank by integrating the services within their platforms.

Embedded Insurance

Protection is a need of the customers to minimize their risk, and it is a commonly used financial service. Embedded insurance allows non-financial firms to protect themselves from expected damages and losses in case of costly purchases. BMW and Amazon are examples that are already providing the insurance to their customers.

Embedded Investments

Embedded Investments is the use case that integrates the investment opportunities of various investment domains like stocks, mutual funds, crowdfunding, retirement plans, etc., within the platform of non-financial firms so that their customers will not have to leave their platforms.

Embedded Anything

Various other new use cases could be developed according to the scenarios if the customer's needs don't fit in any of the above-defined use cases. The International banker (2024) claims on the knowledge published in August 2024 in the Spherical Insights report, that Embedded Finance

is expected to capture the major market share in the future. The market of embedded finance comprises embedded insurance, embedded lending, embedded investment, and Embedded Banking. This is due to the growing demand of the customer for seamless payments and improved security. Various e-commerce platforms are offering investment opportunities to their customers in the financial market, including stocks and bonds. These services allow the companies to retain the customers and acquire more customers, and develop new revenue streams from their businesses. Moreover, due to the extraordinary demand of the customers, the global embedded finance market is expected to grow to $1.16 trillion in 2033 from $81.4 billion in 2023 at a growth rate of 30.4% yearly. Research and Markets (2025) notified the publication of a report developed by them and published in December 2024 regarding the forecasting of embedded finance. The report states that the Embedded Finance market is expected to grow to US$690.386 million in 2030 from US$146.171 million in 2025. This rapid growth of 36.41% compound annual growth rate is due to the increased popularity of online payment services and the willingness of customers to utilize the embedded financial services at non-financial platforms. Another reason for this rapid growth is the growing trend of digitalization, which is raising the popularity of embedded finance in every sector. Juniper Research defines Embedded Finance as any use case that embeds any financial services task in the experience of non-financial users, which could be banking, insurance, lending, etc. (Payments Next, 2021). According to Galileo Embedded Finance Report: A B2B Market Snapshot by Juniper Research (2022), 85% of B2B businesses are already aware of embedded finance, and 68% would prefer to offer embedded finance services. The major challenges being faced by the various companies include customers' interest, Lack of knowledge, Cost, Time, Lack of reliable partners, and complexity in implementation. These challenges need to be addressed to fulfil the growing customers' demand for various services that lie under the platform of embedded finance. Furthermore, the credit and lending are the highest value options and show the highest potential demand by the companies that they want to explore, followed by Payments, Rebates/Rewards, Insurance, and Banking.

Use-Cases of Embedded Banking

There are various use cases of embedded finance already implemented by various companies which including Uber, Swatch, Amazon, Apple, TikTok, Grab, Lyft, Tesla, Zillow, Google Maps, etc. (Ozili, 2022). These Use Cases include the use cases of Accounts, Payments, Cards, Credit, and Digital Assets (Solarisbank AG, 2024).

Payments

Samsung launched in 2020 its payment service with the name of Samsung Pay, in Germany. Samsung utilized the service of Solaris, which is an embedded finance services provider. Their customers can pay using their payment services. Furthermore, the buy now pay later option is also integrated, known as SplitPay (Solarisbank AG, 2024).

Accounts

The use case of the account is implemented by the German Telefonica Subsidiary O2 in collaboration with a German financial institution. They offer their customers the "o2 Banking" services, which include the current account, debit, and credit cards. Furthermore, the customers can also participate in the interest bonus programs (Solarisbank AG, 2024). Similarly, the embedded finance use case of Uber and Lyft are offering bank accounts to their drivers to reduce the transaction cost and to connect the drivers to the billing system efficiently. Uber is also offering the debit card to their drivers connected with their Uber financials (Ozili, 2022;

Solarisbank AG, 2024).

Cards

There are several use cases for offering the cards to the customers. For example, Lufthansa offers credit cards under the "Miles and More" bonus program, which allows their customers to earn and collect bonuses. Furthermore, the cards also have various insurance options, which include travel cancellation insurance, car rental insurance, international travel health insurance, etc. (Solarisbank AG, 2024). Similarly, Amazon also offers credit cards to its customers, which allows them to purchase from Amazon and earn reward points that can be used in future purchases. Another example is the Apple Card, which comes in both a virtual credit card that could be used in contactless payment with the iPhone and Apple Watch, and as a physical credit card that could be used anywhere. They also offer bonus programs for their credit cards (Ozili, 2022; Solarisbank AG, 2024).

Credit

According to Solarisbank AG (2024, integrating lending can have various applications. Germany is already active in integrated lending in the automotive industry. Lending as a service is also increasing. Property buying could also be integrated with the lending mechanism. Buy Now Pay Later (BNPL) is also being used widely all over the world (Ozili, 2022; Solarisbank AG, 2024). Shopify offers payment processing for its stores and generates additional income. In 2019, Shopify generated $400 million in revenue from its payment services. Furthermore, Shopify also offers credit services to its qualified merchants for 12 months (Solarisbank AG, 2024).

