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Technology management and innovation. Effect on financial business organizations

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Abstract

The innovation and technological management are essential in financial organizations. An analysis of user perception was conducted in three branches using an intentional sampling of 300 clients. The majority expressed the need to improve the implementation of technological strategies to provide more timely and efficient service, as well as to develop products and services that better meet their needs. These results underline the importance of innovation and technological management, highlighting areas for improvement to enhance performance and user satisfaction in the financial context.

Keywords: *innovation, financial organizations, technology management, timely attention.*

Introduction

In recent times, significant changes have occurred in the functioning of the global economy and society. Globalization, driven by scientific and technological advancements, as well as the expansion of multinational companies, has led to the daily emergence of new and improved products and processes in the market, replacing existing ones (Neme Castillo y Chiatchoua 2022). Technological advancements are occurring at a surprising speed, with new technologies emerging to replace existing ones before their full assimilation has been completed. This applies to both prototypes and systems, as well as management methods that are influenced or mediated by technology. (Valdés García, Triana Velásquez y Alejandro Boza Valle 2019).

Technology plays a fundamental role in an ever-advancing society, as it relies on the resources it provides, such as information systems. These systems enable efficient management and access to relevant data, thereby driving development and informed decision-making in various fields. (Coccia

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2023). These systems support business operations, management, and decision-making by providing individuals with the necessary information. Both companies and any other organization use them as strategic elements to innovate, compete, and achieve their goals in a globalized environment. Information systems integrate people, processes, data, and technology, transcending the boundaries of the organization to facilitate more efficient collaboration with suppliers, distributors, and customers. (Al-Shanfari 2023).

It is crucial to consider that information plays a fundamental role in the decision-making process, both at the managerial and operational levels. These decisions are more accurate when based on information sources that help reduce uncertainty and financial risks in business. (Liu 2022). In this sense, information technologies become a valuable tool for collecting, processing, transmitting, and storing data. Their main components, such as hardware, software, databases, and telecommunications, have fostered organizational transformations in purchasing and selling practices, production processes, and even communication. (Gladilina et al. 2022).

Furthermore, information technologies encompass all computer-based technologies and computer communications used to acquire, store, manipulate, and transmit information to individuals and business units, both internally and externally. These technologies enable companies, especially those in the financial sector, to enhance their management and integration of information processing needs across all functional areas. (Hemling, Plesner Rossing y Hoffjan 2022).

However, despite the fact that advances in information technology have enabled these changes, technology should not be mistaken as the direct cause of them. These organizational changes, including new ways of operating, provide opportunities for decision-making at all levels of the organization, greater staff involvement, and modifications in organizational schemes. (Haber y Carmeli 2023b).

The dynamics of a society constantly advancing in science and technology present ongoing challenges for organizations. In this context, technology has become an essential tool to enhance organizational objectives and address continuous challenges. Its proper management drives improvement in decision-making, intellectual development of human talent, and the implementation of new professional, business, and human techniques. (Khogali y Mekid 2023).

According to the United Nations (ONU), Information technologies are computer resources that provide a set of activities and solutions to support administrative processes, operational organization, and logistics. By using historical data, these technologies enable managing the present and planning the future with the aim of reducing uncertainty in the process of manufacturing products and/or delivering services. (Quiñones, Sánchez y Lorenzana 2022).

Digital systems aim to meet the demand for information within organizations and provide the necessary knowledge to make efficient decisions. (Javaid et al. 2022; Love y Matthews 2019).

It is commonly assumed that Information Technologies are only used in the production phase, associated with large manufacturing systems or automated continuous production systems. However, nowadays, Information Technologies must be present in all activities of the company, that is, in the input, conversion, and output stages. (Morales Nieto 2017).

In this context, Information Technologies enable the transformation of a hierarchical organizational structure in the form of a pyramid, as they shift control tasks from the workforce to new technologies. This is because the direct exchange of information required for decision-making and task execution becomes less necessary, as these functions can be carried out in real-time and remotely. (Cirillo et al. 2021; Valeri 2021).

The rapid growth of information technology, driven by the power of computers, information systems, and networks, has expanded its scope and bestowed it with a new role in organizations. Now, these technologies enable the redesign and transformation of organizational structure, as well as reporting and control mechanisms, practices and workflows, and the products and services offered. (Sigov et al. 2022).

