



The role of e-banking quality in improving customer satisfaction in commercial banks: a case study from Libya

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ABSTRACT: The bank is the central pillar of the economy; its mission is to offer financial services such as collecting savings and distributing them in the form of loans. It enjoys a leading position in high-value-added operations. However, the arrival of digital technology is suddenly going to call everything into question. At the heart of a constantly evolving digital era, Libyan banks are committed to following the global trend by integrating digital technologies, seeking to meet customers' needs and improve their operational efficiencies. For our research, we selected a sample of 400 Libyan banking customers and 260 executives working within Libyan banks. Our sample includes various types of banks, particularly those with the best digital performance. In recent years, the development of digital technology has gained momentum within organizations, and the COVID-19 pandemic has accelerated this trend. Its changes have highlighted the importance of digitalizing work processes and practices within banks, a transformation synonymous with survival and performance.

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1. Introduction

The digital revolution is impacting all sectors of the economy, particularly the banking sector. Banks must adapt to these changes, which involve astronomical sums in proportion to the size of their tangible and intangible infrastructures. With the arrival of new technologies and the democratization of the internet, we are seeing a growing imbalance in banking distribution. Consumer behavior has also changed, and their expectations are increasingly sophisticated. They are more opportunistic and less loyal. Customers want faster processing of their requests and are also becoming increasingly well-informed. Consumers want to control their choices. They no longer want to pay for products/services they do not need (Aaras & Nicolosi, 2020).

The changes in the banking environment primarily consist of the emergence of new players known as FinTech. They offer financial services that overturn an entire ecosystem that traditional banking institutions long monopolized. A second factor in the emergence of FinTechs is the changing expectations and behavior of customers. As a result, traditional banks have been compelled to rethink their operations radically. (Roson, 2025)

Indeed, Enkhjav and Varga (2021) point out that banks are currently facing a new revolution, known as the 'fourth industrial revolution'. Sotnikova and Bilokonenko (2020) demonstrate that the first decade of the 21st century has witnessed the emergence of a new technological era that blurs the boundaries between technological and physical realms. In the same vein, Chesbrough and Schwartz (2009) note that banks have

adopted this approach to maximize their profitability and the mastery of know-how, enabling them to drive the development process to a higher level of quality. [Squali \(2019\)](#) notes that banks utilize digitalization to collect and share information about potential customers, among other purposes. Moreover, these sources of information are essential resources that the bank needs to maintain a sustainable position in a competitive environment.

In this way, the increasing user-friendliness of digitization enables the two stakeholders to envision themselves side by side, even when they are distant. In this sense, the economic theory of information and decision also reveals that the use of digitization by a bank improves its decision-making performance ([Teo, Tan & Wei, 1997](#)). According to [Hewitt and Dundas \(2006\)](#), these communication tools will enable banks to reduce uncertainty and detect competitor trends. According to Alard and [Dirringer \(2000\)](#), NICTs are considered highly resonant products as they allow real-time access to information, regardless of the customer's location. The challenges of these new media facilitate the remote connection of various information formats to customers, mainly text and images. The penetration of digital technology is changing the way banks operate. It plays a significant role in their competitiveness and performance. The work of [Razouk \(2014\)](#), which has so far focused on the development of technological innovation, emphasizes that communication tools diversify the relational activity of banks while positively differentiating them.

With this in mind, banks should not only develop projects aimed at maximizing the use of Internet services through websites, for example, but also create applications that can be accessed from all devices, including mobile phones, smartphones, tablets, and computers, to enhance the performance of services and their commercial benefits. [Autissier and Vandangeon-Derumez \(2013\)](#) demonstrate that banks no longer view communication tools as a form of technological equipment, but rather as a management strategy. In this sense, digitalization represents an opportunity for the bank, leading to the development of a new know-how ([Godé, 2012](#)).

Technological innovation is gradually emerging as a significant asset in the revolution to which banks in Libya must align themselves if they wish to remain competitive. They should diversify and differentiate themselves by basing their strategy on a better combination of supply and demand. Given the above, it is reasonable to ask how banks utilize digitalization to inform their organizational and relational strategies.

This study aims to highlight the impact of digitalization on the relational, organizational, and human strategy of banks in the Libyan context. The integration of digital technologies creates new perspectives. They help modernize the banking sector and offer new sources of value for customers while creating new revenue-generating opportunities.