E-commerce is the industry that has a huge potential for embedded finance because e-commerce is already fully digital, thus, it requires less effort to integrate embedded finance. Furthermore, e-commerce has penetrated among all demographics, especially e-commerce adoption is high among young consumers who could be more open to embedded finance (Ozili, 2022; Solarisbank AG, 2024). By embracing Embedded Finance, the company may bring itself to the forefront of innovation and may revolutionize the financial services industry for a future that is more customer-oriented. Businesses may succeed in the new environment by fostering collaborations and efficient use of technology. Embedded Finance can grow by promoting collaborations, prioritizing securities, investing in technology, regulatory standardizations, and consumer education (Narang et al., 2023).

Embedded Finance can dramatically change the banking needs of the lending SMEs, especially given the fact that the SMEs have long faced financial constraints when it comes to meeting their own financial needs (Dab et al., 2022). Embedded Finance is equally being considered all over the world and gaining popularity in various sectors. Although this model is still in its initial stages of development, it has demonstrated great adoption potential across small and medium businesses. Payment services are one of the most adopted categories among the other Embedded Finance services in organizations. On the other hand, short-term advances are one of the potential products of Embedded Finance, which could be adopted immediately because managing liquidity is the major focus of every organization. Embedded Banking is also one of the types of Embedded Finance that could help organizations manage their liquidity while increasing their revenues with alternate streams (Narang et al., 2023; Dab et al., 2022).

Kazmi (2023) explains Embedded Banking as a specific type of Embedded Finance that enables a non-financial organization to offer banking services. This service enables customers and businesses to access their funds more

conveniently with decreased transactional costs and faster processing times. Customers of Embedded Banking also receive rewards for using the banking services of the organizations, which makes the service more attractive. Damti (2023) also discusses Embedded Banking. According to him, non-financial companies developed high-yield accounts and other attractive financial products and made them available on their website and applications. Embedded Banking benefits companies in various ways. It enables them to offer unique products to keep themselves standing out from the competitors. Furthermore, by implementing Embedded Banking, the organization could acquire more customers at a low cost because Embedded Banking products will be more of an extra facility besides the core products and services. Customer engagement and retention are also one of the major benefits of Embedded Banking because banking services are a requirement of every individual, and when the customer starts using the banking services of Embedded Banking with non-financial platforms, they get stuck with the organization.

Embedded Banking helps the company generate new revenue streams. Cash management cannot be ignored by any organization. Enow & Kamala (2016) revealed in their study that organizations ignore the importance of keeping the spare money for speculative purposes, and that is why they don't use extra cash to earn more. According to him, this ignorance is due to the decision makers who lack the knowledge of available surplus funds. They suggested optimizing the cash management process and utilizing the cash in short-term investment plans. Kontuš & Mihanović (2019) suggested in their study that firms can increase their revenues by effective management of the liquid cash available. Thus, cash management cannot be ignored when firms are required to expand their revenues. Embedded Banking also enables the firms to generate additional funds, making it available to manage liquidity while offering various attractive benefits to their customers. Woo (2021) discussed real use cases of Embedded Banking, Delivery Money's transactional account that offers the immediate deposit of a client's collected money into the account and is available for use. Additionally, they also offer a 50% overdraft facility. The DeliveryMoney transactional account shifted him from his commercial bank to Embedded Bank. Kazmi (2023) also discussed Shopify as an example of Embedded Finance, which enables its customers to get the sales money from their customers faster as compared to traditional banks. Furthermore, they also allow their customers to use the funds sooner compared to traditional banks.

Laux (2024) considered the Embedded Banking solutions as a source of customer retention, engagement, and a new revenue stream. Furthermore, the customers are more likely to use the products with built-in banking features because their money and financial information are connected to the system, which makes switching less appealing. Moreover, the customers are willing to pay more in case of a better experience in the services. The mobile banking retention rate is the highest among various other mobile applications, which implies that the non-financial platforms, embedding banking in their service, can make their product or services sticky and offer the opportunity to understand their needs in a better way. Several revenue opportunities are linked with the Embedded Banking services. For instance, the payment revenues are one of the major revenue streams. With Embedded Banking, the non-financial firms can offer accounts and payments like regular banks and could earn revenue as transaction fees.

Another revenue stream is the deposit revenue. When non-financial firms offer Embedded Banking,

in return, they also receive the customer's deposits, which could generate value in terms of deposit revenue because the deposits will never be kept idle. They would be the source of earnings in terms of interest. Financing revenue is also one of the important revenue types that is offered by Embedded Banking for non-financial firms. When the customers need money, the Embedded Banking could offer them services by charging interest, which generates additional revenue for the firm. Similarly, Smith (2024) proposed Embedded Banking as the most important feature to be added to the product in the year 2025. She also emphasized the benefits of Embedded Banking, notably customer retention, enhanced user experience, and an additional revenue stream. According to her, Embedded Banking has become a new standard; therefore, due to the demand for improved experience, the firms are embedding banking features in their core products and services. The firms need Embedded Banking integration in their businesses to keep themselves competitive. According to the CEO of Libeo, people love the Embedded Banking features in their platform. The support services of offering embedded finance have also become easier, and there are many firms in the market offering their services in this regard.