Technology and innovation are fundamental elements to achieve competitiveness, which has become the new economic paradigm for success in the present time. In the pursuit of competitive advantages, Information and Communication Technologies (ICT) and innovation play a relevant role in business management. Moreover, it is evident that technological progress drives the development of societies. (Banmairuoy, Kritjaroen y Homsombat 2022).

Additionally, information systems can reduce the number of hierarchical levels in organizations by providing managers with information to oversee a large number of employees (Haber y Carmeli 2023a). They also enable managers to work independently of physical location through the use of the Internet, email, and video conferencing. Information systems have the capacity to reorganize workflows, replacing manual processes and restructuring companies. (Gadatsch 2023b). At the same time, they increase the flexibility of organizations and their ability to adapt to changes and seize opportunities. These systems can redefine organizational boundaries by creating new relationships with suppliers and customers through information publishing and distribution technologies. In summary, information systems transform management processes by providing new capabilities for planning, organizing, and controlling. (Gadatsch 2023a).

In this context, the creation of regulations that guide the process of acquiring ICT is crucial to achieve this goal. It is not enough for the organization to recognize the implementation of ICT as a support tool for achieving efficient and professional work. It is necessary to establish guidelines and regulations that guide the acquisition process of these technologies. These norms should ensure the proper selection of ICT, considering their compatibility with the organization's objectives and needs, as well as their quality, security, and effectiveness. In this way, it is ensured that ICT effectively contribute to achieving desired outcomes and continuous improvement of organizational processes. (Gadatsch 2023a).

The technological aspect represents a tool that is within the objectives of the institution. However, it is important to consider that in order to maximize the impact and effectiveness of software implementation, it is necessary for it to be accompanied by other factors to achieve the desired transformation, such as adequate training, changes in work processes, adaptation of organizational culture, and a clear vision of the objectives to be achieved. Only through a combination of these factors can a significant and positive modification in the organization be achieved. (Gadatsch 2023a).

In different business departments, proper information management generates benefits in various processes. Resource optimization is crucial for improving the competitiveness of any organization, whether in technological, financial, or material terms. Identifying unnecessary areas or processes, idle times, or delays due to inadequate planning allows for maximizing the use of available resources. (Gadatsch 2023a).

Other areas where technologies impact decision-making include expense management, cash flow scheduling, and even customer relationship management. The objective is to reduce time, make better decisions, minimize errors, identify risks, and eliminate obstacles that hinder productivity. (Terán Bustamante, Dávila Aragón y Castañón Ibarra 2019).

Another information system, aimed at increasing effectiveness in strategic decision-making, is called Business Intelligence (BI). It is currently used in organizations to gather data, analyze it, and apply the results in order to improve performance. (Gadatsch 2023a).

Information Technologies reduce that time and consequently their costs; this allows managers and employees to improve their productivity by wasting less time in search of solutions to their problems. Three types of Information Technologies are particularly useful: teleconferencing systems, information transfer and retrieval systems, and personal information processing systems. (He et al. 2023).

Lastly, the choice of a technological tool that can be incorporated into the organization should be based on the internal and external needs of the company, its characteristics, and the products and/or services provided. Therefore, knowledge of the utility and benefits offered by each tool is of utmost importance when making the decision to incorporate it. (Huallanca Carbajal 2020).

In recent years, the term Innovation Management has gained prominence to refer to the planning, organization, execution, and control of changes implemented based on available knowledge both within and outside the organization, with the aim of generating value in the processes and products created, developed, and marketed. (González-Ramos, Guadamillas y Donate 2023; Mollahassani et al. 2022).

Now, organizations that have understood and embraced technological innovation as a systematic and important process have achieved greater productivity and competitiveness in the global market. Nowadays, it is widely recognized that innovation is a symbol of modernity and that there is a direct correlation between science, technology, innovation, and economic and social performance. (Valdés García, Triana Velásquez y Alejandro Boza Valle 2019).