Therefore, the question is not whether to have a digital strategy, but how to develop a strategy for the digital world. Based on this, we will attempt to answer the following question: What impact does digitisation have on banks and their customers? The rest of the article is organised into five sections to answer this. [Section 2](#) will examine the effects of digitalization on the bank from both theoretical and empirical perspectives, focusing on digital organizational or transformation strategies and their impact on the bank's business lines. The waves of digital transformation that have hit the world have not spared Libyan banks. [Section 3](#) will survey the digitalisation of Libyan banks, aiming to measure the digital maturity of the banks and their customers. [Section 4](#) will focus on a study of the Libyan banking sector. First, we present the Libyan regulatory framework for technology start-ups. Then, we will demonstrate the digital transformation using two case studies to illustrate its impact on customers and banking agents. Finally, we will present our survey results, which aim to identify the approaches adopted by Libyan banks in their digital transformation efforts. [Section 5](#) will contain a discussion, and [Section 6](#) will present the conclusion and policy implications.

2. Literature review

2.1 Theoretical aspect of the study

The 21st century has seen the emergence of new means of communication. Technical and technological advances have accelerated globalization. Information can now be transmitted almost instantaneously across the globe. This phenomenon opens up new horizons for marketing and exploiting new platforms, such as social networks. (Lejealle & Delecolle, 2017).

The digital revolution is impacting all sectors of the economy, particularly the banking sector. Banks must adapt to these changes, which involve astronomical sums in proportion to the size of their tangible and intangible infrastructures. With the arrival of new technologies and the democratization of the internet, we are seeing a growing imbalance in banking distribution. Consumer behavior has also changed, and their expectations are increasingly sophisticated. They are more opportunistic and less loyal. Customers want faster processing of their requests and are also becoming increasingly well-informed. Consumers want to control their choices. They no longer want to pay for products/services they do not need (Aaras & Nicolosi, 2020).

The transformations that have affected the traditional consumer profile, along with the acceleration of technological innovations, have given rise to new entrants in the financial system, namely Fintechs. These new entrants combine digital technologies with financial services, whether for individuals (Business-to-Customer) or companies (Business-to-Business). This group includes companies or, more generally, start-ups of all sizes, with projects that are as different as each other, but which are similar in that they all take a 'disruptive' approach to finance, i.e. they break with the old organizational models for these activities and favor an approach based on the use of technology. Our research defines service quality improvement as increasing the value added to the service offered to consumers. In the financial sector, institutions primarily innovate to enhance the quality of their services and expand their offerings (Lamouline, 1998).

The perceived benefits of e-banking, such as increased self-service, the development of remote consultation services, the de-temporalization of service provision made possible by various equipment and information systems, relocation, time-saving, re-negotiability, flexibility, facilitation of the service access process, real-time interaction, rapid response, exchange of reliable and secure information, etc., can be seen as improvements in the quality of the bank's services. Thus, we believe that the more a bank adopts electronic distribution and communication channels, the more its customers will present specifications, demand personalized banking services and the more they will look for the best quality products and services; therefore, in order to increase customer loyalty, the bank is obliged to improve the quality of the services it offers. We suppose that the more the bank adopts e-banking channels, the more it will benefit from offering its customers higher-quality services with high added value in products, information, and commercial relations (Ndzie, 2022).

According to the literature review, the impact of technology extends beyond the simple improvement of production capacity, offering organizations the opportunity to integrate new services, whether or not related to their core business, into their existing offerings. Munos (1998) suggests that to serve its customers better and stand out from the competition, the company develops its offering into a more comprehensive, coherent, richer, and more innovative whole, both for the customer and itself. Adopting new e-banking channels opens up new opportunities for the bank to broaden its products and services, such as image cheques, electronic purses, digital signatures, and electronic payment methods. Expanding the bank's range of products and services to meet customer requirements and needs, and to differentiate itself from its competitors, will enable it to stand out from its main rivals and maintain or even increase its market share.

The acceleration of technological innovation has led to the emergence of new players that are more agile and responsive to consumer expectations. With the help of new technologies, these start-ups have developed innovative business models and financial services that are disrupting the traditional business models of established financial players, thereby challenging their dominance in various segments of the banking and financial sector. At this stage, initiatives to transform banks digitally have emerged to meet customer needs, adapt to the era of new technologies, and unlock new growth opportunities. Today, many banks are embracing digital platforms to reach a broader audience, particularly in areas where new

technologies are prevalent. Today's customers are demanding, so banks are constantly developing by adopting new technologies in their various services.