Sustainability is one of the most important considerations of the firm in this modern world. According to Smith (2024), Embedded Banking could be a powerful solution for sustainable development. For example, the embedded virtual cards can reduce plastic usage. Furthermore, the carbon footprint can be tracked in real time based on spending. As the regulatory pressure is increasing on customers and firms to adhere to the environmental regulations, the Embedded Banking features could build customer loyalty while fulfilling the compliance requirements. Embedded Banking is being adopted all over the world rapidly. Recently, Dutch bookkeeping provider Snelstart adopted Embedded Banking in their business model to target freelancers and small businesses. They are providing a wide range of services, which include invoicing to inventory management. The service of embedded finance is being offered with the partnership of other firms, working as enablers, which includes Adyen and Flow, enabling them with the necessary infrastructure to offer Embedded Banking services (Markull, 2025a). The core product of Snelstart is the service of bookkeeping, having more than 155000 entrepreneurs as their customers, giving opportunity to their customers to fulfil their banking needs within the bookkeeping services. This offering has the potential to boost their revenues rapidly. Furthermore, the revenue would grow with the growth of the customers automatically because when the customers grow, their banking activities will also grow, thus, it will generate more revenue. According to Markull (2025b), Lexware, a German bookkeeping and invoicing provider, launched full-fledged banking products. Similarly, Agicap and Ben also utilized the concept of Embedded Banking to enhance the customer experience by offering banking services.

THE GUIDING THEORETICAL FRAMEWORKS

Diffusion of Innovation (DOI) Theory

Diffusion of Innovation Theory explains the innovation decision process based on the five steps. The first step is the knowledge of the innovation, followed by the attitude towards the innovation. The third step is the decision for rejection or adoption of that innovation. The fourth and fifth steps includes the implementation of the innovation and the confirmation of the decision respectively (Rogers & Williams, 1983).

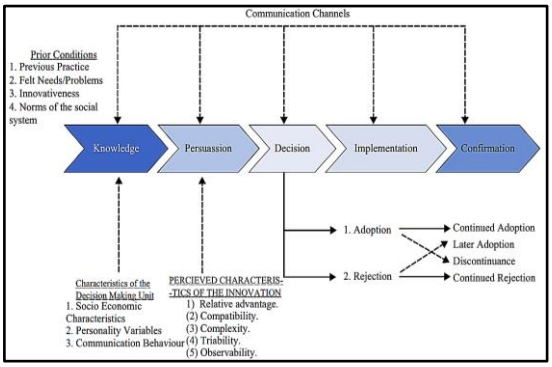

Figure 1: Conceptual Framework of Innovative Decision Process (Rogers & Williams, 1983)

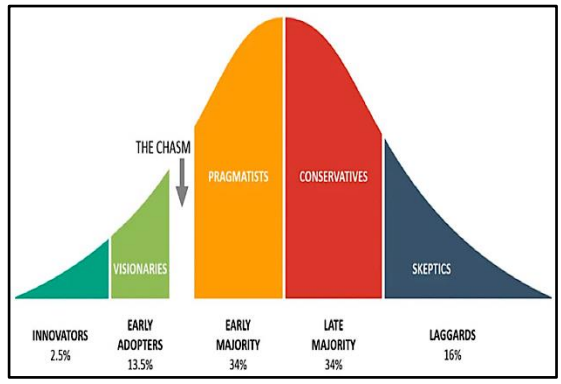

Figure 2: Adoption Curve of Innovation (Rogers et al., 2014)

Several studies in the literature related to decisions for innovations are based on the DOI Theory. For example, Bharadwaj & Deka (2021) employed the DOI Theory for cryptocurrency, and Chhina et al. (2024) for blockchain adoption. Furthermore, Rogers et al. (2014) also discussed the adoption curve under the Diffusion of Innovations Theory. The adoption curve explains that adoption depends on time. The first 2.5% of adopters are the innovators, and then come the early adopters, who are more than the innovators but still not in very big numbers. After the early adopters, the majority starts adopting the innovation, which is the peak adoption level for any innovation. In the last, there are late adopters, and their adoption duration is too long. According to Rogers et al. (2014), the innovation adoption process is continuous until the innovation is adopted to the maximum level. The early adopters are different from the majority of adopters and late adopters from the perspective of personality. Furthermore, Social participation, interpersonal networks, contact with change agents, and exposure to media channels are also important factors in the adoption of innovation.

Platform Ecosystem Theory

Platform ecosystem theory is based on the concept that how digital platforms serve as the ecosystem in the presence of multiple stakeholders, for example, users, developers, service providers, etc., creating the value collectively by the leverage of data sharing, APIs, and other innovative facilities. Gawer & Cusumano (2014) defined the firm's internal product and platform as the set of assets from which a company can produce derivative products. Furthermore, they also defined the external (industry) platforms as products or technologies that act as the foundations for the innovative business ecosystem, which can also be transformed into a firm's products and services by adding value to them. Moreover, effective leadership in the larger business ecosystem is based on the innovativeness of the product or services. According to Gawer (2022), this is the age of the digital revolution that has made various devices like computers, sensors, and mobiles very common. These technologies have created a techno-social environment. This techno-social environment allows the various technologies and innovative ideas to participate in the ecosystem to create value in new ways through digital innovation. The global digitalization has created a new form of firms that are the digital platform firms and their associated ecosystem.

RESEARCH METHODOLOGY

This paper is grounded on the conceptual approach to developing a conceptual framework for Embedded Banking for SMEs. The methodology consists of detailed and comprehensive literature reviews followed by conceptual analysis, and lastly, the conceptual framework development of the SMEs' embedded financing model. The literature review is based on the review of existing academic literature and industrial reports to explore Embedded Banking and its potential regarding SMEs. The conceptual analysis identifies the gap in existing SME banking solutions and evaluates the concept of Embedded Banking concerning SMEs. Based on the conceptual analysis, the new Conceptual Framework is developed to improve the SME's cash flow and enhance its performance.