In this regard, it was proposed to analyze the perception of users regarding innovation and technological management in three branches of a financial organization, as well as to assess their impact on efficiency and competitiveness. The objective was to identify the implemented technological strategies and their effectiveness in providing timely customer service, creating products and services that meet their needs, and integrating systems for teamwork and collaborative management.

Methodology

Sampling

An intentional non-probabilistic sampling (Banning 2023) was conducted, considering as criteria those clients who requested service from the service department of three branches of an Ecuadorian savings cooperative in the second week of May 2023.

The study variable was divided into its three dimensions: innovation and technology in a) processes, b) products, and c) organization.

Data collection

To gather relevant information, surveys validated by experts were used, and the measurement employed was the Likert Ordinal scale. I apologize for the misunderstanding. To obtain relevant information, surveys validated by experts were used, and the measurement employed was the Likert ordinal scale with response options as follows: strongly disagree (SD), disagree (D), neutral (N), agree (A), and strongly agree (SA) (Heo et al., 2022; Anjaria, 2022).

Descriptive statistics were used to calculate the numerical frequency and percentage of the data, followed by a comparison process with documentary sources. (Gutiérrez Rojas 2016).

Results and discussion

Innovation and technology dimension in processes.

The study resulted in a sample of 300 customers who requested assistance in the service area of the three branches of the studied savings cooperative. The findings of the study's variable in the dimension of innovation and technology in processes are shown in Table 1.

Table 1. Frequency distribution according to the dimension of innovation and technology in processes.

Items	Answer Options									
	ED		TD		NS		DA		TA	
	F	%	F	%	F	%	F	%	F	%
There is a virtual platform for timely customer service.	52	17,3	90	30	80	26,6	50	16,6	28	9,3
He considers that the financial products area uses technology adequately to improve its customer service processes.	100	33,3	74	24,6	69	23	40	13,3	17	5,6

F: frequency; ED: disagree; TD: totally disagree; NS: don't know; DA: agreed; TA: Totally agree.

It was found that 47.3% of those consulted consider that they totally disagree or disagree about the fact that there is a virtual platform for timely customer service, added to the above, 26.6% do not know about it. the existence of virtual platforms that expedite the necessary procedures. These results show that, within financial organizations, according to the considerations of their users, there is no strategy of a technological nature that favors transactions and even aspects related to management.

In relation to this, consistently with other studies, it has been reported that credit and savings cooperatives provide a wide range of financial services, but there are difficulties in the processes due to the deficient technology they possess. (Cárdenas Muñoz et al. 2021).

In line with the previous indicator, users have pointed out that the existence of weaknesses in the use of technology or the creation of other strategies, products, or services is related to innovation. However, this could also be due to the users' own lack of knowledge about the strategies employed by the organization, which include technological advancements as part of the management.

The financial system, composed of public and private entities, plays a crucial role in the economy by attracting people's savings and channeling those funds through loans, generating financial returns that benefit both financial institutions and their partners or clients. This intermediation of resources is essential for the economic progress of countries, as it allows the surplus money of some individuals to be transformed into credits intended for other individuals who need those resources for their projects or needs. In this way, the flow of money remains in circulation and contributes to economic and social development. (Ordóñez-Granda, Narváez-Zurita y Erazo-Álvarez 2020).

In relation to this, it is important to highlight that the financial system must adapt and evolve in line with scientific and technological advances, being able to innovate in the creation of products and services. In the case of Ecuador, the financial system is composed of savings and credit cooperatives, mutualists, and other financial institutions. However, the majority of assets are

concentrated in private banking. This reflects the importance and predominance of private banking in the Ecuadorian financial system. (Sonmez Cakir y Adiguzel 2023).

Product innovation and technology dimensión

Table 2 displays the frequency distribution of the innovation and technology dimension in products for the selected branches.

Table 2. Frequency distribution according to the innovation dimension of products.

Ítems	Answer Options									
	ED		TD		NS		DA		TD	
	F	%	F	%	F	%	F	%	F	%
The company has created products and services suitable for customer needs.	30	10	60	20	20	6,6	40	13,3	150	50
They consider that the technologies employed favor the required efficiency in response to customer requests.	35	11,6	17	5,6	58	19,3	110	36,6	80	26,3
Technological solutions are created to expedite procedures.	8	2,6	7	2,3	10	3,3	230	76,6	45	15

F: Frequency; ED: Strongly Disagree; TD: Totally Disagree; NS: Not Sure; DA: Agree; TA: Totally Agree.