2.2. Empirical aspect of the study

The banking sector is no exception. Digital transformation has revolutionized the financial services landscape. It is now opening up new horizons in terms of interaction between the bank and its customers, with the emergence of new products and services incorporating innovative digital technologies such as online banking, mobile banking, and customer relationship centers, contact channels that did not previously exist in the traditional bank branch model.

Banks play an important role in a nation's economic development and success. The association between economic growth and financial intermediation has long been a topic of interest to academics, economists, and policymakers. In less developed countries, the role of the banking system is particularly evident, as banks are the dominant players in the financial sector and are the primary source of financing for economic activities (Kumati, 2008). Researchers (Habara, 2009; Husien, 2007) believe this applies particularly to Libya. Husein (2007), while subscribing to the view that the Libyan banking sector is similar to its peers in other developing countries, argues that it is -...more crucial to the economy as it represents the backbone of the Libyan financial system, being the only source of finance and the only financial institution that can provide loans and credit in Libya (Husien, 2007).

Numerous Libyan studies (Alwaddan, 2005; Elmogla, 2009; Hanibich, 2009; Husien, 2007; Kumati, 2008; Mashat, 2005) have demonstrated the poor performance of Libyan banks in financial and non-financial activities. This paper marks the first step towards understanding the reasons for the Libyan banking sector's poor performance, providing an overview of its evolution from inception to the end of 2010 and highlighting the factors that have had a significant impact on its performance.

According to Dufour et al. (2018), customers are facing new needs in their relations with their banks: First of all, according to these authors, customers need 'easy-to-access, multi-channel digital tools', and 'fluid' pathways. Customers expect to be able to carry out a range of management operations online, all on secure platforms. Secondly, there is a need for immediacy and flexibility in customer relations. Here, the goal is to achieve response and assistance times as short as possible, excluding banking days.

Banks have had to face digital challenges by putting their capacity for innovation to the test to meet the challenges of today's world. Driven by this new era, banks have reviewed their business models and expanded their range of banking solutions for customers, introducing new products and services (Bany, 2024).

A business model is the path for any company wishing to create, offer, and capture value; in other words, the logic will enable the company to understand how to create value and make money (Ait El Haloui Mhamed, 2021). This concept emerged in the 1990s, coinciding with the rise of the internet and e-commerce.

Banks can invest more in digital transformation by reducing the costs associated with managing physical infrastructure. The initial investment for a digital banking solution is much lower than that for setting up and maintaining a physical branch. With digitalization, banks can offer online services, which reduces certain operational costs. By setting up these digital services, customers can manage their day-to-day transactions independently, such as checking their accounts and making transfers or payments, without needing to visit a physical branch. This considerably reduces the costs associated with infrastructure, such as rental or maintenance of premises, as well as staff management costs (Kaka et al., 2025).

Additionally, digitalization has enabled streamlined back-office operations, further reducing operating costs and enhancing internal processes. According to El Yaacoubi and Bennani (2022), the back-office job is defined as follows: Administrative management is the central pillar on which the back-office manager's job is based, with the task of processing routine banking and accounting transactions (deposits, withdrawals, transfers, provision of funds, etc.) and ensuring that they run smoothly. They also carry out

checks, such as verifying the conformity of cheques, transfer orders, and direct debits. However, the digital maturity of these banks remains variable and requires improvement to consolidate their positions and strengthen their market presence. Digital transformation in the Libyan banking sector is crucial and fully justifies our study. The Libyan banking sector plays a crucial role in the country's economic and financial development, serving as a major player in the national economy. To maintain their competitiveness on national and international markets, Libyan banks must seize the opportunities presented by digital transformation.

The hypotheses should be based on the relationship between the quality of e-services and customer satisfaction, and detail the different quality elements. Here are a few possible hypotheses: First (general) hypothesis (**H1**): There is a statistically significant relationship between the quality of electronic banking services and customer satisfaction in commercial banks in Libya.

From this general hypothesis, several sub-hypotheses (according to quality dimensions) can be formulated:

The second hypothesis (**H2**) is that there is a statistically significant relationship between the ease of using e-banking and customer satisfaction in commercial banks.

