DIGITAL TRANSFORMATION OF FINANCIAL INSTITUTIONS AND ITS IMPACT ON THEIR PROFITABILITY

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ABSTRACT

Digital transformation is helping financial institutions, like banks, reduce their operating cost, increase profit by targeting prospective customers, and make better business decisions. Digitization can be a significant long-term cost-cutting strategy for banks, especially in the field of financial industry digitalization. Nowadays, there is more digital literacy among the customers, which sets the right pitch for the banking sector to go ahead and embrace digital transformation. During the COVID-19 pandemic, there was a sense of urgency to accomplish digital transformation goals, which prompted many banks to accelerate their transformation efforts. While banks are adopting digital solutions rapidly, the profitability of such endeavors has been questioned. Despite its importance, to date, very limited studies have explored this issue. This study focuses on analyzing the last decade's data provided by the Bank of Thailand (BOT) and examines how the banks' adoption of digital technologies help them to achieve operating cost optimization and financial profitability. In addition, going digital has added new revenue streams for the banks in terms of integrating the utility services. Firms can capitalize on massive consumer behavior data collected through digital touchpoints. Having those data analyzed gives greater insights that are useful for future business decisions and may lead to sustainability and resilience.

Keywords: Digital transformation; profitability; operating cost; resilience; banking industry

1. INTRODUCTION

Digital Transformation (DT) is the process of integrating various technologies into all aspects of a business, significantly transforming how organizations function and deliver value to customers [1,8,11]. The traditional consumer-business relationship is being reshaped by digitalization [34]. It's also a cultural shift [10] that entails firms challenging the existing status quo, innovating, and becoming comfortable with uncertainties. From small enterprises to large corporations, DT is essential in this digital era [21]. DT is enriching the end-user experience, transforming business processes and better-utilizing data [16]. Furthermore, the digital revolution is dramatically transforming business circumstances, and the financial services industry is no exception. With the increasing percentage of digital and financial literacy among the people in countries like Thailand [28], DT has broadened the business horizons for the banks and other firms to reach more customers easily and effectively with almost little or no marginal cost [23].

During the COVID-19 pandemic, there was a sense of urgency to accomplish DT goals, which prompted many firms to accelerate their transformation efforts [16,17]. The banking industry, like other businesses, attempts to embrace new processes and integrate digital technologies into its daily operations [8]. Digital transformation in this sense refers to a series of changes made in the banking industry to integrate various fintech technologies in order to optimize, automate and digitize processes while also increasing data security. Digital banking development will lead to greater economic openness, a reduction in the shadow economy, and an increase in tax collections, job creation, and GDP [1].

The majority of the existing literature has focused on the implementation of digital technology in large organizations [9], especially high-tech giants, as well as in digital startups [12], whereas research concentrating on DT and financial profitability in banks, or the financial sector are relatively scarce. Nonetheless, the banks and financial firms are regarded as innovative and serve as the foundation for economic growth in all countries world-wide. In the recent years, banks have paid attention to their DT drive and continuously invested in achieving digital capabilities to deliver seamless services to their customers while optimizing their operating costs. Thus, this study establishes a relationship between DT and financial profitability in the banking industry. Specifically, relying on evidence from financial data made available by the Bank of Thailand (BOT), the objective of this article is to explore the relation between DT and financial profitability in banks, especially in developing countries like Thailand.

We provide a conceptual model that demonstrates why DT favorably affects operating costs, revenues, and banks' profitability. Then, to evaluate this conceptual model, we employ longitudinal archival data from a large sample of more than 20 Thai banks. Our findings indicate that DT has a major impact on banks' financial profitability. Specifically, we discovered that DT has a stronger influence on business profitability due to increased revenue and lower operational costs [23].

The rest of this article is structured as follows. Next, to explain our hypotheses, we present a theoretical foundation. Then we will go into our research methodology followed by the findings of our study. Finally, the discussion section is followed by the conclusion.

2. Hypotheses Development

As stated earlier, the goal of this study is to examine the relationship between digital transformation and financial profitability in banking industry. We argue that the effect of DT on FP is mediated by the both the bank's revenue and operating expenses. The article' conceptual model is shown in Figure 1.

