MERCADOS y Negocios

48

ISSN-i: 1665 - 7039/ISSN-e: 2594 - 0163

REVISTA DE INVESTIGACIÓN Y ANÁLISIS ■ año 24 ■ número 48 enero-abril 2023

UNIVERSIDAD DE GUADALAJARA
Rector: Dr. Ricardo Villanueva Lomelí
Vicerrector Ejecutivo: Dr. Héctor Raúl Solís Gadea
Secretario General: Mtro. Guillermo Arturo Gómez Mata

CENTRO UNIVERSITARIO DE CIENCIAS ECONÓMICO ADMINISTRATIVAS

Rector: Mtro. Luis Gustavo Padilla Montes
Secretario Académico: Dr. José María Nava Preciado
Secretaria Administrativa: Lic. Denisse Murillo González
Director de la División de Gestión Empresarial: Dr. José Luis Santana Medina
Jefe del Departamento de Mercadotecnia y Negocios Internacionales: Dr. José Sánchez Gutiérrez

EQUIPO EDITORIAL
Editor de la Revista: José Sánchez Gutiérrez, Universidad de Guadalajara, México
Coeditores: Juan Gaytán Cortés, Universidad de Guadalajara, México
Tania Elena González Alvarado, Universidad de Guadalajara, México

CONSEJO DE REDACCIÓN

José Octavio Alonso Gamboa (Universidad Nacional Autónoma de México, México); Mónica Blanco Jiménez (Universidad Autónoma de Nuevo León, México); Tania Elena González Alvarado (Universidad de Guadalajara, México); Renata Kubus (Universidad Complutense de Madrid, España).

FUNDADOR DE LA REVISTA Y PRESIDENTE DEL COMITÉ CIENTÍFICO
José Sánchez Gutiérrez, Universidad de Guadalajara, México

COMITÉ CIENTÍFICO

Tony Antakly (University of Montreal, Canadá); Demetrios Argyriades (John Jay College of Criminal Justice New York, Estados Unidos); Pablo Cabanelas Lorenzo (Universidad de Vigo, España); José Cabanelas Omil (Universidad de Vigo, España); Juan José Durán Herrera (Universidad Autónoma de Madrid, España); Rosa Amalia Gómez Ortiz (Instituto Politécnico Nacional, México); Prosper Lamothe Fernández (Universidad Autónoma de Madrid, España); Jesús Lampón Caride (Universidad de Vigo, España); Jahir Lombana Coy (Universidad del Norte, Colombia); Gonzalo Maldonado Guzmán (Universidad Autónoma de Aguascalientes, México); Alexander Rühl (Commerzbank AG, Alemania); Giovanni Schiuma (University of Basilicata, Italia); Juan Antonio Vargas Barraza (Universidad de Guadalajara, México); Fernando Ubeda Mellina (Universidad Autónoma de Madrid, España); Charis M. Vlados, Democritus (University of Thrace, Grecia).

MERCADOS Y NEGOCIOS, año 24, número 48 (enero-abril 2023), es una revista de investigación, divulgación y análisis de publicación cuatrimestral editada por la Universidad de Guadalajara, a través del Departamento de Mercadotecnia y Negocios Internacionales del Centro Universitario de Ciencias Económico Administrativas (CUCEA), con domicilio en Periférico Norte 799, Módulo G-306, núcleo Los Belenes, Zapopan, Jalisco, México, C.P. 45100. Tel.: 3770-3343, Tel./fax: 3770-3300 ext. 25607. web: http://mercadosynegocios.cucea.udg.mx/index.php/MYN/index e-mail:revistamercadosynegocios@cucea.udg.mx Editor responsable: José Sánchez Gutiérrez. Reservas de Derechos al Uso Exclusivo del Título: 04-2005-011212585100-102, ISSN 1665-7039 versión impresa, ISSN 2594-0163 versión electrónica, otorgados por el Instituto Nacional del Derecho de Autor, Certificado de Licitud de Título 12710, Certificado de Licitud de Contenido 10282, ambos otorgados por la Comisión Calificadora de Publicaciones y Revistas Ilustradas de la Secretaría de Gobernación. Este número se terminó de imprimir el 16 de enero 2023 con un tiraje de 50 ejemplares. Las opiniones expresadas por los autores no necesariamente reflejan la postura del editor de la publicación. Mercados y Negocios aparece en el índice del catálogo Latindex 2.0; en la Matriz de Información para el análisis de revistas (MIAR), en DOAJ (Directory of Open Access Journals), en Dialnet, en tres bases de datos de EBSCO (Business Source Corporate Plus; Business Source Ultimate y Fuente Académica Plus), REDIB (Red Iberoamericana de Innovación y Conocimiento Científico), en el Sistema de Información Científica REDALYC, Scielo-México y Biblat -UNAM.

Mercados y Negocios por Departamento Mercadotecnia y Negocios Internacionales. Universidad de Guadalajara se distribuye bajo una Licencia Creative Commons Atribución-NoComercial 4.0 Internacional.
Basada en una obra en http://revistascientificas.udg.mx/index.php/MYN/

Mercados y Negocios
1665-7039 printed
2594-0163 online
Year 24, N. 48, January-April (2023)

Editor's Letter

https://doi.org/10.32870/myn.vi48.7691

What is a high-impact factor journal? Is it essential to publish in high-impact journals? These questions repeatedly arise in academic conversations, congresses, and workshops, and, indeed, they are relevant.

Beyond the statistical indicators (Quartiles), the term "impact" implies the statements as "we communicate the results of an investigation", "quote whomever we read to respond to what they wrote", or "they read what we wrote, and that answer us through a new article". We write to be read because we have read others; with this in mind, we communicate, debate, and reflect. Thus, we can know if our research findings are new or if the novelty represents us due to our scientific isolation (we read little about what others write or only read a few articles).

It permeates an article's quality. If we read about a subject, we must ensure that the sources are reliable, valid, up-to-date, and, if possible, highly cited. At this point, we refer to reading sources that are as up-to-date as possible in quality indices. If we read from these sources, the quality of what we quote and refer to in what we write will have quality scientific support. However, it is only the beginning of researching a topic.

Once this short introduction about the importance of the quality and relevance of citations, we will indicate the articles in this issue.

The effect of banking channels and efficiency indicators on bank profitability is written by Heber Bernardo Magallón González, Evaristo Galeana Figueroa, and Oscar Valdemar de la Torre-Torres. They propose two models to analyze profitability banking. Using panel data methodology, it's examined the relationship between operational efficiency indicators and banking access channels alternative to the branch with ROA and ROE.

The second article is written by Giselle Araceli López Galicia and Rosa Amalia Gómez Ortiz. Its title is *Technostress and Organizational Culture in the Software Industry.* Their paper presents a critical review of technostress literature, the organizational culture of employee well-being, and the relationship between the two concepts in the software industry workers.

The resilience of corporate tourism: bleisure, digitalization, and sustainability is the next article. Its authors are María Elena Puerta López, Julián Pindado Martínez and Tania Elena

González Alvarado. The objective of this research is to analyze the resilience of corporate tourism in the last three years. Interviews were conducted with industry professionals, and a questionnaire was applied to corporate clients.

Fernando Penagos Guzmán, Octavio Hernández Castorena, Mónica García Solarte are the authors of the fourth article, titled: *Managerial Skills and Organizational Performance: Competitive Advantage*. This article analyzes how management skills affect organizational performance and contribute to SMEs' competitive advantage. This study has a quantitative approach by applying questionnaires to a sample of 273 companies in Caquetá, mainly in the commerce, manufacturing, and services sectors. The main results reveal that managerial skills and organizational performance are variables that impact the competitive advantage of SMEs in the department of Caquetá.

We are grateful for the support given to Mercados y Negocios by our readers, referees, and authors. We invite you to read and recommend this new issue of the magazine

Jesús F. Lampón
Universidad de Vigo (España)
jesus.lampon@uvigo.es
https://orcid.org/0000-0001-9267-4448

Mercados y Negocios
1665-7039 printed
2594-0163 on line
Year 24, n. 48, January-April (2023)

The Effect of Banking Channels and Efficiency Indicators on Bank Profitability

El efecto de los canales bancarios y los indicadores de eficiencia en la rentabilidad bancaria

https://doi.org/10.32870/myn.vi48.7685

Heber Bernardo Magallón González
Universidad Michoacana de San Nicolás de Hidalgo (Mexico)
hmagallon@umich.mx
https://orcid.org/0000-0001-8698-6269
Evaristo Galeana Figueroa
Universidad Michoacana de San Nicolás de Hidalgo (Mexico)
evaristo.galeana@umich.mx
https://orcid.org/0000-0002-6365-9975
Oscar Valdemar de la Torre-Torres
Universidad Michoacana de San Nicolás de Hidalgo (Mexico)
oscar.delatorre.torres@gmail.com
http://orcid.org/0000-0001-9281-974X

Received: August 16, 2022
Accepted: December 29, 2022

ABSTRACT

This article proposes two models to analyze profitability banking. Using panel data methodology, it examined the relationship between operational efficiency indicators and banking access channels alternative to the branch with ROA and ROE. The main findings are that Net Operating Margin (MNO) has a direct relationship. Net noninterest Margin (MNNI) and Asset Utilization (RA) have a negative impact on ROA. Regarding access channels, Automatic Teller Machines (ATMs) have a positive, albeit weak, impact. Point of Sale Terminals (POS) are significant but in reverse. As for ROE, MNO and MNNI are related in the same sense as ROA. The Capital Multiplier (MC) presents a negative relationship. Mobile Banking (NBM) and POS show a significant inverse relationship, while ATM is direct.

Keywords: Multiple Banking, financial indicators, branchless banking.

JEL CODE: G21.

Mercados y Negocios por Departamento de Mercadotecnia y Negocios Internacionales. Universidad de Guadalajara se distribuye bajo una Licencia Creative Commons Atribución-NoComercial 4.0 Internacional. Basada en una obra en http://mercadosynegocios.cucea.udg.mx/index.php/MYN.

RESUMEN

Este artículo propone dos modelos para analizar la rentabilidad bancaria. Mediante metodología de datos de panel se analiza la relación entre los indicadores de eficiencia operativa y los canales de acceso bancario alternativos a la sucursal con ROA y ROE. Los principales hallazgos son que el Margen Operativo Neto (MNO) tiene una relación directa. El margen neto sin intereses (MNNI) y la utilización de activos (RA) tienen un impacto negativo en el ROA. En cuanto a los canales de acceso, los Cajeros Automáticos (ATM) tienen un impacto positivo, aunque débil. Los Terminales de Punto de Venta (POS) son significativos, pero a la inversa. En cuanto a ROE, MNO y MNNI están relacionados en el mismo sentido que ROA. El Multiplicador de Capital (CM) presenta una relación negativa. La Banca Móvil (NBM) y POS muestran una relación inversa significativa, mientras que ATM es directa

Palabras clave: Banca Múltiple, indicadores financieros, banca sin sucursales.