The third hypothesis (**H3**) is that there is a statistically significant relationship between the security and confidentiality of electronic banking transactions and customer satisfaction.

The fourth hypothesis (**H4**) is that there is a statistically significant relationship between the speed of response to electronic services and customer satisfaction.

The fifth hypothesis (**H5**) posits that there is a statistically significant relationship between the availability of 24/7 electronic services and customer satisfaction.

The sixth hypothesis (**H6**) posits that a statistically significant relationship exists between the accuracy of information and transactions provided through electronic channels and customer satisfaction.

The seventh hypothesis (**H7**) states that customer satisfaction with online banking varies with demographic characteristics (such as age, education level, and technology experience).

3. Methodology

Our methodological approach is based on two main parts: a presentation of the model and sample variables, a survey of bank customers' and workers' use of digital banking, and an analysis of the relationships between the different variables using principal component analysis (PCA), a multivariate statistical method, and a Tobit regression model.

3.1. Sample of the study

For our research, we selected a sample of 400 Libyan bank customers and 260 executives working in Libyan banks. We included different types of banks in our sample, particularly those with the best digital performance. We will endeavor to present the characteristics of each question and the appropriate measures to modify the pre-established hypotheses. Our primary concern is to create a database that includes multiple interviewees, who will complete a questionnaire to collect the necessary data to support our hypothesis. Our empirical investigation involves administering a questionnaire to bank managers to collect the quantitative data necessary for building an economic model that addresses our research question. Using this analysis, we will examine the use of the structural equation technique to control the relationships between the different variables and the significance of these relationships.

In our research, we will distribute questionnaires to bank customers and workers. We will then analyze the principal components of all variables using appropriate software, such as SPSS. [Table 1](#) summarizes the main variables of our study for customers and workers.

Table 1. Presentation of variables

Variables	Definition
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Variables for Banking Customer

The speed of our services	Banks step up their digital transformation.
Digital banking efficiency	Despite having access to other banking options, most bank customers do not see any convincing alternatives on the market.
The challenges of digital banking	The success of any company depends on its ability to meet its customers' needs by offering excellent services or quality products. This is even truer in the banking and insurance sectors.
The digital revolution and its impact on banking, digitalization, and customer satisfaction	Digital transformation has enhanced sales practices and the customer experience, while also creating new models of relationships.
The effects of digitalization on customer costs at banks	Digitization offers banks and insurance companies substantial gains in terms of operational efficiency. Automating processes, from customer data management to transaction processing, considerably reduces delays and errors.

Variables for Banking agents

Quality of work	Implementing a process to integrate diverse customer requirements is beneficial for targeting and reducing communication investments, while ensuring long-lasting, refined relationships.
Protection at work	Before delimiting the concept of “digital banking solutions,” we need to focus on information and communication technologies (ICT) related to digital channels across the network and via the Internet. These technologies enable consumers to receive personalized services and products tailored to their individual needs.
Satisfaction	By putting the customer at the center of their concerns and including them in the innovation process, banks can identify their desires and anticipate their needs, enabling them to create personalized proposals that improve customer satisfaction and loyalty.
Performance	The expected effects of these transformations are also difficult to quantify: banks generally do not distinguish between the different possible origins of planned savings.
Financial dimension	The proliferation of partnerships also leads banks to develop new strategies for acquiring stakes in companies at the seed, start-up, or expansion stages.
Employee performance appraisal	However, digital transformation is not just a technical process; it also significantly impacts human resources management through the major transformations it brings about in the banking profession.
Quality of electronic services	However, the financial effects of these transformations—in particular, the cost reductions or revenue increases resulting from the investments made—seem difficult to measure.
Banks turn to digital operations.	In a context marked by deregulation, the sharing and opening up of different sectors to others, the emergence of new competitors, and the difficulty of differentiating between easily mutable banking brands and products, the establishment and consolidation of a relationship between the bank and its customers helps to foster the affective factor in the relationship.

Regarding customer loyalty, this latest opportunity will enhance financial performance and increase the appetite of both banks and their customers. Moreover, banks are redirecting their focus towards enhancing

the cross-selling of their products, thereby improving their financial performance.