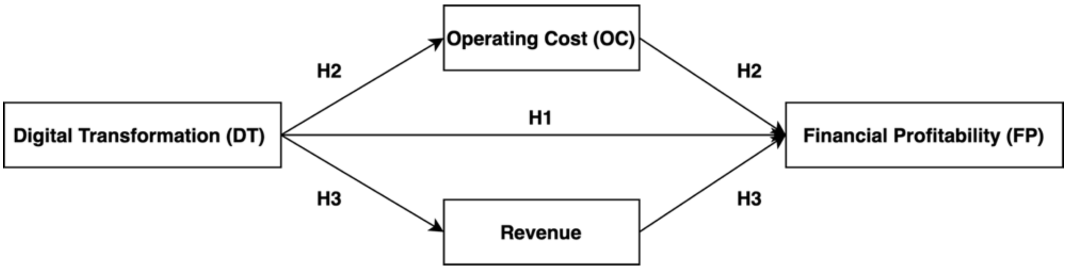

Figure 1. Conceptual Model

2.1. Digital Transformation

Digital Transformation (DT) is all about becoming a digital enterprise, a firm that leverages technology to improve all parts of its business models such as what it offers, how it operates and how it interacts with customers on a constant basis [10,11]. Digital transformation does not happen by chance. Instead, it demands a significant investment across the board because the disruptive potential of change, particularly at later phases of digital transformation, extends beyond technologies. It refers to a paradigm shift in how technologies are adopted and used, both at an individual and organizational level [14]. It is about value, people, optimization, and the ability to quickly react, when necessary, through the intelligent application of technology and data. According to [27] large institutions may use digital technology to fulfill a variety of goals, including meeting stakeholder expectations, simplifying procedures, innovating, reaping benefits, preparing for risks and threats, and improving business models.

Digitalization is fast transforming people's day-to-day living styles, due to the advancement of technology. Organizational design, employment processes, and personnel management have all been changed as a result of adopting DT. The digital revolution is transforming the business landscape, and the banking industry is no exception [8]. Transformation is likely to be variable for organizations and depends partly on the maturity level in technology adoption [27]. Due to progressive economic reforms and quick technological advancements, the banking sector has been undergoing rapid transition in this digital era. Banks offer end-to-end services efficiently to their customers via digital platforms such as mobile phones, tablets, and the internet. Banks offer contactless, branchless, signature-free services, as well as 24-hour banking, allowing consumers to access their accounts and make financial transactions even on holidays [22]. New job opportunities have been created in the banks' workforce due to the digital transformation.

2.2. Bank's Financial Profitability

Profitability is the ultimate bottom-line of the business which determines if business can continue to exist or cease. Measuring and projecting it is of paramount importance. Almost any internal or external change to the business is checked against profitability [31] to ensure that business can continue as it is, or adjustments are necessary. While measuring the profitability, which metric is the most suitable is another area of concern. Scholars [24] suggested that the "gross profit" to be better than various other measures like - dividends, net income, and cash flows. "Operating Profitability" has been claimed to display an even stronger link with expected return which is nearer to the concept of profitability [5]. Studies have used various other financial metrics as profitability measures like - total assets, total sales, pre-tax profits, operating expenses, profit margin, return on assets, return on equity, cost to income etc. Other Authors [26], used an advanced measure of profitability based on Data Envelopment Analysis (DEA) in their studies.

2.3. Financial Profitability of Digital Transformation

Digital Technologies hits five out of Forbes's top six industries to invest in 2021. Authors [13], claimed that globally the banking sector spent higher than many other businesses. While the spending on digital transformation is undisputed, their financial returns are not so clear. Information Technology (IT) productivity paradox has been long discussed in literature [2,7,18] several times from different angles. Though the consensus has been growing on Digital Transformation's positive performance effect [3,4] on business, very little studies have analyzed the effect on a firm's financial profitability (FP). DT can influence the financial profitability because it allows businesses to create new marketing and sales channels to raise awareness of their product/service offerings among current customers and attract new ones [23].

Hence, it is assumed that:

H1. Digital Transformation has positive impact on Financial Profitability.

2.4. Mediating Role of the Bank's Operating Cost

Previous study [19] examined the revenue models that were employed by the online firms who traded in digital goods. While the firms fear IT as a cost center, digital goods almost have low cost of transactions, zero marginal expense of production and distribution, inexpensive marketing, and cheaper management. DT reduces cost with IoT, and automation supported by intelligent data analytics [6]. Cost of the service industry is also controlled as the single infrastructure can serve many clients and the labor force can be saved to utilize on other productive work. Transaction cost has gone down due to this; bringing the operation cost to negligible amounts which used to be expensive before [30]. Operating expenses include all the non-capital expenditures spent during the process of revenue generation.