Código Jel**:** G21

INTRODUCTION

Commercial banking is essential in the development of a country. The centrality played by banks in their role as an intermediary as creditor and custodian of society's monetary surpluses, in addition to guaranteeing liquidity among economic agents that promotes the development of productive sectors, makes the performance of the sector a relevant issue for all economic sectors. Banking is also a leading actor in increasing financial inclusion, which drives economic growth and reduces poverty (Palaon et al., 2020). To achieve this scenario is necessary for banks to be profitable and adequately capitalized to guarantee not only their operation but also their expansion. Hence, bank profitability is a recurring theme in the financial literature. Research lines that incorporate multiple determinants into their analyzes with increasingly robust and sophisticated models.

According to the literature consulted, the performance of bank profitability is due to multiple factors that, for practical purposes, are classified into two categories: internal and external factors. The former depends on the management of the senior management of each bank, such as risk indicators, liquidity, efficiency, and profitability, among others. On the other hand, external factors influence profitability but are unrelated to the banks' decisions. Examples of these are changes in the economic environment, such as inflation, economic growth, changes in the regulation of the sector, the market structure in which banks operate, and the development and adoption of technologies.

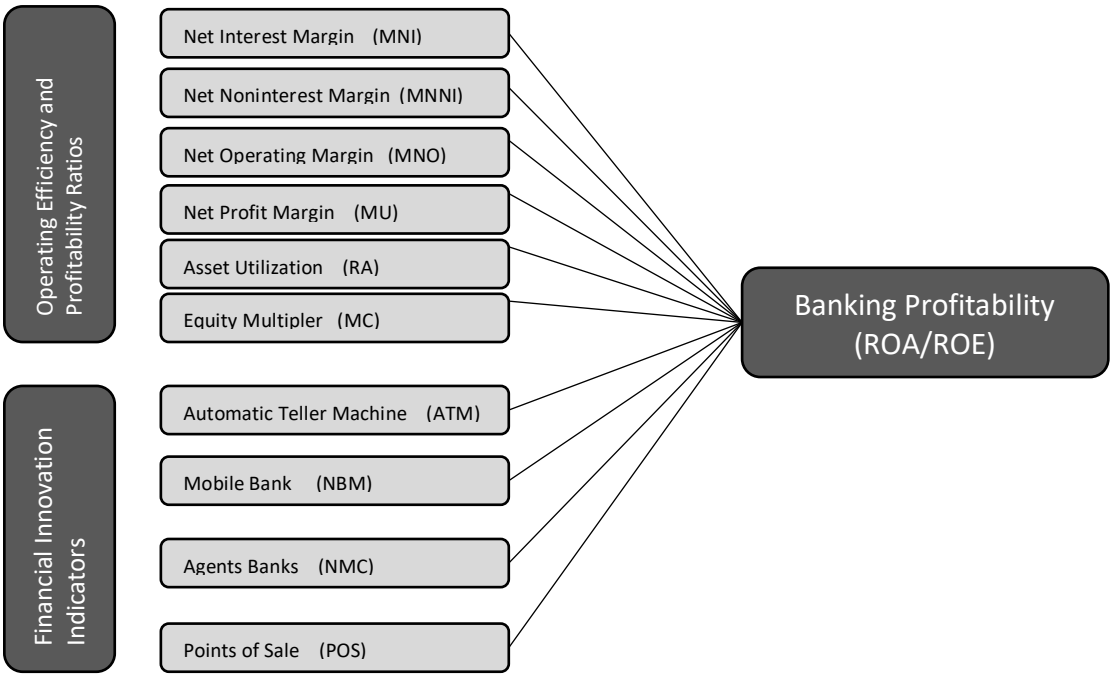
This article seeks to contribute to the literature by proposing an extension of a model that explains bank profitability based on indicators of operating efficiency and profitability with the incorporation of independent banking access channels to the traditional branch, see Figure 1. These channels are considered independent variables that affect the performance of banks.

In recent decades, the development of Information and Communication Technologies (ICTs) has impacted all economic sectors, and commercial banking is no exception. The different financial innovations adopted by banks have modified the traditional interaction in bank branches with their users (Mbama, 2016; Olavarría et al., 2018).

Users who are increasingly digital demand comfort, speed, and ease in requesting, contracting, and using their financial products and services. To meet this demand, banks have invested in the expansion of alternative banking channels to the branch, such as ATMs (Automatic Teller Machines), POS (Point of Sale Terminals), BM (Mobile Banking), and Commission Agents (also called banking correspondents). This banking infrastructure is supported by Information and Communication Technologies (ICTs), and different investigations have analyzed its relationship with banking performance, finding significant

relationships in different channels (Le & Ngo, 2020; Medyawati et al., 2021; Moudud-Ul-Huq & Hossain, 2020).

Figure 1
Variable Model



Source: own elaboration

The articles that analyze the relationship between profitability and efficiency in the banking sector are vast. The relationship between these indicators is inversely significant, indicating that the higher the profitability, the efficiency indicators tend to be lower (Buchory, 2015; Christaria & Kurnia, 2016; Phan et al., 2020). In Mexico, the literature that addresses this relationship is scarce. Rodríguez & Venegas (2010) analyze Mexican banks' profitability and operational efficiency indicators classified by the number of assets they own. They also find evidence that these banks have more significant advantages in the Net Interest Margin and the Net Operating Margin.

The authors Guerrero & Villalpando (2009) analyze the context of the banking sector from the transformation process that began at the end of the last century with the authorization of foreign investment, which generated a change in concentration, being this and the power of the market variables with a strong influence on bank profitability. In the same vein, Maudos & Solisa (2009) find evidence that average operating costs and market power mainly explain the high margins obtained by Mexican banks.

On the other hand, incorporating innovation variables in the proposed model that analyzes bank profitability is theoretically based on the Schumpeterian principle of creative destruction, the diffusion of innovation theory (Rogers et al., 2014), and, in addition, the Theory of the Acceptance of Technology. This Theory affirms that the ease of use of the technology indicates to implement and to learn new systems of information. Therefore, the model emphasizes the ease of use of the new technology affecting the perceived usefulness (Venkatesh & Davis, 2000).

According to Alvarez (1993), innovation is adapting the offer to the demand of the clientele and the markets. However, a broader definition of financial innovation is given by Khraisha & Arthur (2018), who define it as a process carried out by any institution which involves the creation, promotion, and adoption of new (including both incremental and radical) products, platforms and processes or enabling technologies that introduce new forms or changes in the way of carrying out a financial activity. These definitions fit with the current situation in which the banking sector tends to invest more in alternative channels to physical branches as demanded by digital users.

The incorporation of banking access points in financial innovation research is aligned with the term branchless banking. Said concept measures the effect of adopting alternative banking infrastructure on the bank branch. Most empirical research is done in developing countries with large territorial extensions. Another characteristic these countries have in common is that they have many rural communities with low populations, irregular settlements, and a high poverty level on the periphery of large cities. For private commercial banks, it is not profitable to open branches in these areas. To cover this lack of coverage, banks invest in expanding banking access channels, being a viable alternative for banks that meets the needs of users (Magallón et al., 2022). Due to the characteristics of unequal access to banking services in Mexico and given the information to which one has access, the branchless banking construct is considered to measure financial innovation.

With information from the information portfolio of CNBV and through an econometric data panel model, the aim is to elucidate the relationships between the determinants of the proposed model with the performance of the ROA and ROE profitability indicators of the seven leading banks operating in Mexico. No research was found in the Mexican literature incorporating financial channels as explanatory variables of bank profitability, which is the main contribution.

The rest of this article comprises the Literature Review section with a description of empirical articles that analyze the relationship between efficiency indicators and banking infrastructure with bank profitability. The third section presents the methodology of the econometric model and the description of the data collection used. The fourth and fifth sections present our

analysis's results, discussion, and conclusions. Finally, topics for future lines of research are proposed.

LITERATURE REVIEW

The banking sector is analyzed from different lines of research in the academic literature in which its history, relationships, and performance are investigated. As mentioned above, this research proposes a model that explains bank profitability with internal determinants of operational efficiency and external determinants that measure banking infrastructure. However, before citing theoretical and empirical research that supports this research, a review of the most critical events in the Mexican banking sector is made to contextualize the evolution of Mexican banking.

Table 1 presents a brief chronology of momentous events in the sector during the last three decades. Although these events are not the only ones, the author considers them the most relevant to explain the consolidation of a healthy and capitalized banking sector. These events have allowed it to face the economic and financial crises presented in this century without the shocks of yesteryear.

Table 1

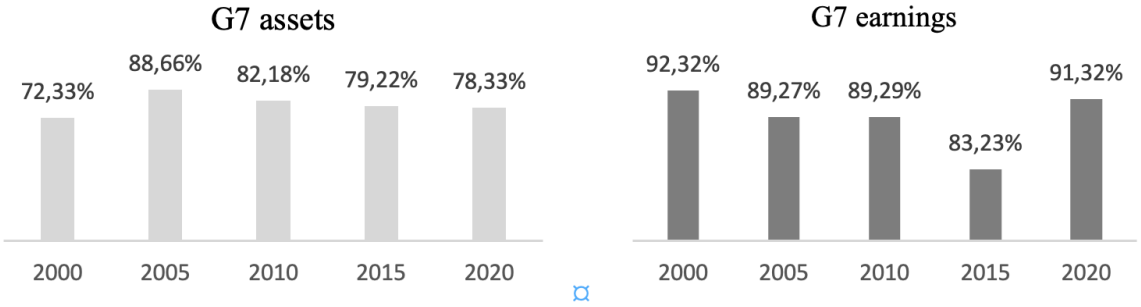
Main events in the Mexican banking sector in recent years