PROPOSED EMBEDDED BANKING CONCEPTUAL FRAMEWORK FOR SMEs

The proposed framework of Embedded Banking for SMEs is suggested to enhance the performance of the SME while increasing customer satisfaction and retention. It incorporates an Application Programming Interface (API) to connect various online platforms of third-party services to assist in the transaction process automation and to connect the online platform with various core services of the SME. The proposed framework enables the SME customers to take additional benefits by utilizing the banking services being offered by them. These services will enhance the employee retention, employee satisfaction, and their performance on one hand while enhancing the customer satisfaction, customer retention, and customer loyalty. The firms will have the opportunity to serve their customer better and design various products and services related to their banking needs, so that they can fulfill their banking needs with them in a more convenient manner.

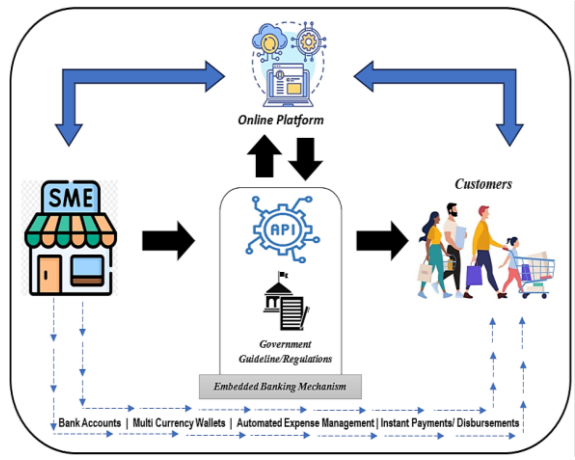

Figure 3: Proposed Embedded Banking Conceptual Framework for SMEs

The proposed framework is grounded in two prominent theories. Firstly, the Conceptual Framework utilizes the lens of Diffusion of Innovations Theory and explains the process of Embedded Banking adoption by the SMEs. The Embedded Banking adoption by SMEs depends on the prior condition that includes previous practices, needs, social system, and the level of innovativeness. Once the suitable prior conditions are met, the innovative decision process begins with the integration of the communication behaviour of the top management, their personality, and their socio-economic conditions. The SME's Embedded Banking adoption depends on the perception associated with the relative advantage of adding the Embedded Banking services as a product, whether the offering makes their organization more productive in terms of value and profit, or not.

The second factor which is important for SME in the adoption of Embedded Banking is the factor of compatibility implies whether the SME's existing system is compatible with the added services of Embedded Banking or not. Due to this factor, the adoption of Embedded Banking is specialized for the organization that already has products or services that can add value to their existing

products or services by offering Embedded Banking. Once the Embedded Banking is perceived to be compatible and has a relative advantage over the existing system, another factor is the level of complexity in understanding the Embedded Banking process of implementation as a service. The level of perceived relative advantage, complexity, and compatibility develops the motivation for the SMEs to try the Embedded Banking. This motivation is also enhanced if the SMEs observe other SMEs in the ecosystem implementing the Embedded Banking.

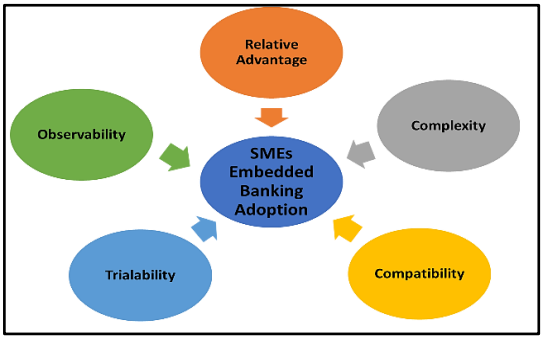

Figure 4: Conceptual Framework for SMEs Embedded Banking Adoption

In the context of the proposed Conceptual Framework for SMEs Embedded Banking Adoption (Figure 4), Embedded Banking represents a significant innovation for SMEs by embedding the banking services into their existing products and services and breaking the traditional boundaries of financial and non-financial firms. The relative advantage of increased customer retention, improved cash flow, and operational efficiency makes the model attractive for the SMEs. The lens of Platform Ecosystem Theory enables the Conceptual Framework to conceptualize the digital platform and related services, which include the service providers, APIs, technology partners, regulators, and end-users as part of the larger Platform Ecosystem, which creates the value within their boundaries to contribute to the ecosystem. Due to the Platform Ecosystem, the Compatibility and Complexity of Embedded Banking are minimized, and promote Embedded Banking Adoption. The use of APIs, digital interfaces, and online platforms enables the SMEs to provide the Embedded Banking services easily to their customers to add value to their existing products and services. The service providers, Embedded Banking enablers, and other third-party innovation providers also facilitate the SMEs through their plug-in nature to seamlessly integrate the Embedded Banking services into their core products and services. These characteristics of the various stakeholders of the Platform Ecosystem make it remarkable by co-creating value through the diverse participants and digital connectivity, and networks.