Moreover, there are many reasons for operating costs to be decreased for the banks which adopted the DT. Most customers go to the bank's service branch to deposit the money, withdraw the money, pay the utility bills, and borrow the loans. Banks with the huge presence of digital channels observed that footfall for the customers decreased heavily in the service branches as most of the services could be delivered to the customers using Mobile Apps, Internet Banking, Cash Deposit Machines (CDS), Automated Teller Machine (ATM) and self-service Kiosks for paying the utility bills and as a result bank started closing their service branches in the area where their presence was very dense. There is a huge cost involved in making a branch operational such as the property rent, electricity bills, human resources, salary and other employee compensation and benefits. Therefore, the closing of the branches will decrease expenses.

Thus, the following is stated:

H2. The Operating Cost mediates the relationship between Digital Transformation and Financial Profitability; i.e., DT lowers the operating cost and this, in turn, increases FP.

2.5. Mediating Role of the Bank's Revenues

The digital change has challenged the traditional sources of revenue but opened up avenues for different forms and channels of revenue [20]. The intention is to replace or enhance revenue streams for increased revenue [33]. There are other different examples of revenue enhancement brought by the digital transformation - marketing digitally to reach actual buyers and derive revenue from them [15], diversifying the business [29], value co-creating with partners [20] etc. These revenues can be measured from the income statement of the firms.

Moreover, we argue that DT facilitates revenue growth by introducing new value propositions, new marketing and sales channels, and improved customer life cycle management [23]. Without spending much, banks are providing numerous services through their digital channels like booking of movie tickets, selling insurance products, paying third party credit card bills or utility bills. In return, banks get hefty commissions from those third parties, which ultimately adds up to their revenue [1,25]. Having looked at the different new sources of the revenue through the digital channels with lower operating cost, we may argue that it will increase the financial profitability.

Therefore, it is proposed that:

H3. The Revenue mediates the relationship between Digital Transformation and Financial Profitability; i.e., DT increases revenues, and this, in turn, increases the FP.

3. METHODS

Based on the hypotheses mentioned above, empirical research was conducted on the last ten years (2011-2020) of banking data available on the Bank of Thailand BOT website, such as the number of branches of all the banks, the total transactions made through the digital channels such as mobile and Internet banking, earning and expenses of the banks. In the last five years, most of the banks in Thailand embraced and implemented DT, in their internal process and customer-facing products. All the relevant financial data were analyzed to get insight into how DT influences the revenue, operating cost, and profitability in the banking industry.

In this study, DT has been operationalized as the degree of the services delivered through digital channels. In that respect, metrics like the value and volume of online transactions have been used to measure the DT. Gross profit has been used as a metric to approximate FP as suggested in different studies [5,32]. Total expenses are measured as operating costs (OC), whereas revenue is measured as total income.

4. RESULTS

While doing the data analysis, we observed a significant statistical relationship between banks' FP to their DT. Linear regression was conducted on the data to establish this relationship. In (Table 1), we observed that FP is related to Revenue, OC, and DT.

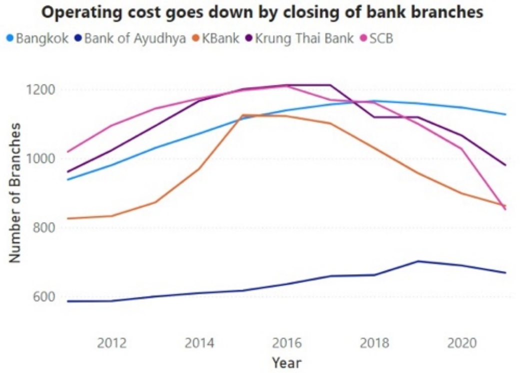

Figure 2. Operating costs goes down by closing of branches

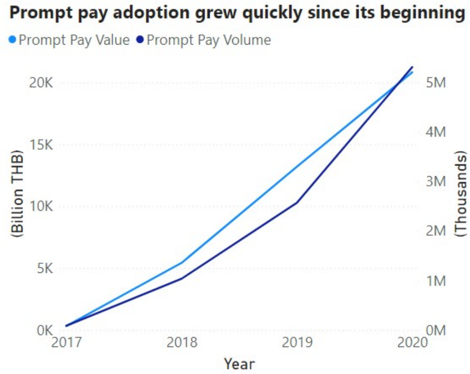

Figure 3. Prompt pay transactions (value & volume)

Table 1. Linear Regression Results (Financial Profitability)

	Coefficients	*Std. Error*	*P-value*
(Constant)	16,131.69334	2,915.569967	0.000003
Total Income	0.14302	0.025907	0.000003
Total Expenses	0.10407	0.039512	0.012487
e-Payments	0.00270	0.001032	0.013030

A similar statistical analysis was conducted to measure the impact of banks' DT on OC and Revenue. In (Table 2) and (Table 3), the results of the linear regression of banks' DT between OC and Revenue have been shown, respectively. Both financial entities are significantly dependent on banks' DT.