Event	Year	Reference
President José López Portillo nationalized private commercial banks in response to the economic crisis. It sought to curb speculation with the exchange rate, contain the flight of foreign currency, and control inflation.	1982	(Fong, 1990; Turrent, 2009)
The financial reform reprivatizes banking and radically deregulates the sector. It is argued that private companies are more efficient than the State.	1990	(Hernández & López, 2001)
The amendment to Article 28 of the Constitution and the Bank of Mexico Law published in the Official Gazette on August 20 and December 23, 1993, conferred autonomy on the central bank, giving it a new legal nature and regime to safeguard that autonomy. , in addition to updating the purposes and functions of the bank and strengthening its powers. Banking only allows 8% of foreign capital participation..	1993	(Borja, 1995)
The liberalization, deregulation, and competition of the Mexican banks to the participation of foreign capital prior to the entry into force of the Free Trade Agreement with the United States and Canada. Up to 25% foreign capital is allowed.	1994	(Girón, 1994)
The reorganization of banks by the Banking Fund for the Protection of Savings (FOBAPROA) today, the Institute for the Protection of Bank Savings (IPAB), and the subsequent reprivatization of banks by the leading world financial groups and the consolidation of others.	1998	(Hernández & López, 2001).
At the beginning of this century, commercial banking was opened to foreign capital, which allowed consolidation as a dynamic sector with growing capitalization. There is no restriction on the participation of foreign capital.	2000 y 2001	(Turrent, 2008)
The financial crisis that began in the United States due to subprime mortgages substantially impacted the world banking sector. In Mexico, Banco de México (BANXICO) reactivated the sale of dollars for up to 400 million dollars a day. Furthermore, exchange lines were agreed upon with the US Federal Reserve for up to 30 billion dollars.	2008	(BANXICO, 2022)

Source: Own elaboration

Although these events consolidated the sector's finances, they failed to change the concentration level. To exemplify this behavior of the banking market, Graphic 1 presents the percentage of asset possession and income of the Mexican banking system's seven largest banks (G7) in the last two decades.

Graphic 1
G7 share of assets and earnings



Source: Own elaboration with data from the National Banking and Securities Commission.

With data from the CNBV as of December 2020, the G7 had 78% of the sector's assets and 91% of the income. The concentration is similar to 2000, when these banks had 72% of the assets and 92.32% of the profits. Given the weight of the G7, it is easy to infer that the variations in its indicators impact the sector's performance.

Internal determinants

In Mexico, publications that analyze bank profitability with internal factors are scarce. Among them is the one carried out by Rodriguez & Venegas (2012), which classifies Mexican banks into four categories according to the number of assets they own. They analyze these categories through an analysis of liquidity, leverage, and profitability indicators in 2002 and 2009. They conclude that the significant determinants are long-term deposits that allow them to assume more profitable investments and short-term solvency.

Chavarín (2014) analyzes the levels of delinquency in the payments of the credits of the banking clients as not a determinant in profitability. Among his findings, he mentions that the factors that impact profitability are the level of capitalization, the size of the bank, the total level of risk exposure, administration expenses, and the mix of activities. For their part, Ronquillo Rodríguez et al. (2018) conclude that the financial factors that contribute the most to profitability are the financial margin adjusted for credit risks and administration and promotion expenses.

Regarding foreign research on this subject, there is the one carried out by Goddard et al. (2004) proposes a model to measure the profitability of European banks during the nineties and incorporate various elements such as the size of the bank, diversification, risk, efficiency, type of owner and dynamic effects. Efficiency and risk are the determinants that have the most significant effect on profitability. Furthermore, Chortareas et al. (2011) analyze the market where banks operate. Based on 2,500 observations of Latin American banks, they conclude that the efficient structure is the one that supports the profitability of banks in countries with more advanced economies, such as Brazil, Argentina, and Chile.

Neves et al. (2020) analyze efficiency indicators, bank size, macroeconomic variables, and profitability. Sixty-six Portuguese and Spanish banks are analyzed using the generalized method of moments (GMM) and data envelopment analysis (DEA). The latter measures efficiency and concludes that there is a positive and negative nonlinear relationship between the bank's size and its profitability and efficiency levels, respectively. Ercegovac et al. (2020) investigated the banking sector in the European Union during the period 2007-2019. The empirical evidence is in line with the initial assumptions: the efficiency of the banking firm, measured by the cost-income ratio and the delinquency rate, significantly influences bank profitability.

The solidity of the sector is also due to responsible internal management of its financial indicators. The relationship between bank profitability and financial ratios has been documented in the academic field, mainly by European, Asian, and American banking publications. Among the different indicators, the efficiency measurement is a line of research with fewer publications. Efficiency ratios show how well management has sustained revenue growth in the face of rising costs.

External determinants

With the advancement of new information technologies, retail banking competes with new alternative channels to the traditional business model of banks based on the number of branches. Among the first innovations that allowed financial users to carry out transactions outside the bank branch took place in the seventies. They appeared in electronic teller machines, Automatic Teller Machines (ATMs). Some studies that analyze the relationship between these and profitability are mentioned. Based on data from US banks, Massoud et al. (2003) analyze the relationship between ATMs and bank profitability and find a direct relationship between additional charges for using ATMs.

Itah & Emmanuel (2014) study Nigerian banking in which they examine the effect of ATMs, points of sale, and transactions through the Internet on bank profitability, using multiple regression analysis methods by ordinary least squares. The result showed that ATMs and points of sale are positively related to ROE. On the other hand, through a data panel, Medyawati et al. (2021) analyze the relationship between Indonesian banks and access

channels such as ATMs, mobile banking, and internet transactions. They conclude that ATMs are not significant in their relationship with ROA.

Mutua (2013) study the Kenyan banking sector, detecting a weak but positive relationship between mobile banking and ROA. The same conclusion was detected by Medyawati et al. (2021). They analyze banks listed on the Indonesian Stock Exchange and find that the relationship between mobile banking and profitability is significant with the ROA ratio. This result is similar to another study conducted in Kenya, which found a significant but weak positive relationship between mobile banking and profitability (Chipeta & Muthinja, 2018). On the other hand, Lebanese banks have no significant relationship with bank profitability (Chaarani & Abiad, 2018).

Regarding the empirical studies that analyze the relationship between profitability and point-of-sale terminals (POS). The one carried out by Le & Ngo (2020) with banks in 23 countries analyzed. It is found that the relationship between POS and bank profitability is significant. Itah & Emmanuel (2014) conclude that point-of-sale terminals positively affect Nigerian banks' profitability, measured by ROE.

In Mexico, the commission agent model's proliferation is due to banks' strategies to have new access points for their users. In addition, the expansion of chains such as Oxxo adds new stores every year (ENIF, 2018). The strategies of the correspondents another essential factor that explains the acceptance of the commission model is the high cost that opening a branch in a distant town implies for banks, such as the bordering areas of large cities and rural towns (Peña & Vázquez, 2012).

In rural Kenya, the installation of two access channels, Mobile banking, and agent banking, is studied by Irura & Munjiru (2013). It concludes that the main factors that encourage the adoption of these financial innovations are: the improvement and guarantee of security, reliability, and trust and the improvement of the propensity to assume risks on the part of SMEs that adopt the technology. In addition to the improvement in the political framework, the telecommunications infrastructure, among others. Some publications analyze banking agents as a factor that drives the performance of commercial banks (Barasa & Mwirigi, 2013; Irura & Munjiru, 2013; Kandie, 2013; Shrader & Duflos, 2014; Waleed & Tahir, 2020).

A large part of the studies that analyze banking access channels has the term Branchless Banking in common. Branchless Banking is a concept that brings together the main innovations in access points outside the bank branch. Its use as a proposal to measure banking innovation is used mainly by developing countries with large territories and marginalized areas where banks have little or no penetration and, therefore, a population excluded from the formal banking system (Ky et al., 2021; Palaon et al., 2020; Zhu et al., 2021). The

following section details the Methodology used in this article to assess the relationship between the explanatory variables with profitability.

METHODOLOGY

In order to comply with the Basel III agreements, Mexican banks must publish their financial statements monthly on the CNBV website. Transparency offers an essential source of information that allows interested parties to investigate banks' financial and operational performance. The indicators' values are obtained from secondary sources and monthly financial reports published in the Information Portfolio section. Among the main advantages of working with indicators is establishing a comparable base for all the institutions evaluated regardless of their size, nationality, or membership. The second decade of this century is analyzed using a panel data econometric model (Hill, Griffiths & Lim, 2018). The program used for the processing and analysis of the database is R-studio.

The ratios and financial indexes of profitability and operating efficiency used in the present analysis measure and evaluate the performance of the administrative policies of the senior management of each bank. This index allows us to evaluate the banks' strategies to elucidate the indicators that have the most significant relationship with profitability.

The indicators assume the role of independent variables, and it is explored if they are statistically significant with the dependent variable, ROA and ROE. The financial ratios are obtained from the book "Bank Management and Financial Services" (Rose & Hudgins, 2008), and their formulas and description are shown in Tabla 3. The innovation variables: ATM, POS, NBM, and NMC are the access points that present greater adoption by Mexican users, as observed in the evolution of the data.

Following the specialized literature consulted, and due to the characteristics of the database used, study units (banks) in periods (monthly financial indicators for the period between 2011-2020), the panel model methodology is used. Of data to evaluate profitability, ROA, and ROE. The estimation is made by Ordinary Least Squares (OLS), and the following general equation is used:

$$ROA/ROE_{i,t} = \alpha + \beta_1 MNOX_{i,t} + \beta_2 MNIX_{i,t} + \beta_3 MNNIX_{i,t} + \beta_4 RAX_{i,t} + \beta_5 MCX_{i,t} + \beta_6 MUX_{i,t} + \beta_7 ATMX_{i,t} + \beta_8 log\,(NMC)_{i,t} + \beta_9 log\,(NBM) + \beta_8 POS\varepsilon_{i,t}$$

Equation 1

The dependent variable is the banking profitability measured by the ROA and ROE indicators. The explanatory variables correspond to the following financial ratios of profitability and operating efficiency: Operating Efficiency (EO), Net Interest Margin (MIN),

Net Non-Interest Margin (MNNI), Asset Turnover (RA), Capital Multiplier (MC), and Profit Margin (MU).

One of the main indicators to assess profitability is ROA. The indicator measures the performance of a company, and in the banking sector, it is widely used due to the uniformity in its calculation, where the assets that are taken into account are: cash, deposits retained by Banxico, cash on hand and instruments with a maturity of the bank, investment, and loans. The ROE indicator evaluates the return of a shareholder who invests his capital in the bank.

The explanatory variables of innovation measure the evolution of the banking infrastructure of access points other than traditional branches. These channels are used as independent variables that are related to bank profitability. Table 3 presents the definition and estimated equation for each indicator. For NMC, it is the number of transactions operated in the commission businesses of bank i at time t. NBM is the number of bank accounts that have the mobile application contracted from bank i at time t. ATMs provide information on the number of ATMs that bank i has at time t. POS is the point of sale terminals bank i have at time t.