3.2. Analysis technique

Principal component analysis (PCA) is a method in data analysis and multivariate statistics often used to compress and classify data. It aims to reduce the dimensionality of a dataset by identifying a new, smaller set of variables, while retaining most of the information from the original sample. The PCA method involves transforming variables that are initially correlated with each other into new, mutually independent variables. These new variables, called principal components or axes, are ordered according to the fraction of total information they contain, as [Baira \(2001\)](#) described.

This technique can be approached from two perspectives: maximizing variance or minimizing mean-squared error. The principal components, represented in the new space, are decorrelated and ordered according to the decrease in variance ([Duby & Robin, 2006](#)). Its applications are broad because of the diversity of data that PCA can handle. There are two primary methods for using PCA. To study a given population, seek to determine the typology of individuals and the variables that characterize them. For example, in biometrics, analyzing measurements on specific organs can reveal characteristics associated with pathologies. Similarly, using PCA to study farm expenditures in economics can lead to management savings. Reduce data dimensions without significant loss of information. For example, in signal and image processing, PCA is often used in pre-processing to reduce the amount of data derived from analog processing. This simplifies subsequent data processing while preserving essential information ([Boubou, 2007](#)).

These are models in which the dependent variable is continuous but only observable over a specific interval. These models are halfway between linear regression models, where the endogenous variable is continuous and observable, and qualitative models. Indeed, models with limited dependent variables derive from models with qualitative variables. We must model the probability that the dependent variable belongs to the interval for which it is observable. We shall see that the Tobit model represents the basic structure of models with limited dependent variables. However, these models are also known as censored regression models or truncated regression models. This more precise terminology introduces the distinction between truncated and censored samples:

1. A regression model is said to be truncated when all observations of the explanatory variables and the dependent variable outside a particular interval are entirely lost.
2. A regression model is said to be censored when at least the observations of the explanatory variables are available for the entire sample. We shall see later that the Tobit model is a censored regression model.

The Tobit method was introduced by James Tobin in 1958 to deal with censored data in regression analysis. It is commonly used in situations where the values of the dependent variable are truncated at a threshold, whether due to practical or theoretical constraints. For example, in economic or marketing studies, certain variables, such as income, satisfaction scores, or purchase amounts, may be limited or censored to a certain level (e.g., a minimum or maximum income). Parameter estimation in a Tobit model is typically performed using the maximum likelihood method (MLE), which seeks to maximize the likelihood function of the observed data under the assumptions of the censored model. This approach allows both censored and uncensored observations to be taken into account.

The coefficients of the Tobit model can be interpreted similarly to those of a classic linear regression, but with an important nuance linked to censoring. For example, the coefficients indicate the marginal effect of the explanatory variables on the latent variable, but censoring may modify this effect. Model interpretation, therefore, considers both the observed values of Y and the probability of an observation being censored. If an explanatory variable increases, this may influence the probability of the observation being censored (if it is close to the limits) and the value of Y itself.

4. Empirical analysis

4.1. Univariate analysis of variables

To determine whether there is a correlation between the various items, we begin by presenting the characteristics of the sample representing our model at the start of this subsection. Then, in this section, we will proceed to an analysis of the variables. We will endeavor to present the various variables in the model statistically, clearly, and concisely, describing their relationships straightforwardly. First, we present in Table 2 the main statistics of the predefined control variables of 260 Libyan bank agents and 400 customers. The data in Table 2 shows that most variables exhibit skewness and different shapes but display a precise normal distribution.

The aim is to find a factorization that reduces the number of items for each variable in the two slices of customers and agents above, using one or two variables, with the PCA method. However, we must conduct some preliminary tests to validate the survey results, including Cronbach's reliability test and the KMO validity test. Indeed, Cronbach's alpha value (Cronbach, 1951), as shown in Table 2, is very high, indicating good reliability of the selected items. From the KMO and Bartlett tests of the factor analysis, we find a KMO value in Table 2 that is assumed to be acceptable, and a Bartlett specificity test that is broadly significant. This confirms that our factorization is valid. An initial factor analysis of the items reveals a primary factor for most variables, with the remaining variance accounted for by the remaining information.

Banking institutions remain major players in the changing financial sector, characterized by the increasing fragmentation of value chains. They demonstrate maturity in digital issues and often approach the transformation of their business models with confidence.