The rate of Embedded Banking adoption by SMEs depends on various interrelated factors, as shown in the Conceptual Framework (Figure 5). The three major 3 factors include the perceived attitude, the type of innovative decision, and the Change agents. Firstly, the perceived attitudes refer to the SME decision makers' perception and beliefs regarding the overall implementation attributes, for example, relative advantage, complexity, compatibility, trialability, and observability. If the SME owner perceives the Embedded Banking overall as beneficial based on the said attribute factor, it is more likely that the adoption rate may increase significantly. The second factor that influences the Embedded Banking adoption rate is the type of decision that could be optional, collective, or authority-based. In SMEs, generally, the optional decisions are common where the SME owner or key stakeholder evaluates and chooses the possible innovation adoption. However, in some cases, the Embedded Banking adoption decision could be collective where organizations are bigger, and peer influence plays a significant role in decisions. The type of decision also affects how quickly the Embedded Banking adoption

decision is evaluated and implemented. The third factor, the change agent, is the most important in the adoption of Embedded Banking. The internal and external influencers, like fintech providers, government institutions, industry consultants, online platforms, or other stakeholders of the Platform Ecosystem that facilitates the implementation of Embedded Banking in SMEs, also play a significant role in increasing the Embedded Banking Adoption. The extent of change agent involvement in effective communication, ongoing support, and their credibility not only influences the adoption rate but also reduces the uncertainty, provides technical guidance, and builds trust in the innovation. This aligns the Conceptual Framework with Rogers' Diffusion of Innovation Theory, where the perceived attributes, type of innovation, and change agents influence the adoption rate of innovations.

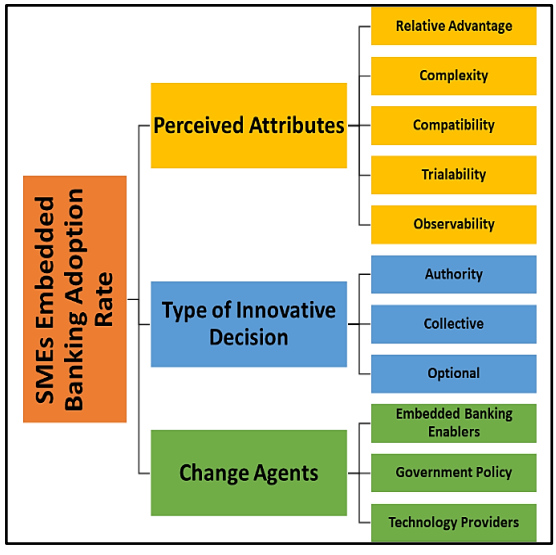

Figure 5: Adoption Rate for Embedded Banking by SME

The Embedded Banking Ecosystem includes the SME as the provider of Embedded Banking, end user as customers, online platform, APIs, and government regulation. A detailed discussion of the Embedded Banking Platform Ecosystem stakeholders is in the following section.

SME as Banking Service Provider

The proposed model, SMEs Embedded Banking, utilizes the concept in which the small and medium enterprises work as the providers of banking services, representing the innovative shift in the traditional financial ecosystem. The proposed model proposes the concept of non-financial firms as banking service providers instead of relying solely on financial institutions. This innovative concept is based upon the technological advancement being utilized by Fintechs, the open banking framework, and the concept of embedded finance. As the non-financial firms are close to their customers, they can tailor unique banking products and services that can add value to their existing products or services.

Embedded Banking Mechanism

The mechanism of the proposed model is based on the Embedded Banking concept in which SME integrates the banking service and works as the provider of the banking service. As a great number of individuals and organizations are interested in managing their banking accounts with non-financial organizations, the proposed model aims to fulfill the banking needs of the customers. The mechanism of the proposed Embedded Banking model is based on the online platforms, Application programming interface (API), available products and services, and government guidelines/regulations.

Online Platform

The proposed Conceptual Framework of Embedded Banking employs the advanced technology of digital platforms, which include customized mobile applications and websites to offer the Embedded Banking services. The digital platforms are the major source of interaction between the customer and the firm to manage their finances. The latest features of the digital platform, like personalization, multimedia capabilities, user-

centric designs, and the facility to use the service ubiquitously, make Embedded Banking a preferable choice.

Application Programming Interface (API)

Application Programming Interfaces (APIs) allow non-financial firms to access various services from third-party service providers, which are needed to offer the Embedded Banking services seamlessly and to facilitate the customers in more convenient ways while keeping full control of the customer interface. API also enables different payment platforms to exchange their services and information for mutual benefits and make the best use of open banking. Furthermore, API also makes the process easy when a partnership is required with other embedded finance platforms, providers, or other fintechs.

Government Regulations

For every business, there are various guidelines of the government and there are also certain regulations. The process of Embedded Banking needs to be followed under the government's guidelines and regulations. The requirements of KYC and prevention of money laundering are necessary, that is why the integration with the monitoring system to diagnose the suspicious transaction is a major part of the proposed model.

Products and Services

The various services and products that the non-financial firms can offer include Banking Accounts, Digital Wallets, automated expense management, Instant payment and disbursements, etc. The customers can use these services to experience seamless and efficient banking solutions without operating traditional banks. A Few of the products and services are discussed below.

Banking Accounts: By utilizing the Embedded Banking, the non-financial firms can offer basic as well as savings account opening within their platform, which could be tailored according to customer-specific segment, for example, food deliveries, gig workers, freelancers, tutoring services, retail customers, etc.

Digital Wallets: Digital wallets are special wallets that allow the user to store and transfer money from their wallets on various digital platforms. The firms can provide the services of digital wallets that could be in multiple currencies, so that the customers can spend them whenever and wherever they want to have a seamless experience with the ease of cross-border transactions in the currency of their choice. These wallets can also integrate loyalty programs to attract customers.