According to the data from the CNBV, the evolution of access channels has a constant growth. In the decade analyzed in the present investigation, ATMs grew by 55.51%, translating into 17,725 more ATMs. The POS went from 469,028 units in 2011 to 1,245,003 in 2020, representing a growth of 145.67%. The amounts of transactions in commission businesses had a growth of 846.53%. The most remarkable growth in the analyzed channels is Mobile Banking. With a growth of close to 36 million accounts from 2011 to 2020. On the other hand, bank branches decreased from their highest point reached in 2016. By the end of 2020, the G7 has 7,507, representing a decrease of 5.58%. (Table 2)

Table 2
G7's evolution banking access points

Year	ATM's	BM	POS	Branch	Transaction amount in Commission Agents (in millions of pesos)
2011	31,931	161,990	469,028	7,711	$ 56,639.77
2012	34,217	803,966	487,949	7,756	$ 95,309.29
2013	35,713	2,699,378	570,933	7,927	$ 127,801.01
2014	37,632	5,065,017	660,365	7,758	$ 166,532.26
2015	40,120	7,556,531	760,990	7,808	$ 216,745.70
2016	42,159	13,315,183	796,112	7,951	$ 296,310.30
2017	43,511	14,362,532	848,304	7,904	$ 394,902.03
2018	46,739	23,841,933	899,369	7,881	$ 483,250.28
2019	49,008	30,116,625	1,152,183	7,938	$ 524,197.40
2020	49,656	36,054,333	1,245,003	7,507	$ 536,114.46

Source: Own elaboration with data from the National Banking and Securities Commission

Table 3
Operability of the Variables Model

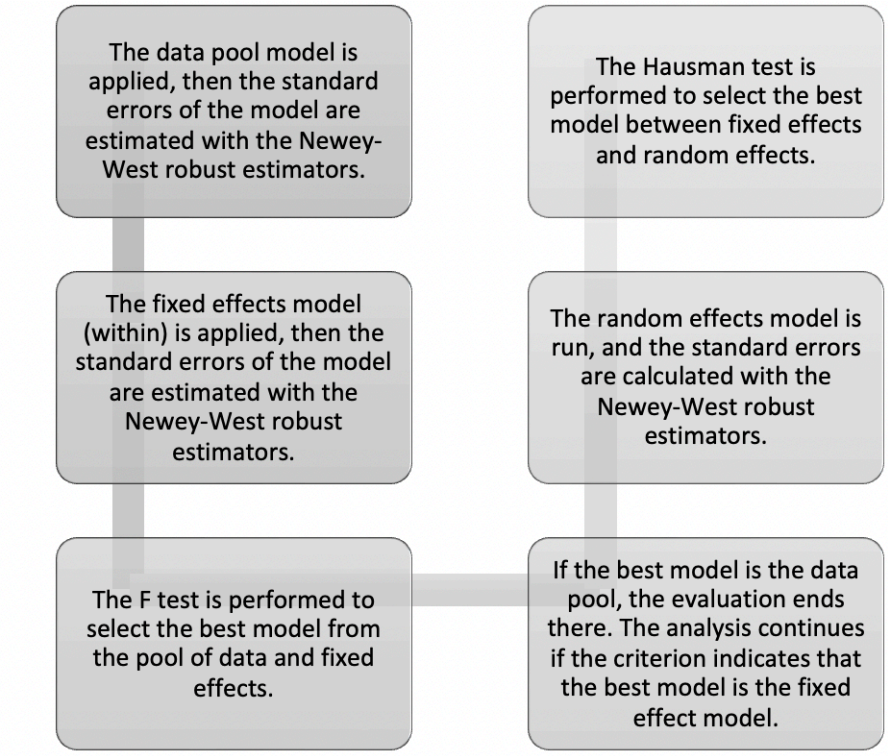
Type of Variable	Variable	Description	Indicator
Dependent	Return on Assets (ROA)	Administration's ability to generate returns from its resources. An acceptable result would be between 1% and 1.5%.	$ROA = \frac{Revenues}{Total\ Assets}$
	Return on Equity (ROE)	Profit for own funds. A result between 10% and 22% is considered acceptable.	$ROE = \frac{Revenues}{Total\ Equity}$
Independent	Net Interest Margin (MNI)	Evaluate the differential between interest income and interest cost management through strict control in obtaining assets and the search for more accessible sources of financing. The expected results of this indicator are between 3% and 4.5%.	$MIN = \frac{\text{(Financial Margin annualized monthly flow (Monthly flow } * \text{ 12))}}{\text{(} * \text{ Productive Assets for the month. (Balances at the end of the month))}}$
Independent	Net Margin Non-Interest (MNNI)	Measures the amount of non-financial revenue from service fees that the finance company has collected relative to the amount of non-financial costs incurred (including wages and salaries, facility repair and maintenance, and loan loss expense). The result is expected to be negative.	$MNNI = \frac{(Total\ operating\ income\ ** - Expenses\ without\ interest)}{Total\ asset}$
Independent	Net Operating Margin (MNO)	Indicates how well management and staff have been able to sustain revenue growth (mainly from loans, investments, and service fees) before rising costs, primarily interest on deposits and other loans compensation and salaries and benefits of the employees.	$MNO = \frac{Total\ income\ per\ operation - Expenses\ without\ interest)}{Total\ Assets}$
Independent	Net Profit Margin (MU)	It provides us with information about the effectiveness of the administration in controlling costs and the pricing policy for services. The higher the result, the income for the bank will be higher.	$MU = \frac{Net\ Income}{Total\ Operating\ Income}$
Independent	Asset Utilization (RA)	It provides us with information about portfolio management, especially about the mix and performance of assets. The result of this indicator is usually higher for smaller banks.	$RA = \frac{Total\ Income\ per\ Operation}{Total\ Assets}$
Independent	Equity Multipler (MC)	Provides information on the institution's financing policies if the sources chosen for leverage are debt or equity. It is interpreted as the number of assets that back the capital.	$MC = \frac{Total\ Assets}{Total\ Equity}$
Independent	Automatic Teller Machine ATM	These variables are defined as innovation and measure the alternative channels for a banking operation. This infrastructure is aligned with the branchless banking concept. For POS and ATM, each data represents the number of units bank i has at time t. For the variables accounts with access contracts to the mobile banking application (NBM) and the number of operations carried out in commission businesses (NMC) for handling large numbers, logarithms are used to be estimated.	$Número\ de\ ATM\ of\ bank\ i\ in\ time\ t$
Independent	Point of sale POS		$Number\ of\ Points\ of\ sale\ of\ bank\ i\ in\ time\ t$
Independent	Movil Banking NBM		log(Number of accounts with mobile banking)
Independent	Banking Agents NMC		log(Amount of transactions carried out in commission businesses)

Source: Obtained from the book Bank Management and Financial Services (Rose & Hudgins, 2008) and the National Banking and Securities Commission. *Productive assets = (Available funds + Margin accounts + Investments in securities + Benefits to be received in securitization operations + Current Portfolio + Repo

debtors + Securities loans + Valuation adjustment for financial asset coverage). **Total operating income (ITO) is obtained as follows: ITO= (Risk-adjusted Financial Margin + Commissions collected-Commissions paid + Intermediation result + other income from the operation).

In order to select the best data panel model that analyzes the relationship between the dependent variable profitability (ROE and ROA) and the financial and innovation ratios described in Table 3, the methodology described in Figure 2 is followed. Newey West and the selection criteria for panel data models given by the F and Hausman tests are described in the footnotes on this page.

Figure 2
The methodology used in profitability analysis



Source: Own elaboration with information from the book Principles of Econometrics (Hill, Griffiths & Lim, 2018)

Once this methodology has been carried out, we identify the data panel model that best analyzes the independent variables' data and the ROA and ROE values. With this, the corresponding inferences are obtained to contextualize the banks' strategy from the perspective of efficiency and innovation indicators that are significant in the performance of banks. The results are presented in the next section.

RESULTS

The results of this study are presented following the methodology described in the previous section. In addition, figures and indicators of the banks that make up the G7 are presented to help us understand their importance in the Mexican banking sector. With data as of December 2020, the seven banks analyzed in this investigation owned 78% of the assets and 91% of the system's profits. BBVA Bancomer and Santander, banks of Spanish origin, the largest in the sector, have 22% and 17% of total assets and 35% and 20% of profits (Table 4).

Table 4
Assets and profits of G7 banks (December 2020)

Bank		Assets	%		Income	%2
BBVA Bancomer	$	2,443,359.00	22%	$	36,172.34	35%
Santander	$	1,855,739.00	17%	$	20,144.36	20%
Banamex	$	1,357,143.00	12%	$	7,440.39	7%
Banorte	$	1,261,618.00	11%	$	20,383.64	20%
HSBC	$	780,037.00	7%	-$	707.96	-1%
Scotiabank	$	638,178.00	6%	$	3,018.68	3%
Inbursa	$	401,206.00	4%	$	6,860.10	7%
Total del G7	***$***	***8,737,280.00***	***78%***	***$***	***93,311.55***	***91%***
Total del sistema	**$**	**11,186,514.00**		**$**	**102,429.46**	

Source: Own elaboration with data from the National Banking and Securities Commission

Regarding the access channels, the figures as of December 2020 are present in the following table (Table 5), and it is observed that for the ATMs BBVA Bancomer, Santander, Banorte, and Banamex are the Credit Institutions with the most significant presence, the first account with 22.3% and the other three banks have 16% of the sector each. On the other hand, regarding POS, BBVA and Santander are the leaders, with 33.5% and 22.24%, respectively.