Table 2. PCA analysis of variables

Variables	Number of items	Cronbach's Alpha	Kaiser-Meyer-Olkin (KMO)	Variable factorization	Percentage of variance
Customer variables					
The speed of our services	4	0.863	0.805	1	72.863
Digital banking efficiency	5	0.865	0.817	1	65.385
The challenges of digital banking	5	0.881	0.816	1	68.559
The digital revolution and its impact on banking, digitalization, and customer satisfaction	5	0.887	0.809	1	68.945
The effects of digitalization on customer costs at banks	5	0.882	0.681	1	68.091
Banking agent variables					
Quality of work	5	0.801	0.599	2	44.865 32,183
Protection at work	5	0.881	0.810	1	68.664
Satisfaction	5	0.894	0.812	1	70.436
Performance	5	0.843	0.739	1	61.568
Financial dimension	5	0.842	0.735	1	61.374
Employee performance appraisal	5	0.774	0.551	2	47.944 36.120

Quality of electronic services	5	0.763	0.530	2	46,525
					36.318
Banks turn to digital operations	5	0.883	0.670	1	68.289

Evolving customer expectations, linked to the rising quality of customer experiences offered by Big Techs and reinforced by Covid-related events, have been and remain the primary driver of this transformation. Online interaction has become the norm, and the tools developed for this purpose have advanced considerably. However, the risk of losing the customer relationship remains at the heart of traditional establishments' concerns and digital strategies.

4.2. Regression analysis

Regression analysis is perhaps one of the most widely used statistical methods for studying or estimating the relationship between independent and dependent variables. In statistical analysis, it is essential to distinguish between categorical and numerical data, as categorical data involves distinct categories or labels, while numerical data consists of measurable quantities. Regression analysis is often used to model or analyze data. Most survey analysts use it to understand the relationship between variables, which can then be used to predict the precise outcome.

Tables 3 and 4 present the model's results related to the variable "Effects of digitization," with the other variables estimated using the Tobit model with and without personal data.

Table 3. Tobit model results for bank customers

Digital Revolution	Model 1 without Personal Data		Model 2 with Personal Data	
Variables	Coefficient	p-value	Coefficient	p-value
Speed of our services	0.776	0.000	0.825	0.000
Services effectiveness	0.050	0.000	0.036	0.000
Challenges	0.260	0.000	0.220	0.000
Digital revolution	0.035	0.001	0.013	0.049
Genre	-----	-----	-0.055	0.000
Age	-----	-----	-0.002	0.839
Level	-----	-----	0.019	0.041
Profession	-----	-----	0.015	0.035
The situation	-----	-----	0.104	0.000
Constant	-9.238E-17	1.000	-0.195	0.000
F-statistic	F-statistic (4, 395) = 9111.102		F-statistic (9, 390) = 4564.019	
Probability	0.000		0.000	
R ²	0.989		0.991	

Table 3 shows the estimation of two models. All variables positively and significantly reacted to the dependent variable, "Effects of digitization." For the second model (With Personal Data), the personal variables are positive and significant, except AGE, which is negative and insignificant.

Table 4. Tobit model results for banking agents

Bank transformation	Model 1 without Personal Data		Model 2 with Personal Data	
Variables	Coefficient	p-value	Coefficient	p-value

Quality of work	0.375	0.000	-0.388	0.000
Protection at work	0.276	0.000	-0.282	0.000
Satisfaction	-0.059	0.300	-0.065	0.242
Performance	0.071	0.241	0.093	0.113
Financial dimension	-0.011	0.851	-0.016	0.765
Work evaluation	0.224	0.000	0.231	0.000
Quality of services	-0.049	0.382	-0.059	0.279
Genre	-----	-----	-0.073	0.515
Age	-----	-----	0.199	0.006
Level	-----	-----	0.300	0.000
Profession	-----	-----	-0.140	0.227
The situation	-----	-----	-0.117	0.364
Constant	6.072E-17	0.000	-0.555	0.102
F-statistic	F-statistic (7, 252) = 9,822		F-statistic (12, 247) = 8,710	
Probability	0.000		0.000	
R ²	0.214		0.297	

Table 4 shows that the estimation of both models reveals that all variables are positively and significantly related to the dependent variable, "Effects of digitization." However, the variables of satisfaction, performance, financial dimension, and work quality are insignificant. In the second model (With Personal Data), the personal variables are negative and insignificant, except for two variables, AGE and Level, which are positive and significant.