Automated Expense Management: This is the service that is needed by many individuals. The expense management tools track and optimize the expense in real time and provide the analytics so that people can make appropriate financial decisions. These services automatically calculate the regular expense and suggest the inappropriate financial spending and fraudulent activities with the use of Artificial Intelligence.

Instant Payments/Disbursements: This service is very helpful for every individual. Instant payment and disbursement allow the real-time transfers of different payments like salaries, vendors, suppliers, and customer refunds, enhancing the liquidity for recipients in a convenient manner.

Customers as Beneficiaries

Customers are the major beneficiaries of the proposed model of Embedded Banking of SMEs. The customers gain several advantages from Embedded Banking services, which include convenience and accessibility. Through Embedded Banking, the elimination of traditional banking is possible. Furthermore, the customers from underserved or rural areas could also be entertained easily. Another benefit for the customers is the cost saving for various banking needs, and additional benefits or rewards and savings also attract the customer to keep the service active.

Advantages for SMEs

There are several benefits for the SME to offer Embedded Banking to their customers. The proposed framework opens a new revenue stream in terms of service fees, interest, etc. Furthermore, it will also improve the cash flow of the provider SME and help them maintain better liquidity. Another benefit for the SME is that by integrating the Embedded Banking, the transaction cost will be reduced as compared to the traditional banking system. Moreover, the intermediaries will be excluded from the process, so it will reduce the time required for processing. Furthermore, the time required for documentation in the case of external banking services will also be excluded. Customer loyalty is another important benefit of integrating the Embedded Banking services because the value-added financial services enhance the customer's relationship. Additionally, it will also give the firm a competitive advantage and differentiate the firm in the crowded market.

IMPLICATIONS AND CONTRIBUTIONS

Implications for Theory and Research

Firstly, by integrating the Diffusion of Innovations Theory (DOI) and Platform Ecosystem Theory, this study provides a novel theoretical framework that enriches both perspectives. The application of DOI in the context of Embedded Banking extends the understanding of how technological innovations, particularly digital financial services, diffuse among non-financial SMEs. It emphasizes the role of perceived relative advantage, compatibility, complexity, trialability, and observability in shaping the adoption behavior of Embedded Banking solutions.

Secondly, the use of Platform Ecosystem Theory highlights the role of SMEs not just as participants but as potential enablers within financial ecosystems. This shifts the traditional narrative that positions SMEs merely as end-users of financial technology to viewing them as active platforms capable of embedding and delivering financial services. This theoretical shift opens new avenues for exploring platform dynamics in non-financial sectors and how they can co-create value within digital finance ecosystems.

Thirdly, the Conceptual Framework bridges the gap between finance, technology, and entrepreneurship research by proposing an interdisciplinary approach to financial inclusion and SME development. It also adds to the growing body of literature on embedded finance, an emerging area that has yet to be fully explored in academic discourse, especially in the context of SMEs in developing and emerging markets.

Implications for Policy and Practice

The proposed Conceptual Framework of Embedded Banking for SMEs has various implications for businesses, customers, the economy, and also for the implementation of Sustainable Development Goals.

Implications for SMEs

For SMEs the implementation of the proposed model opens a new revenue stream that can improve the financial performance. Furthermore, cash flow management is also expected to be improved. Moreover, the implementation of Embedded Banking can help the SME retain the customer and help in broadening the customer base by developing a competitive advantage and convenience for customers.

Implications for Customers

The proposed model is also beneficial for customers. The customers will have a Stop Solution for their financial needs within their favorite non-financial platform to have a seamless experience with reduced transaction costs. Customers benefit from a more seamless, integrated, and convenient financial experience.

Rather than relying on traditional banking channels, customers can access services such as payments, credit, savings, and insurance directly through the platforms they already use to interact with SMEs, such as e-commerce websites, service apps, or retail platforms. Furthermore, Embedded Banking can support more personalized services, driven by data and customer behavior insights. SMEs can leverage customer data to offer relevant financial products, enhancing value and satisfaction. This personalization contributes to stronger trust and loyalty between SMEs and their customers.

Implications for the Economy

The proposed model also proposed the practical implication for the economy as the banking service will be available to everyone so it will increase the financial inclusion that will result in increased tax collection for the government. Furthermore, the improved performance of the SMEs will also result in the economic growth of the country. One more implication on the macroeconomic scale is the empowerment of small businesses and the acceleration of digital transformation.

Implications for SDGs

The proposed Conceptual Framework also has several implications that support the United Nations' Sustainable Development Goals.

SDG 1 (No Poverty)

The proposed Conceptual Framework of Embedded Banking contributes to SDG 1 by providing access to financial services to underserved communities and businesses, including people living in rural areas, which facilitates them in equal access to capital, credit, and other banking services due to the seamless nature of Embedded Banking. This will enable them to participate positively in the economy and also uplift their living standards due to increased ability to earn and manage their finances.

SDG 8 (Decent Work and Economic Growth)

The Embedded Banking adoption by the SMEs increases the financial inclusion of individuals and firms, thus increasing the size of formal economy while decreasing the size of the informal economy, this Conceptual Framework contributes to the SDG 8 (Decent Work and Economic Growth). As a result, the financial performance of the SMEs also increases, which is the backbone of the economy, leaving a positive impact on the overall economy.