Table 5
Access channels available to each G7 bank as of December 2020

	ATM	%	TPV	%	MB	%	Commission Agents	%	Branches	%
BBVA Bancomer	12,961	22.34	492,541	33.50	14,844,596	29.84	15,737,050,009	21.73	1,745	14.46
Santander	9,448	16.28	327,048	22.24	4,801,475	9.65	7,762,481,470	10.72	1,037	8.60
Banamex	9,424	16.24	111,628	7.59	14,324,866	28.80	17,658,913,589	24.39	1,420	11.77
Banorte	9,387	16.18	161,651	10.99	1,948,787	3.92	5,161,381,644	7.13	1,193	9.89
HSBC	5,934	10.23	52,052	3.54		0.00	3,124,434,406	4.31	929	7.70
Inbursa	760	1.31	73,249	4.98		0.00	1,630,524,128	2.25	662	5.49
Scotiabank	1,742	3.00	26,834	1.83	134,609	0.27	1,601,370,454	2.21	521	4.32
G7	**49,656**	**85.58**	**1,245,003**	**84.68**	**36,054,333**	**72.48**	**52,676,155,700**	**72.74**	**7,507**	**62.22**
Total Sector Bancario	**58,023**		**1,470,257**		**49,745,798**		**72413380028**		**12,065**	

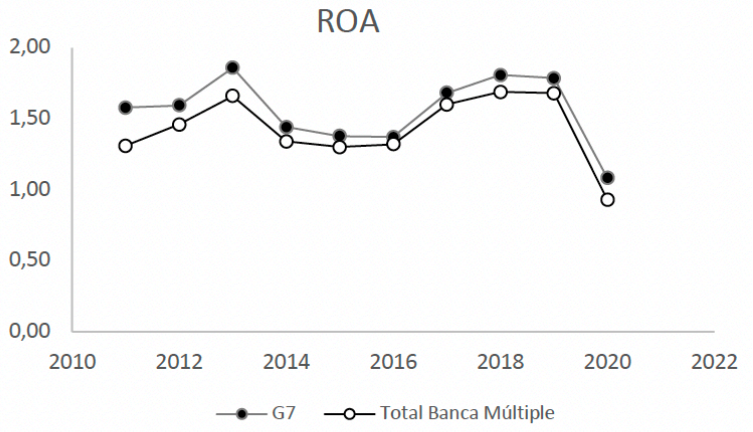
Source: Own elaboration with data from the National Banking and Securities Commission

BBVA Bancomer and Banamex are the leaders in Mobile Banking, with more than 14 million accounts each. Regarding the amounts in commission businesses, Banamex has 24.39% of the market, followed by BBVA Bancomer, which has 21.73%.

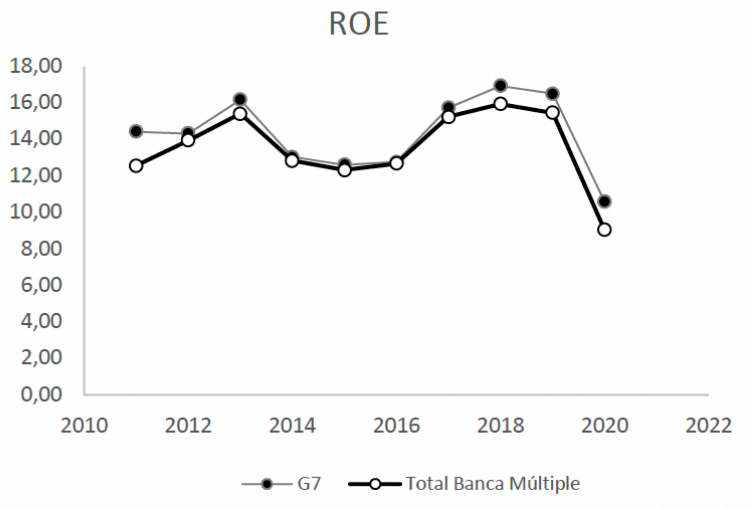
The behavior of the ROE indicator during the last decade is presented in Graphic 2. It can be observed that the performance of the sector (Total Multiple Banking) presents a similar behavior to that observed by the G7 banks. The same graph also shows the behavior of the ROA indicator of the seven banks. As in the ROE indicator, G7 influences the behavior of the ROA of the Mexican banking sector. This is explained because most of the elements that make up the indicator, net stockholders' equity and income, are contributed by the G7.

Graphic 2
Evolution of the ROA and ROE indicators of the G7 and the banking sector 2011-2020

Year	ROA G7	Total Multiple Banking
2011	1.58	1.31
2012	1.59	1.46
2013	1.86	1.66
2014	1.44	1.34
2015	1.38	1.3
2016	1.37	1.32
2017	1.68	1.6
2018	1.81	1.69
2019	1.79	1.68
2020	1.08	0.93



Year	ROE G7	Total Multiple Banking
2011	14.44	12.57
2012	14.34	13.96
2013	16.19	15.42
2014	13.05	12.85
2015	12.61	12.33
2016	12.77	12.69
2017	15.75	15.25
2018	16.94	15.95
2019	16.51	15.47
2020	10.60	9.04



Source: Own elaboration with data from the National Banking and Securities Commission

A drop is observed in the two indicators in 2020, partly due to the closure of several economic sectors in the first half of 2020. Despite the uncertainty caused by the Covid-19 pandemic, only the HSBC bank presented losses this year of 708 million pesos.

Table 6
Result of the data panel with the dependent variables ROE and ROA

	ROE
MNO	0.098***
	-0.012
MIN	0.3
	-0.064
MNNI	-0.127*
	-0.056
MU	0.809
	-0.298
RA	0.006
	-0.006
MC	-0.129**
	-0.06
NATM	0.001**
	-0.0004
NTPV	-0.00002*
	-0.00001
log(NBM)	-0.851**
	-0.378
log(NMC)	0.176
	-0.674
Constant	4.285
	(10.988)
LLF	-1739.3348
Akaike	4422.6687
Observations	483
R2	0.345
Adjusted R2	0.331
F Statistic	12.278*** (df = 10; 466)

	ROA
MNO	0.216***
	(0.023)
MIN	0.035
	(0.075)
MNNI	-0.515***
	(0.101)
MU	0.446
	(0.297)
RA	-8.299*
	(3.861)
MC	-0.085
	(0.075)
NATM	0.0002**
	(0.0001)
NTPV	-0.00001**
	(0.00001)
log(NBM)	-0.131
	(0.076)
log(NMC)	-0.046
	(0.135)
Constant	3.642
	(2.198)
LLF	-962.1623
Akaike	2868.3247
Observations	483
R2	0.312
Adjusted R2	0.298
F Statistic	21.453*** (df = 10; 472)

Source: Own elaboration with data from the National Banking and Securities Commission

According to the F and Hausman tests, the data panel model that best fits the analysis of the ROE and ROA (Table 6) dependent variables is the data pool, which implies that α and β's are constant for the seven banks analyzed (Table 7).

Table 7
F test and Hausman Test for the choice of the Data Panel Model

	ROA		
	Pool	Fixed	Random
F test	**83.80919**	0	
Hausman test	**0**	0	

	ROE		
	Pool	Fixed	Random
F test	**48.76184**	0	
Hausman test	**0**	0	

Source: own elaboration

DISCUSSION AND CONCLUSIONS

The importance of banks' financial performance is an issue of vital importance for a country's economy. Given the interaction of the banking sector with other economic agents, it is essential to follow up on its main indicators. This research proposes to analyze the influence on bank profitability of the profitability and operational efficiency indicators, which measure the efficiency in the administration of its costs concerning its income, of the accounting capital's relationship with respect to the assets between others. In addition, the banking access channels that show significant growth and adoption by the Mexican market are integrated.

The Net Operating Margin (MNO) has a significant relationship with ROA and ROE. The reading of this indicator refers to the differential between income and operating expenses to assets. The higher the indicator, the bank is more efficient in its operations. It is usual for large banks to have a better result, given the economies of scale they manage. This result is in line with the research by Rodríguez & Venegas (2010).

Regarding the indicators that have a significant relationship with the ROA indicator, we find that the indicators:

The noninterest Net Margin, MNNI, has ROA influence but in a negative sense, coinciding with the literature consulted (Rose & Hudgins, 2008). This financial ratio does not indicate the relationship between the difference in income from commissions collected and noninterest expenses (mainly wages and salaries) with assets.

The management of the banks' portfolio refers to the income of the banks in the placement of their assets and is measured by the indicator of Asset Utilization, RA. It has a significant inverse relationship with ROA, which implies a low placement by banks.

Regarding the indicators of banking infrastructure, it is found that electronic teller machines, and ATMs, have a positive but weak influence on ROA. These results align with the research carried out by (Le & Ngo, 2020; Medyawati et al., 2021), who found a positive but weak relationship between ATMs in conjunction with other channels. The result is also consistent with a study by (Clemons, 1990), which concludes that ATMs help banks not to lose market share and not to be more competitive. Conversely, Moudud-Ul-Huq & Hossain (2020) conclude that ATMs have a negative relationship with ROA. On the other hand, Itah & Emmanuel (2014) conclude that ATMs alone negatively influence profitability. However, the relationship is positive if complemented by other innovations, such as Point of Sale Terminals.

Point of Sale Terminals, POS, present a negative relationship with ROA and a very weak effect. This result is in the same sense as the findings found by the investigations (Akhisar et al., 2015; Moudud-Ul-Huq & Hossain, 2020). In the research carried out in 23 countries by Le & Ngo (2020), it was found that POS positively affects bank profitability. On the other hand, Mobile Banking and commission businesses do not have a significant relationship with ROA.

Regarding the determinants that have a significant relationship with the ROE profitability indicator, the commissions charged for the assets held by the banks (MNNI) have a significant negative relationship. In addition, the Equity Multiplier influences profitability. This indicator refers to banks' leverage, whether it is with their capital or debt. It is common for bank management to finance projects with debt, resulting in greater profitability, so care must be taken not to present high levels of indebtedness.

As with the ROA indicator, the innovation indicators, ATM and POS, are related to ROE in the same sense, positive for the first and negative for the second channel. Also, the coefficients have a slight impact on profitability. The relationship is negative for the Mobile Banking channel, with a significance level of up to 0.05. Chipeta & Muthinja (2018) find in their study carried out for banking in Kenya that mobile banking is significant for ROE but in a direct sense. Imamah & Ayu Safira (2021) reach the same conclusion regarding the positive effect mobile banking has on the performance of bank profitability in Indonesia. Regarding the amounts negotiated in the Commission Agent, NMC businesses do not present a significant relationship.

Future Lines research

The CNBV portal presents an accessible database to analyze Mexican banking from different perspectives. In addition, incorporating new reports facilitates access to information on the sector, encouraging academic research in this sector.

Although the access channels present a weak relationship with the performance of the banks, their proliferation represents a virtual object of study to analyze other indicators of the banks, such as the effect on the indicators of efficiency, transactionality, and jobs in the banking sector, among others.

Determine if user satisfaction in using banking access channels contributes to efficiency. It would allow us to determine whether the application of these banking strategies impacts bank profitability.

It is also essential to study the disruption of Neo Banks, whose main characteristic is that they do not have branches that have their business model on their online platforms and mobile applications.

.