5. Discussions

The use of digital technology has transformed the organizational and relational structures of banks, enhancing their performance. This study aims to shed light on the impact of digitalization on the relational, organizational, and human strategy of banks in the Cameroonian context. The research methodology used for this purpose is based on semi-structured interviews with various stakeholders (bankers and bank customers in the sample), supplemented by a questionnaire, which leads to an econometric model to define the research object better.

Mbida (2020) states that the bank-customer relationship is undergoing profound socio-economic changes. However, Brillet et al. (2016) note that technological and societal evolutions have turned this relationship upside down. Indeed, financial institutions must adapt their behaviors to meet customer expectations and attract and retain them (Des Garets et al., 2009). This need for banks to adapt should lead them to implement reactive strategies. Durand (2006) applies the theory of core competencies to demonstrate that banks must reassess their digitalization strategy to develop key competencies that add value and thoroughly reflect their *raison d'être*. This section will discuss mastering the new communication media that define how the bank should interact with its customers. Next, we will examine the transformation of the banking business from a tangible to an intangible medium, from face-to-face interactions to mobile banking.

Moreover, according to Amechi and Long (2015), they must focus their strategic plan on the new ICT media to be closer to their customers. This organizational change within banks will enable them to improve their performance by being present on every network, thereby meeting their customers' expectations. It is therefore necessary to make the customer journey more fluid by pooling skills (capturing innovative ideas).

Furthermore, according to [Trivedi and Pillai \(2020\)](#), digital transformation is a radical change that also contributes to customer over-information and behavioral volatility if the level of service quality delivered does not meet their requirements. In addition, digitalization provides the tools needed to get to know customers better and strengthen the bond by interacting with them. Banks now have the means to communicate wherever, whenever, and however each customer wishes, whether by telephone, e-mail, the web, or any other interactive medium. Thanks to relational ICT media, they can establish a direct relationship with customers at a distance, who are invited into the heart of the bank and its offer.

Furthermore, [Benedetto-Meyer and Boboc \(2021\)](#) argue that the adoption of digitalization affects working hours and organizations through ICT media ([Zouinar, 2020](#)). According to [Thompson \(1979\)](#) and [Noiriel \(1986\)](#), digitization equips banks with properties that facilitate their transition towards the emergence of modern institutions, including the allocation of tasks to employees, the designation of spaces for these tasks, and the scheduling of time. By closely linking time and space, bank managers give themselves the means to control the implementation of activities and tasks.

Technological innovation is defining new game rules and creating new economic landscapes. It offers numerous opportunities to banks, which are the first to integrate it into their business, combining it to maximize service quality and exploit it to increase customer value and loyalty. The ever-growing technological and economic environment is prompting banks to adapt their organizational structures, with physical branches diverging from Online branches, allowing customers to choose the path that provides the most satisfaction. To this end, the bank utilizes a digitalization channel to transition from a tangible medium to an intangible one, from face-to-face interactions to mobile ([Amani & Asma, 2023](#)).

Digital transformation is an indisputable lever for developing banking operations and services. This lever is crucial, as we have seen in times of crisis, especially the coronavirus pandemic. In the era of digitization, all economic agents had no alternative but to adapt to the new communication and information technologies by incorporating digitization strategies into their culture. The race for new digital uses has become a guarantee of efficiency for banking institutions.

Digital transformation has eased the burden on banking institution employees and saved customers time by allowing them to avoid traveling to the branch location. Fintech has brought unprecedented disruption to the financial services ecosystem. With the new consumer lifestyles associated with NICTs and the emergence of financial technologies, financial institutions must adapt to digitalization and change to maintain their competitiveness ([Khanboubi & Boulmakoul, 2018](#)).

Today, digital technology plays a crucial role in enhancing the dynamism of various institutions, as it contributes to improved performance, customer satisfaction and loyalty, increased sales, rapid and easy innovation, and differentiation from competitors through digitalization. Digital transformation is all about reducing costs, simplifying procedures and processes, and developing business effectively.

The technological revolution has had a profound impact on the banking sector over the past few decades. With the help of new telecommunications and information technologies, such as e-banking, it has undergone an increased digital transformation. To satisfy customers diligently and efficiently, banking institutions have developed their service offerings by keeping in touch with their customers through digital applications and websites, and by enabling commercial and financial exchanges via online payment, which has become even simpler and easier thanks to the Internet, now considered a primordial tool ([El Khazri & Ailli, 2025](#)).