SDG 9 (Industry, Innovation and Infrastructure)

The Conceptual Framework of Embedded Banking enables the non-financial firms, especially the SME sector, to integrate the financial services innovatively through digital platforms that promote the technological adoption and development of infrastructure through fintech integration promotes SDG 9 (Industry, Innovation and Infrastructure). The Embedded Banking adoption strengthens the digital infrastructure of the country and creates opportunities for new entrants in the industry.

SDG 10 (Reduced Inequalities)

The proposed Conceptual Framework of Embedded Banking for SMEs has a strong implication for achieving SDG 10, which is about reducing inequalities. Traditional financial institutions often exclude most of the SMEs due to many constraints like limited collateral, insufficient credit history, and regulations, or due to their presence in underserved areas. The proposed model addresses the inequalities by presenting the concept for non-financial firms to provide financial services to their customer through digital platforms, leaving behind various constraints of traditional financial institutions. This model makes the financial services accessible for most of the underserved communities, including women-owned businesses, rural areas, SMEs in the informal sector, and minorities.

SDG 17 (Partnerships for the Goals)

The digital platform ecosystem enables various partnerships and collaborations, such as

technology providers, fintech, regulators, SMEs, etc., in the process of implementing the Embedded Banking solutions. These partnerships not only support operations but are also vital for the scalability of Embedded Finance. Thus, these collaborations support the United Nations Sustainable Development Goal 17, which emphasizes the need to strengthen the means of implementation and revitalize global partnerships.

LIMITATIONS & FUTURE RECOMMENDATIONS

The proposed Conceptual Framework presents a novel framework for the integration of financial services in non-financial SMEs. Several limitations should also be addressed. Firstly, this is a conceptual paper based on the literature review and theoretical synthesis; thus, it lacks empirical validation. The real-world applications may present unforeseen challenges. Secondly, SMEs in various regions of the world, SMEs of various sizes, SMEs belonging to various industries, and SMEs with different levels of digital maturity may respond differently, which means that a one-size-fits-all approach may not be feasible. Thirdly, the model assumes a certain level of regulatory clarity and technological readiness, which may not be available in every country. Data privacy, security concerns, and resistance from traditional financial institutions are barriers that are not scope of the proposed model.

Accordingly, future research should be conducted to validate the proposed model empirically through quantitative studies, case studies, and pilot implementation across different SME sectors. Comparative studies between various sectors, regions, and various sizes of SMEs would also help to understand how contextual factors influence the adoption of Embedded Banking by SMEs. Furthermore, developing the regulatory framework would help the government policies facilitate various concerns of the SMEs and end users. Research should also be conducted to analyze the customer's perception and trust in using Embedded Banking. Studies could also be conducted to investigate the long-term impact of Embedded Banking on economic growth, SME sustainability, and financial inclusion.

CONCLUSION

The objective of this study was to propose a novel Embedded Banking Framework for the global SME sector based on an in-depth literature review, theoretical underpinning & conceptual synthesis. The framework would assist the SMEs in addressing traditionally longstanding issues like poor infrastructure, access to capital, cash flow management, regulatory compliance, and customer retention, thus enabling them to offer a seamless experience to their customers while adhering to the government regulations. The framework additionally offers promising prospects for the SMEs in terms of creating new revenue streams, thereby empowering them to simultaneously contribute to the relevant SDGs and maintain a long-term competitive advantage.

References

Al-Ashmori, A., Basri, S. B., Dominic, P. D. D., Capretz, L. F., Muneer, A., Balogun, A. O., & Ali, R. F. (2022). Classifications of sustainable factors in blockchain adoption: A literature review and bibliometric analysis. *Sustainability*, 14(9), 5176. https://doi.org/10.3390/su14095176.

Accenture. (2021). Embedded finance for SMEs. https://www.accenture.com/content/dam/accenture/final/industry/banking/document/Accenture-Banking-Embedded-Finance-SMEs.pdf

Barney, J. (1991). Firm resources and sustained competitive advantage. Journal of Management, 17(1), 99–120. https://doi.org/10.1177/014920639101700108

Bharadwaj, S., & Deka, S. (2021). Behavioural intention towards cryptocurrency investment: An integration of Rogers' diffusion of innovation theory and the technology acceptance model. Forum Scientiae Oeconomia, 9(4), 137–159.

Bruhn, M., Hommes, M., Khanna, M., Singh, S., Sorokina, A., & Wimpey, J. S. (2017). *MSME finance gap: Assessment of the shortfalls and opportunities in financing micro, small, and medium enterprises in emerging markets (No. 121264, pp. 1-80).* The World Bank. https://openknowledge.worldbank.org/handle/10986/28881

Carvajal, A. F., & Didier, T. (2024). *Boosting SME finance for growth: The case for more effective support policies.*

Challenge Fund for SME Banking. (2024). *Annexure-A of SH&SFD Circular No: Expression of Interest Document – Challenge Fund for Technology Adoption & Digitalization of SME Banking.*

Chhina, S., Chadhar, M., Firmin, S., & Tatnall, A. (2024). Navigating blockchain adoption: An examination of actor alignment with the diffusion of innovation principles. Blockchain: *Research and Applications*, 5(4), 100228. https://doi.org/10.1016/j.bcra.2024.100228