REFERENCES

Akhisar, İ., Tunay, K., & Tunay, N. (2015). The Effects of Innovations on Bank Performance: The Case of Electronic Banking Services. *Procedia - Social and Behavioral Sciences, 195,* 369–375. https://doi.org/10.1016/j.sbspro.2015.06.336

Alvarez, J. (1993). La banca española Actualidad y perspectivas. *Papeles de La Economía Española, 54*, 127–138.

BANXICO. (2022). Banxico Ante Ciclos de Ajustes en la Tasa de Fondos Federales. México: Banxico

Barasa, D. A., & Mwirigi, F. M. (2013). The role of agency banking in enhancing financial sector deepening in emerging markets: lessons from the Kenyan experience. *European Journal of Business and Management, 5*(21), 19-21

Borja, F. (1995). El nuevo régimen del Banco de México. *Revista Comercio Exterior,* 45(1), 12-19.

Buchory, H. (2015). Capital, Operational Efficiency and Credit Risk In The Banking Intermediation. *Proceedings of the International Conference on Economics and Banking 2015*, 5, 141–152. https://doi.org/10.2991/iceb-15.2015.27

Chaarani, H., & Abiad, Z. (2018). The Impact of Technological Innovation on Bank Performance. *Journal of Internet Banking and Commerce*, 23(3).

Chavarín, R. (2014). Profitability in Mexico. *EconoQuantum, 12*(1), 97–123.

Chipeta, C., & Muthinja, M. (2018). Financial innovations and bank performance in Kenya: Evidence from branchless banking models. *South African Journal of Economic and Management Sciences, 21*(1), 1–11. https://doi.org/10.4102/sajems.v21i1.1681

Chortareas, G., Garza, J., & Girardone, C. (2011). Banking Sector Performance in Latin America: Market Power versus Efficiency. *Review of Development Economics, 15*(2), 307–325. https://doi.org/10.1111/j.1467-9361.2011.00610.x

Christaria, F., & Kurnia, R. (2016). The Impact of Financial Ratios, Operational Efficiency and Non-Performing Loan Towards Commercial Bank Profitability. *GATR*

Accounting and Finance Review, 1(1), 43–50. https://doi.org/10.35609/afr.2016.1.1(6)

Clemons, E. (1990). MAC-Philadelphia national bank's strategic venture in shared ATM networks. *Journal of Management Information Systems, 7*(1), 5–25. https://doi.org/10.1080/07421222.1990.11517878

ENIF. (2018). Reporte Nacional de Inclusión Financiera 9. In *Consejo Nacional de Inclusión Financiera.* Mexico: ENIF.

Ercegovac, R., Klinac, I., & Zdrilić, I. (2020). Bank specific determinants of eu banks profitability after 2007 financial crisis. *Management (Croatia), 25*(1), 89–102. https://doi.org/10.30924/mjcmi.25.1.5

Fong, C. (1990). Apuntes para una reflexion sobre la privatizacion bancaria. *Carta Económica Regional, 3*(15), 50–52.

Girón, A. (1994). La banca comercial de México frente al TLC. *Revista de Comercio Exterior, 24*(12), 1068–1075.

Goddard, J., Molyneux, P., & Wilson, J. (2004). The profitability of European banks: A cross-sectional and dynamic panel analysis. *The Manchester School, 72*(3), 363-381. https://doi.org/10.1111/j.1467-9957.2004.00397.x

Guerrero, R., & Villalpando, M. (2009). Rentabilidad, concentración y eficiencia en el sistema bancario mexicano. *Trimestre Economico, 76*(1), 237–263.

Hernández, F., & López, O. (2001). La banca en México, 1994-2000. *Economía Mexicana Nueva Época, 10*(2), 363-390.

Hill, R., Griffiths, W., & Lim, G. (2018). *Principles of econometrics*. John Wiley & Sons.

Imamah, N., & Ayu Safira, D. (2021). Pengaruh mobile banking terhadap profitabilitas bank di bursa efek Indonesia. *Profit: jurnal administrasi bisnis, 15*(1), 95-103. https://doi.org/10.21776/ub.profit.2021.015.01.10

Irura, N., & Munjiru, M. (2013). Technology Adoption and the Banking Agency in Rural Kenya. *Journal of Sociological Research, 4*(1), 249–266. https://doi.org/10.5296/jsr.v4i1.3584

Itah, A., & Emmanuel, E. (2014). Impact of Cashless Banking on Banks' Profitability (Evidence from Nigeria). *Asian Journal of Finance & Accounting, 6*(2), 301. https://doi.org/10.5296/ajfa.v6i2.6268

Kandie, G. (2013). The effect of agency banking on financial inclusion in Kenya (Doctoral dissertation, University of Nairobi).

Khraisha, T., & Arthur, K. (2018). Can we have a general theory of financial innovation processes? A conceptual review. *Financial Innovation, 4*(1), 1–27. https://doi.org/10.1186/s40854-018-0088-y

Ky, S., Rugemintwari, C., & Sauviat, A. (2021). Friends or Foes? Mobile money interaction with formal and informal finance. *Telecommunications Policy, 45*(1). https://doi.org/10.1016/j.telpol.2020.102057

Le, T., & Ngo, T. (2020). The determinants of bank profitability: A cross-country analysis. *Central Bank Review, 20*(2), 65–73. https://doi.org/10.1016/j.cbrev.2020.04.001

Magallón, H., Galeana, E., & Prado, C. (2022). Banking innovations and their effect on profitability. *Mercados y Negocios, 23*(47), 25–56. https://doi.org/https://doi.org/10.32870/myn.vi47.7680

Massoud, N. & Scholnick, B. (2003). Is There a Customer Relationship Effect from Bank Atm Surcharges? *NYU Working Paper No. S-FI-03-05*, Available at SSRN: https://ssrn.com/abstract=1297768

Maudos, J., & Solisa, L. (2009). Determinants of net interest income in the Mexican banking system: an integrated model. *Munich Personal RePEc Archive, 15257*, 1–31.

Mbama, C. (2016). Digital banking, customer experience and bank financial performance : UK customers' perceptions. *International Journal of Bank Marketing, 36*, 230–255.

Medyawati, H., Yunanto, M., & Hegarini, E. (2021). Financial Technology as Determinants of Bank Profitability. *Journal of Economics, Finance and Accounting Studies, 3*(2), 91–100. https://doi.org/10.32996/jefas.2021.3.2.10

Moudud-Ul-Huq, S., & Hossain, S. (2020). Impact of cashless policy on bank's profitability: Evidence from a developing economy. *International Journal of Financial Engineering, 7*(3), 2050034. https://doi.org/10.1142/s2424786320500346

Mutua, R. (2013). *Effects of Mobile Banking on the Financial Performance of Commercial Banks in Kenya*. Doctoral dissertation, University of Nairobi (Issue 8).

Neves, M., Proença, C., & Dias, A. (2020). Bank Profitability and Efficiency in Portugal and Spain: A Non-Linearity Approach. *Journal of Risk and Financial Management, 13*(11), 1–19. https://doi.org/10.3390/jrfm13110284

Olavarría, A., Cambra, J., Centeno, E., & Vázquez, R. (2018). Relationship quality as an antecedent of customer relationship proneness: A cross-cultural study between Spain and Mexico. *Journal of Retailing and Consumer Services, 42*, 78–87. https://doi.org/10.1016/j.jretconser.2018.01.011

Palaon, H., Wiryono, S., & Faturohman, T. (2020). Branchless banking agents: Business satisfaction, continuity, and viability. *Cogent Business and Management, 7*(1). https://doi.org/10.1080/23311975.2020.1823585

Peña, P., & Vázquez, A. (2012). El impacto de los corresponsales bancarios en la inclusión financiera: una primera evaluación. *Estudios Economicos Cnbv, 1*, 195–216.

Phan, H., Hoang, T., Dinh, L., & Hoang, D. (2020). The Determinants of Listed Commercial Banks' Profitability in Vietnam. *Journal of Asian Finance, Economics and Business, 7*(11), 219–230. https://doi.org/10.13106/jafeb.2020.vol7.no11.219

Rodríguez, A., & Venegas, F. (2010). Indicadores de rentabilidad y eficiencia operativa de la banca comercial en México. *Problemas Del Desarrollo, 41*(161), 165–191.

Rodríguez, A., & Venegas, F. (2012). Liquidez y apalancamiento de la banca comercial en México. *Análisis Económico, XXVII*, 73–96.

Rogers, E., Singhal, A., & Quinlan, M. (2014). Diffusion of innovations. In *An integrated approach to communication theory and research* (432-448). Routledge.

Ronquillo, D., Aguilasocho, D., & Galeana, E. (2018). Factores financieros que determinan la rentabilidad de los bancos que operan en México. *Mercados y Negocios,* (38), 23–44.

Rose, P., & Hudgins, S. (2008). Measuring and Evaluating the Performance of Banks and Their Principal Competitors. In *Bank Management and Financial Services* (163–204).

Shrader, L., & Duflos, E. (2014). *China: A New Paradigm in Branchless Banking?*. Washington: CGAP.

Turrent, D. (2009). *Estatización Bancaria en México. Antecedentes, causas y consecuencias*. México: Centro de Estudios Espinoza Yglesias.

Turrent, E. (2008). *Historia Sintética de la Banca en México.* México: Banco de México.

Venkatesh, V., & Davis, F. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science, 46*(2), 186–204.

Waleed, A., & Tahir, A. (2020). The Impact of Branchless Banking on Promotion. *Journal of Finance, Accounting and Management, 11*(1), 53.

Zhu, Q., Lyu, Z., Long, Y., & Wachenheim, C. (2021). Adoption of mobile banking in rural China: Impact of information dissemination channel. *Socio-Economic Planning Sciences*. https://doi.org/10.1016/j.seps.2021.101011

Mercados y Negocios
1665-7039 printed
2594-0163 on line
Year 24, n. 48, January-April (2023)

Technostress and Organizational Culture in the Software Industry

Tecnoestrés y cultura organizacional en la industria del software

https://doi.org/10.32870/myn.vi48.7686

Giselle Araceli López Galicia
Instituto Politécnico Nacional (Mexico)
gi_ara@hotmail.com
https://orcid.org/0000-0002-9306-4913
Rosa Amalia Gómez Ortiz
Instituto Politécnico Nacional (Mexico)
ragomez100@hotmail.com
https://orcid.org/0000-0002-2082-1696

Received: August 16, 2022
Accepted: December 17, 2022

ABSTRACT

This paper critically reviews the literature on technostress, the organizational culture of employee well-being, and the relationship between the concepts in the software industry workers. For this task, it is crucial to describe the characteristics of the software industry. After that, the definition and dimensions of technostress and organizational culture are explained. Finally, the relationship between technostress and organizational culture is presented.