Table 2. Linear Regression Results (Operating Cost and Digital Transformation)

	Coefficients	*Std. Error*	*P-value*
(Constant)	141966.35419	3404.64447	0.00001
e-Payments	0.01499	0.00659	0.02865

Table 3. Linear Regression Results (Revenue and Digital Transformation)

	Coefficients	*Std. Error*	*P-value*
(Constant)	223671.39914	5653.92642	0.00001
e-Payments	0.03897	0.01095	0.00102

5. DISCUSSION

The study examined the impact of DT on FP and how that impact is mediated through revenue growth and lower operational costs in the banking sector in the emerging market, Thailand. We observed DT's influence on revenue growth is positive, whereas it lowers the operating expenses. Our empirical analysis shows that the top 5 banks have closed around 20% of their service branches, as shown in (Figure 2) over the last five years, although the customer base has increased manifolds in the last few years. Furthermore, the closing of the branches has helped banks reduce their operating cost and increase their revenue. With fewer branches, banks serve more customers than they had ten years before and deliver more quality services than ever. Our analysis also shows that people have availed banking services through digital channels for transferring and receiving money irrespective of the value of the transactions.

Next, prompt-pay was introduced in Thailand in 2017, which is another way to transfer money from one account to another account using mobile numbers. As shown in (Figure 3), data shows that there was a 6,000% of growth in its usage in the last three years. Hence, ease of use, improved accessibility are the biggest advantages of DT for the customers and banks [1]. Providing the services through the digital channel has almost no marginal cost [19]. However, serving an additional customer through a human resource need lots of extra costs, which is obvious.

Similar study done by scholars [23], suggests that DT is positively associated with profitability, and it creates further opportunities for value creation. Our study focused on the banking sector in Thailand validated the prior studies done in another context, which is in line with previous findings. We have the empirical evidence that DT has a positive impact on banks' FP in mediating the role of OC and revenue, which fills the research gap and answers whether DT leads to profitability [31].

Our study shows that DT helps banks lower their operating cost and expenses and provides more opportunities to earn more revenues than before from different new sources of income and, in return, increases the total revenue. Furthermore, lower operational costs and higher revenues lead to financial profitability, which is proved empirically in our study. The practical implication is that managers should consider DT initiatives to harvest better profitability as it contributes to revenue and slashes expenses.

In summary, DT has enabled banks to dispense 24X7 banking services to their customers conveniently and smoothly at minimum cost. On the other hand, DT empowered the customers to avail themselves the banking services in their comfort. Using more and more digital channels for banking services positively impacts the country's economy as these transactions are easily accountable and come under the tax system. However, some study limitations should be acknowledged. This current study is confined to the banking sector in Thailand to explore the DT and its influence on FP. Some more constructs could be added to the conceptual model, like the Environmental Turbulence, to measure its effect on DT and FP. In future, other researchers can take this study forward and validate the conceptual model presented in (Figure 1) in other industries or other countries.

6. CONCLUSION

In this study we explored the effect of DT on FP and found that it has a positive influence on it. Furthermore, this study confirms that DT helps firms reduce their operating cost and serving an extra customer has almost zero marginal cost which in turn increases the revenue. This has been empirically validated in the banking sector of Thailand using the statistical data provided by BOT. This study asserts the positive association of DT with a firm's productivity shown in the previous research. The theoretical contribution of this study is that it added empirical evidence by establishing the positive effect of DT on banks' profitability. Furthermore, the practical contribution of this study is that firms should speed up their DT drive if they want to be competitive and sustainable in the longer run.

AUTHOR CONTRIBUTIONS

Ranjan Kumar and Maheshwor Shrestha designed the conceptual model, performed the statistical analysis, and wrote the manuscript. Dr. Yuosre F. Badir conceived the study and was in charge of overall direction and planning.

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