Dab, S., Dobbeni, J., Malhotra, S., & Jarvis, F. (2022, October 24). How platforms can revolutionize small-business banking with embedded finance. *BCG Global*. https://www.bcg.com/publications/2022/smb-banking-embedded-finance-potential

Damti, I. (2023, November 9). A complete guide to Embedded Banking. *Unit.co*. https://www.unit.co/guides/a-complete-guide-to-embedded-banking

Dresner, A., Murati, A., Pike, B., & Zell, J. (2022). *Embedded finance: Who will lead the next payments revolution?* McKinsey & Company. https://www.mckinsey.com/industries/financial-services/our-insights/embeddedfinance-whowill-lead-the-next-payments-revolution

Enow, S. T., & Kamala, P. (2016). Cash management practices of small, medium, and micro enterprises in the Cape Metropolis, South Africa. *Investment Management and Financial Innovations*, 13(1), 230-236.

Gawer, A. (2022). Digital platforms and ecosystems: Remarks on the dominant organizational forms of the digital age. *Innovation*, 24(1), 110–124.

Gawer, A., & Cusumano, M. A. (2014). Industry platforms and ecosystem innovation. *Journal of Product Innovation Management*, 31(3), 417–433.

International Banker. (2024, December 30). Embedded finance: A market ripe for growth. https://internationalbanker.com/technology/embedded-finance-a-market-ripe-for-growth/

Juniper Research. (2022). *Galileo Embedded Finance Report: A B2B market snapshot*. https://www.galileo-ft.com/resources/Galileo-Juniper-Research-ebook-2022_FINAL.pdf

Kazmi, R. (2023, July 25). Embedded Banking: Everything you need to know. *Koombea.* https://www.koombea.com/blog/embedded-banking/

Kontuš, E., & Mihanović, D. (2019). Management of liquidity and liquid assets in small and medium-sized enterprises. *Economic Research-Ekonomska Istraživanja*, 32(1), 3247-3265.

Laurer, C. (2021, December 22). Embedded finance – What it means (for banks and tech firms). Trimplement *Blog.* https://trimplement.com/blog/2021/12/embeddedfinance-what-it-means-for-banks-and-tech-firms/

Laux, C. (2024, November 26). Embedded Banking: The path to profitability. *Swan.io*. https://www.swan.io/blog-posts/embedded-finance-profitability

Markull, L. (2025, March 25). Dutch bookkeeping tool launches banking. Embedded Finance Review. https://www.embeddedfinancereview.com/p/dutch-bookkeeping-tool-launches-banking-33m-baas-funding-in-mena

Markull, L. (2025b, March 25). The Complete Embedded Finance Primer: Strategies, Examples, and Revenue Models. *Embedded Finance Review*. https://www.embeddedfinancereview.com/p/dutch-bookkeeping-tool-launches-banking-33m-baas-funding-in-mena

Narang, A., Patil, S., Aggarwal, R., Tomar, R. P., Venkataraman, V., & Jain, A. (2023). *Embedded finance: A strategic outlook*. PwC India. https://www.pwc.in/assets/pdfs/consulting/financial-services/fintech/publications/embedded-finance-a-strategic-outlook-final.pdf

Ozili, P. K. (2022). Embedded finance: Assessing the benefits, use case, challenges, and interest over time. *Journal of Internet and Digital Economics*, 2(2), 108–123.

Payments Next. (2021). *Why the future of fintech is embedded finance* [White paper]. https://paymentsnext.com/wp-content/uploads/2021/07/Why-the-Future-of-Fintech-is-Embedded-Finance-whitepaper.pdf

Plaid & Accenture. (2021). *Embedded finance: Financial services whenever and wherever customers need them.* https://assets.ctfassets.net/ss5kfr270og3/3aWnLyVDCcwuNOdIDs1aOC/baec2f07bd09549f40eb7858a710e50c/Embedded-Finance-FINAL.pdf

Research and Markets. (2025, January 13). *Embedded finance market forecasts report 2025-2030: Growing demand for digital and convenient financial services to fuel adoption and growth. GlobeNewswire.* https://www.globenewswire.com/news-release/2025/01/13/3008712/28124/en/Embedded-Finance-Market-Forecasts-Report-2025-2030-Growing-Demand-for-Digital-and-Convenient-Financial-Services-to-Fuel-Adoption-and-Growth.html

Rogers, E. M., & Williams, D. (1983). *Diffusion of innovations*. The Free Press.

Rogers, E. M., Singhal, A., & Quinlan, M. M. (2014). Diffusion of innovations. In D. W. Stacks & M. B. Salwen (Eds.), *An integrated approach to communication theory and research* (pp. 432–448). Routledge.

Sanga, B., & Aziakpono, M. (2023). FinTech and SMEs financing: A systematic literature review and bibliometric analysis. *Digital Business*, 100067. https://doi.org/10.1016/j.digbus.2023.100067

Smith, S. (2024, November 18). Why Embedded Banking needs to be on your product roadmap in 2025. *Swan.io*. https://www.swan.io/blog-posts/embedded-banking-on-your-roadmap

Solarisbank AG. (2024). *When brands become banks.* https://www.solarisgroup.com/en/publications/embedded-finance-study/

Woo, M. K., Brown, B., Kapllan, E., Bongardt, S., & Kastenbaum, D. (2021). *Embedded finance for SMEs: Banks and digital platforms.* Accenture. https://www.accenture.com/us-en/insights/banking/embedded-finance-smes