Regarding the indicator related to whether the company has created products and services suitable for customer needs, 63.3% agreed with this statement; however, 30% disagreed or strongly disagreed.

An essential element is that the technologies employed facilitate the required efficiency in response to customer requests. In this regard, 63.2% of the surveyed individuals agree or strongly agree with this statement, while only 17.0% disagree with it. These results align with findings from other researchers who determined a positive relationship between financial technological innovations and the revenues generated by financial institutions. Therefore, the development of the financial sector stimulates the introduction of other types of innovation in new finance. (Arias González, Puente Riofrío y Vallejo Villalva 2021).

The findings regarding this dimension indicate that 91.6% of respondents believe that technological solutions are created in the investigated branches to streamline procedures. However, the remaining respondents do not share this perspective, being either totally or partially in disagreement. These results are consistent with other research conducted in the province of Loja, which indicates that technological innovation projects in banking have encouraged the

development of solutions that can potentially transform financial intermediation in the short to medium term for financial transactions and credit services. (Andrade, De Olloqui y Herrera 2015).

Innovation and technology dimension in the organization

Table 3. Frequency distribution of the dimension of innovation and technology in the organization considering the selected branches.

Table 1. Distribución de frecuencia según la dimensión innovación de Organización.

Ítems	Answer Options									
	ED		TD		NS		DA		TD	
	F	%	F	%	F	%	F	%	F	%
The technological systems enable teamwork in the financial area.	0		12	4	14	4,6	258	86	10	3,3
Technological systems are created to allow requests to be integrated with other offices of the financial company.	0		15	5	15	5	260	86,6	10	3,3

F: Frequency; ED: Disagree; TD: Totally disagree; NS: Don't know; DA: Agree; TA: Totally agree.

The results from Table 3 show that 89.3% of the study subjects believe that the technological systems allow teamwork in the financial area, while only 4% disagree with this statement. It is important to mention that the information generated within the organization, through the proper use of technology, leads to a more comprehensive and accurate specification of the needs of different stakeholders. (Alfiah et al. 2023). From this same perspective, when inquiring about whether technological systems allow requests to be integrated with other offices of the financial company, it has been found that 89.9% are totally or partially in agreement with this statement.

These results are aligned with other studies that have shown that both management innovation and technological innovation have a significant positive impact on the sustainability and performance of the organization. Furthermore, sustainability acts as a stabilizing factor between management innovation and organizational performance, as well as between technological innovation and organizational performance. (Zhang et al. 2019). These findings highlight the importance of innovation and sustainability as key drivers of organizational success. In this regard, emphasis should be placed on financial innovation, innovation strategy, and organizational innovation activities. (Sonmez Cakir y Adiguzel 2023).

Conclusions

Regarding the dimension of innovation and technology in processes, it was evident that a large portion of the users in the studied organization perceive the lack of a virtual platform for timely customer service. Additionally, there is a considerable percentage of users who are unaware of the

existence of virtual platforms that facilitate necessary procedures. This indicates that the implementation of technological strategies to improve processes is limited.

Para la dimensión de innovación y tecnología en los productos, se encontró que la mayoría de los usuarios están de acuerdo en que la organización ha creado productos y servicios adecuados a sus necesidades. Sin embargo, un porcentaje significativo de usuarios muestra desacuerdo en este aspecto, lo que sugiere que aún hay espacio para mejorar la creación de productos y servicios que satisfagan plenamente las expectativas de los clientes.

Regarding the dimension of innovation and technology in the organization, it is noteworthy that the majority of the subjects consider that technological systems enable teamwork in the financial area. Likewise, it is found that technological systems facilitate the integration of requests with other offices of the financial company. These results highlight the importance of technology in collaboration, efficiency, and process integration within the organization.

Finally, it was found that there is a need to improve the implementation of technological strategies to provide more timely and efficient customer service, as well as to develop products and services that better fit their needs. All of this highlights the relevance of innovation and technological management and suggests areas for improvement to enhance performance and user satisfaction.

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