Keywords: Technostress, Organizational culture, Software, Personal well-being.

JEL CODE: M19, M14, L86.

Mercados y Negocios por Departamento de Mercadotecnia y Negocios Internacionales. Universidad de Guadalajara se distribuye bajo una Licencia Creative Commons Atribución-NoComercial 4.0 Internacional. Basada en una obra en http://mercadosynegocios.cucea.udg.mx/index.php/MYN.

RESUMEN

El presente documento presenta una revisión crítica de la literatura respecto del tecnoestrés, así como de la cultura organizacional del bienestar del personal y la relación que guardan entre si ambos conceptos en los trabajadores de la Industria del software. Para lograr ese cometido, en primer lugar, se presenta la industria del software, sus características y como se conforma. En segundo lugar, se presenta el tecnoestrés, su definición y sus tres dimensiones principales. En tercer lugar, se presenta la cultura organizacional y de forma específica las dimensiones que impactan en el bienestar del personal. Finalmente, la relación que existe entre tecnoestrés y cultura organizacional.

Palabras clave: Tecnoestrés, Cultura organizacional, Software, Bienestar personal.

Código Jel**:** M19, M14, L86.

INTRODUCTION

The changes in organizations since past decades demand modifications in the following paradigms: health applied to work and organizational culture (Cuervo, Orviz, Arce & Fernández, 2018). Three decades ago, a change was a milestone in organizational development. It consisted of the massive use of Information and Communication Technologies (ICTs), which began the evolution of the digital economy (Cardona, Kretschmer & Strobel, 2013) as we know it today. As a result, companies increasingly depend on technological infrastructure to host their applications, protect their information, communicate, and operate continuously and efficiently.

The digital economy dramatically affects how goods and services are provided in companies, leading to the satisfaction of technical needs through the development of the technology industry. A distinctive feature of the digital economy is the excessive technological competition and the struggle between organizations to develop cutting-edge technology, which affects human factor due to the demand imposed. Under this framework of ideas, the human resource is fundamental to generating ICT products and services, which increases productivity and the creation of innovative developments (Ueki, Masatsugu & Cárcamo 2005).

Mexico is a country within the context of globalization, so it is necessary to make proposals to increase the competitiveness and permanence of companies. This paper critically reviews the literature on technostress, the organizational culture of staff welfare, and the relationship between the two concepts. Those companies that are successful in the market have managed to obtain a sustainable competitive advantage, particularly as mentioned by Benavides et al. (2002). Latin American organizations must achieve organizational differentiation based on identifying and forming strategies oriented to human capital to achieve a competitive advantage. The human factor is vital in competitiveness issues, so it is essential that these individuals have work, social and family balance, which will result in optimal performance professionally, resulting in social, organizational, family, and personal welfare. In addition, the competitiveness of software industry organizations is essential for the country's development of the material wealth it brings in social and economic terms by creating jobs.

SOFTWARE INDUSTRY

Information and Communication Technologies ICTs are the technologies required to manage and transform information through computers and programs that create, modify, store, protect and retrieve information (Sanchez, 2008).

On the one hand, there is the machine as a physical tool known as hardware; on the other hand, the instructions or programming is called software. According to the criteria of the Organization for Economic Cooperation and Development (OECD), it is "a structured set of instructions, procedures, programs, rules and documentation contained in different types of physical media (tape, disks, electrical circuits, etc.) intending to make possible the use of electronic data processing equipment" (OECD, 2017).

For their part, Ceceña, Palma and Amador (1995) point to software as:

> *A list of instructions that tells the CPU what to do is the operating system and is essential for computer use. It is the primary program and from it can be introduced, indistinctly, a whole range of additional programs for specific uses. The instructions of these programs are written in machine format, that is, as binary expressions. (Ceceña et. al, 1995)*

The most widely accepted definition of software was proposed by the Institute of Electrical and Electronics Engineers (IEEE), which is the world's largest engineering association. The IEEE states that "software is the total of the computer programs, procedures, rules, documentation, and associated data that are part of the operations of a computer system." So, the concept of the software is more than just computer programs, whether they are source code, binary or executable code, as well as their documentation. That is why software is intangible. Software is also programmatic or logical equipment, a "set of programs that can run the hardware to perform the computing tasks for which it is intended" (Cruz, 2022).

The primary services targeted by the software industry are: "software development and IT services, interactive media (digital animation), contact centers (call centers and contact centers), remote business services and research, development, and innovation (R&D&I) centers" (Solleiro et al., 2015). These services form a cycle in which the activities with the highest added value are the initial ones (R&D&I), followed by the lower value activities of implementation and integration and implementation, then, advanced support and ending with basic operations.

So the software industry is all those organizations related to software: the data programmed into the computer or computer that constitute the logical or immaterial part of the computer

system, stored in a binary way in zeros and ones. However, on the other hand, data are values that are processed or produced as results, being simple, compound, or files.

Mexico is one of the leading Latin American countries oriented on the progress of the digital economy, for which it has given facilities for creating of new companies focused on cutting-edge technology, specifically in the software industry. In Mexico, technology centers stimulate the sector together; however, there are most profitable territories; in particular, Mexico City presents 1,023 Micro, Small, Medium, and Large Information Technology companies with approximately 135,000 workers (Table 1).

Table 1
Distribution of software companies in Mexico City

Size	No. of companies	Approx. number of employees	% of employees by size
Micro	477	3,000	2
Small	390	10,000	7
Medium	105	14,000	10
Large	51	108,000	80
	1023	135,000	

Source: Own elaboration based on INEGI (2019).

Tracing software-producing activities in Mexico leads to the identification of two activities classified in the traditional industrial statistics of the North American Industrial Classification System (SCIAN), namely activities 511210 Software publishing and software publishing integrated with reproduction and 541510 Computer systems design services and related services, established in the Economic Censuses (INEGI, 2019).

The development of the software industry brings significant changes on a social level and has improved the lives of workers; however, these new technological circumstances place novel demands on employees; these demands are recognized as learning demands and are the result of functional technological changes (Sanchez, 2008; Ayyagari, Grover & Purvis 2011). Moreover, demanding contexts allow tensions known as work stress involving damage to the well-being and health of people.

Within the Software Industry, workers perform different positions and functions; in particular, the software developer has been transformed in recent years, and its importance has grown exponentially. Their "main role is creating and adapting software, whose scope covers a range of applications, such as programs, processes, networks, version upgrades, patches, migrations, DevOps and testing." There are a variety of fields with opportunities for "software developers, including systems design, manufacturing, finance, publishing, and engineering" (Michael Page, 2022).

The most critical skill for the software developer is systems thinking, which is essential to project success. This "systems thinking, in general, is also considered a skill to perform management activities and is highly correlated with success in projects" (Frank, Sadeh & Ashkenasi, 2011), so both Systems Engineers and Project Managers should have systems thinking applied to the resolution of technical-managerial problems to generate synergy and have greater chances of success in the development of projects.

Software development sometimes turns out to be stressful, requiring the ability to work under pressure. It requires the dual ability of individual work and teamwork; hence such positions require capable and flexible workers to be self-motivated at crucial moments in developing specific software. Highly critical analysis and problem-solving skills correspond to highly efficient software developers in their job functions. Additionally, developers must have a clear understanding and vision of the company's structure and how it will operate. On certain occasions, the deadlines are very unfair, so the ability to manage time limits is necessary. Another essential characteristic of software developers is a taste for detail and an unwavering commitment to accuracy. According to Ruiz (2018), it is established that ICT forges new professional circumstances that are mainly demanding, specifically for employees of companies whose products and services are part of this complex world of Information Technologies. These work situations lead to higher employee stress and deteriorating social and individual life in the context of quality life (Carlotto, Welter & Jones, 2017).

TECHNOSTRESS

Job stress is a global health problem. Several kinds of research relate stress with diseases and productivity problems. For the ILO, this disease affects not only the health of workers but also the economic situation of nations, and the losses represent between 0.5% and 3.5% of the national Gross Domestic Product (GDP) (El CEO, 2020). The Pan American Health Organization (OPS/OMS, 2017) stated in 2017 that mental disorders are in the top 10 causes of international disability, anxiety disorders were manifested in 260 million people, and depression disorders were presented by about 300 million people around the world. In 2019 work-associated mental and behavioral disorders were reported as the 16th cause of illness by the Mexican Institute of Social Security (IMSS, 2019), representing 1% of the total work-related illnesses.

One of these repercussions is Technostress; this illness at work is determined by novel demands created by technology, by long exposures to recent technologies, by the incapacity to face effectively the over demands given by the use of technologies, and by the lack of individual abilities. Although, according to research, technology per se is neutral, which means that the use of technology does not manifest positive or negative effects; however, the demands and the lack of it favor the generation of stress (Salanova, Llorens, Cifre Nogareda;

2007). Therefore, technostress for this research, derived from the analysis of the conceptualization of various authors, is understood as:

The negative psychological state results from the unbalanced perception of technological stimuli due to excessive demands, lack of internal control, lack of social support and/or deficiency of rewards that affect workers' health, causing physical and mental illnesses.
A negative psychological state is distinguished by harmful characteristics for the subject in his psychosocial functionality, and the subject is in a psychological moment that will not allow him to perform adequately for himself or society.

An unbalanced perception consists of incorporating sensations deficiently interpreted as adverse that generate an insecure and unstable psychological environment.

Demands become excessive the moment the individual cannot meet them on a planned time and place basis under the job standards of the position held.

The lack of internal control is the inability to dominate the individual's impulses, emotions, feelings, desires, actions, and thoughts.

The lack of emotional support consists of the lack of accompaniment from collaborators, family members, and friends in the face of the adverse circumstances the subject is experiencing. A reward deficiency implies that the individual will not receive what he or she desires, whether these desires are expressed overtly or implicitly.

Workers' health can be physical or mental. Within the physical diseases are cardiovascular diseases, and mental illnesses are mainly depression and anxiety.

According to Llorens et al. (2011), technostress comprises four dimensions: fatigue, anxiety, skepticism, and ineffectiveness. However, for workers in the software industry, skepticism is an invalid dimension because these individuals are immersed in technologies daily. Skepticism is the negative attitude towards the experience of using technology. Negative assessments, avoidance, indifference, and in some cases, hostile expressions of negative opinions of information technology characterize this dimension of denial of technology.

In the affective part of the dimensions are fatigue and anxiety, both of which refer to emotional states that subjects experience when using information technologies.