Banks have faced a new customer landscape in recent years and must consider the dematerialization of transactions, the need for personalized customer service, the complexity of multi-channel interactions, and the verification of existing customer uses. The digitization of banking is viewed as the only means to meet the evolving needs of customers who demand personalized services available 24 hours a day, anywhere ([Talbi & Sahed, 2024](#)).

Banking institutions determined to remain relevant to their customers in the face of neo-banks, fintech, and big techs are being forced to reevaluate their strategic positioning and reconfigure their business

processes, particularly when it comes to document non-compliance. While banks have already developed several somewhat mature digital services, such as mobile account advice and online contracts, true digital transformation today requires crossing certain boundaries.

Unlike sectors such as e-commerce, the banking industry faces significant challenges in managing documents, contracts, and interactions that were previously paper-based but are now non-electronic. The importance of these documents in almost all business processes (account opening, credit granting, information requests, claims management, etc.) fundamentally complicates the digitization of banks.

One of the challenges of banks' digital transformation is managing documents within their data. Collecting hundreds of reliable, centralized customer data records, whatever their medium, is essential to support real-time operational processes and enable informed decision-making. Nevertheless, banks face a twofold problem: There has been explosive growth in the amount of information processed, and information has been circulating in organizations for over 60 years, documented in paper and digital form. There is also a vast amount of valuable but unstructured customer data that cannot be used in banking information systems.

The crisis underscores the need for transformation within banking institutions to maintain control over their operational functions. Accelerating the digitization of processes and tools towards dematerialization is a business continuity strategy that considers health and environmental risks on the one hand, and gains in efficiency by decentralizing the operational decision-making chain on the other.

6. Conclusion

In recent years, digitalization has become increasingly important. Customer interactivity, database marketing, and big data have become key factors in determining a company's success. Digitization has had several impacts on the development of banking services. First and foremost, it is a rule that enables banks to get closer to their customers, offering services tailored to their needs. From then on, it became a strategic means of differentiation. As a result of increased interactivity with bank customers, customer monitoring has enabled the transformation of generally informal information into a database, providing helpful information for risk management in predicting the likelihood of a customer's bankruptcy.

The introduction of digital technologies continues to open up new opportunities for banks, enabling them to innovate and provide better services by quickly meeting customer needs and environmental requirements. The digital transformation of banking involves a transition of this activity at several levels. It means integrating digital technology into the bank's day-to-day operations, whether in strategy, organization, or customer interaction. Essentially, digital banking has brought about changes to its external and internal environment, including the bank's presence on the web via its website or social networks, which impacts its interaction with customers. Internally, this has led to changes in staff, organization, and operational processes.

With this in mind, the marketing manager will focus on the customer experience. Unlike previous strategies, the relationship between the bank and its customer is prioritized, focusing on the service to be provided. This approach, aimed at building a lasting relationship with the customer, is based essentially on the feelings and emotions experienced by the consumer. Today, these mechanisms are crucial in supporting the bank's decisions and offerings, while also fostering loyalty and attracting new customers. On the other hand, the consequences of digitization on the banking sector, as observed, can be seen in the transformations taking place at different levels of the bank. It is not just a matter of customers adopting digital channels. It involves profound upheavals, whether in optimizing the customer journey, operational procedures, internal operating practices, or revising the bank's business model.

Another area directly impacted by digital technology is the banking profession. Two administrative managers handle downstream operations, and the account manager works upstream. Some of these jobs will have to be phased out as tasks, especially administrative ones, are automated. Others will evolve, especially those in direct contact with customers, reinforcing their profession with the help of digital media. This leads us to believe that these transformations contribute significantly to the banking industry, offering

advantages, convenience, speed of execution, cost reduction, and increased profitability. In terms of strategy, banks will need to arm themselves with innovative ideas that will enable them to revolutionize their current model and thus compete with fintech.

Some banks in advanced economies opt for a radical strategy, investing in innovative start-ups that enable them to integrate these technologies more easily and rapidly. For other banks, the digitalization strategy involves implementing a multi-channel operation, integrating Big Data technology, and renovating the service offering. Banks must also train their employees and recruit better-qualified people to help build tomorrow's bank.

Declaration

This article lacks any research conducted by the authors involving human subjects.

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