Fatigue

Fatigue refers to tiredness, physical, mental, and even social exhaustion generated by the use of technology; this state generates in the individual a lethargy devoid of pleasure when performing work, family, and personal functions whose elements are very often confused

with elements of dysthymia. This type is characterized by "feelings of tiredness and exhaustion, both mental and cognitive, which attitudes of suspicion and distrust of the effectiveness of using technologies in the workplace may increase." This disorder comes from the information overload produced in workers by technology. In such a way, occupational wear and tear and the maximization of factors are intrinsically linked to the "excess of informational and communicational stimuli, which trigger cognitive fatigue and the activation of diseases of mental and neuronal character" (Arangüez, 2017, pp. 180, 181).

Anxiety

On the other hand, anxiety presents high levels of physiological activation and tension due to the use of technology, characterized by fears in two tenses, present, and future. The subject experiences the stress from a perspective that escapes his or her understanding and does not conceive in his or her mind the origin of the fears and obsessive thoughts. It is the most popular disorder and the most prevalent in workers to experience excessive levels of physiological activation of unpleasant character, feeling of tension, and perceived discomfort for the present or future use of digital devices. There are mainly two scales to measure this anxiety: the STAI-R and the BAI (Beck Anxiety Inventory).

The Beck Anxiety Inventory is a useful tool to assess somatic anxiety symptoms in anxiety disorders and depressive symptoms. On the one hand, the STAI-R measures anxiety as a trait defined as "a relatively stable anxious propensity by which subjects differ in their tendency to perceive situations as threatening and to consequently elevate their state anxiety" (Spielberger, Gorsuc & Lushene, 2015, p. 7).

So, it assesses "abnormal or pathological behaviors (cognitive, emotional, motor or physiological) of anxiety (clinical anxiety)" (Sanz, 2013). Thus, anxiety is determined by being "a transient emotional state or condition of the human organism, which is characterized by subjective feelings, consciously perceived, tension and apprehension, as well as by a hyperactivity of the autonomic nervous system" (Spielberger et al., 2015, p. 7) reaching levels of dysfunctionality, frequency and pathological or abnormal intensity (clinical anxiety), in which the STAI-R detects individuals who consistently manifest these levels.

Ineffectiveness

In the cognitive part is located the dimension of ineffectiveness, which constitutes obsessive thoughts of ineffectiveness for using technology successfully. This perception implies more significant damage to the subject's psyche by presenting self-sabotage to the essence of the personal esteem of the worker, becoming his main enemy by consciously, frequently, and hostilely disqualifying himself.

For Llorens et al. (2011), technostress results from a perception of mismatches between demands and available resources, characterized by two main situations. The initial situation

refers to anxiety or affective symptoms concerning the high level of psychophysiological activation of the body, known as technophilia. The second situation is characterized by negative attitudes toward technology, known as technophobia.

So, there is a wide range of negative effects related to the inefficient use of new technologies: Cyber-tiredness, technophobia, technophilia, technophilia, techno-addiction, habeas data, techno-anxiety, technological scabbing, informational self-determination, expectations of confidentiality, the right to disconnect and cyber-surveillance.

Exposure to risk factors such as technostress during the working day is associated with various adverse health effects, such as psychological, cardiovascular, and musculoskeletal diseases (Cázares, 2020; Uribe et al., 2020). These findings stimulate the evaluation of technostress as a risk factor in various labor surveys of environmental and health conditions at the national level because there is a growing trend of employees who report being exposed, which raises the need to develop interventions in organizations in the software industry in a preventive manner.

Hence the interest in investigating the effects that technologies have on workers, particularly those workers who are immersed in this sector, being these employees, who present a potential risk of developing technostress. Moreover, technostress arises in a context where keeping up with the rapid advancement of technology impacts on workers who must constantly renew their technical skills while enduring the pressure of high productivity expectations and systems with increased complexity (Gaudioso, Ture & Galimberti, 2017).

Occupational and environmental medicine focus on the prevention, diagnosis, and treatment of occupational diseases and accidents through intervention, research, and practice; however, from this approach, the intermediary psychosocial processes between companies and employees are not identified, the relationship between the person and their work in a conception of the administrative and psychological type of work, which disturbs the productivity of economic representatives (Ladou & Harrison, 2015; Fernández, González, Iribar & Peinado, 2013).

Technostress is a disease that occurs in each of the organization's workers individually; however, this problem results in work performance, productivity, satisfaction, diseases, and change in habits, values, customs, and everything that promotes the culture of the organization.

ORGANIZATIONAL CULTURE OF STAFF WELFARE

Organizational culture is investigated on a large scale because several researchers have found that it is an important factor in the competitiveness and productivity of organizations (Cújar, Ramos, Hernández & López, 2013). Although in its beginnings, culture was the object of study of anthropology and social psychology, it was evident the need to understand this phenomenon through the management sciences (Pettigrew, 1979).

The term culture is commonly used among people. It refers to the set of "knowledge, beliefs, customs, values, attitudes and a series of social elements acquired over time" (Peiró, 1990) that are transmitted by various means with the aim "to ensure the coexistence or socialization of individuals who agree to participate in related behaviors with the rest of the group" (Peiró, 1990).

It has also been said that culture is "the characteristic way in which different populations or human societies organize their lives" (Hellriegel & Slocum, 2009, p. 39), and it is from this organic structure that the individual learns the behavior he must follow to fit into the society around him. The notion of culture is assimilated, accommodated, and transformed in the subject since the child is small and continues in constant evolution until death itself, hence it is relevant to clarify that culture is not static or inert, but on the contrary, is dynamic and evolves and transforms through external and internal influences that are established and accepted by the members of the group. Furthermore, there are various channels of transmission of culture, for example, family, friends, co-workers, institutions, the media, and social networks. Hence, the culture among a for-profit company's workers is called Organizational Culture.

Jacques (1972) states that culture implies thought and action, any organizational culture should not only be reflected in behaviors but also in thoughts, whose idea is conveyed in the same way by Schein (1996) by highlighting the three levels of culture, at the first level which are artifacts, the idea of behaviors by the workers of the organization and at levels two and three, values and assumptions, respectively emphasizes the fact that culture is reflected in thought.

Jacques (1972), Costa (1992), and Schein (1996) emphasize that culture is learned and that each new member who joins the organization must learn a culture; in this regard, Patlán et al. (2021) state that culture must be learned as if it were a new language with symbols and assumptions.

Costa (1992), Garcia and Lucas (2002), and Hofstede et al. (1999) agree that culture involves a combination of different factors, be they values, beliefs, norms of behavior, policies, ways of thinking, power relations, forms of influence and change, instruments of motivation, procedures, attitudes, basic conventions, ideas, basic assumptions, patterns, which make up the organization and are collectively programmed.

For Costa (1992) and Rodriguez (2006), through culture, an identity of the members of the work team is achieved, which, as Scheinsohn (2001) states, facilitates the generation of an organizational commitment transcending individual interest.

In such a way that the definition of organizational culture for the present work consists of the following:

The set of factors shared by the members of an organization, be these values, norms, beliefs, assumptions, or behaviors, which are programmed through collective experiences and learning in an identity that generates commitment beyond individual interest, whose implication covers the behavioral part (actions) and the cognitive part (thoughts).

Organizational culture has recently become a key factor for companies due to frequent environmental changes that directly affect them. Moreover, these changes in a social environment have a direct impact on culture and indirectly on other organizational aspects such as work climate, interpersonal relationships, and job satisfaction, mediated by attitudes, expectations, and emotions of workers: being important factors for productivity, competitiveness, efficiency and obtaining organizational results" (Cújar, Ramos, Hernández & López, 2013; Patlán et al., 2021).

The study of organizational culture and stress presented by workers is of relevance to the organization "in order to know what are the factors that affect workers subjected to work stress, depending on the type of culture that is present within the organization" (Díaz, Plaza & Hernandez, 2020, p. 109) for which extensive research is required.

Thus, professional competitiveness is the result of professional activity, as well as of the determined work circumstances. So, it is a work-related difficulty that initially damages the work environment generating an affectation of work, with health sequelae in people linked to broad and varied symptomatologies (Fidalgo, 2007; Schaufeli & Enzman, 1998; Moreno & Baez, 2010).

The well-being or satisfaction of the personnel is an evaluative concept of the organizational culture. It qualifies the organization from the worker's point of view and "tries to answer what the employee feels" (Robbins, 1994), for example, "in front of the conflict management or the supervision practices" (Calderón, Murillo & Torres, 2003).

This type of culture involves personal and family development, the results of which forge "greater motivation on the part of employees, which, however, also generates a visible increase in productivity" (Cordero, 2022).

Bonilla et al. (2019) state that a "pleasant work environment facilitates interpersonal relationships, improves productivity, decreases ailments, absenteeism and staff turnover," so certain organizations are obsessed with ensuring a pleasant or happy environment for their workers. In this regard, Cordero (2022) found several investigations that showed "that happy employees are 12% more productive".

It has also been found that "the quality of supervision increases well-being and that the perception of well-being depends on the type of work and the dominant organizational culture" (García & Ovejero, 2000). Hence, "the association between one and the other concept is generally accepted by organizational scholars: for example, forms of leadership that exude trust and credibility, demonstrate sensitivity to people and listening skills improve people's well-being at work" (Robbins, 1994).

The opportunity to participate "in decisions that affect their immediate work environment and the organization of work improves personal satisfaction" while increasing organizational culture (Calderón, Murillo & Torres, 2003). Thus, the culture of people's well-being "has important effects on job satisfaction, commitment, and job stability" (Cameron & Freeman, 1991).

Cameron and Quinn (1999) highlighted the culture of inspiration, humanistic, based on social institutions, social responsibility, and individual potential, which generates a motivation in workers to fulfill the assigned tasks with an emotional rather than material commitment. Therefore, the culture of staff welfare is:

The collective work identity in which the quality of life, safety and values of workers are promoted to help balance between personal and work life.

It is a collective work identity, as proposed by Costa (1992) and Cameron and Quinn (1999) since it combines different factors (e.g., beliefs, thoughts, learning, philosophies) that make up the companies and that are represented by its members. The main factors of this culture are quality of life, safety, and values.

Quality of life

This type of culture promotes quality of life inside and outside the company (Lastra et al., 2019; Cordero, 2022) that allows a balance between personal and family life (Betanzo, De la Cruz & Espinoza, 2017). In addition, the quality of life in the workplace guarantees job satisfaction through the "possible promotions, motivation, human relations, self-realization, and participation of all collaborators" (Cordero, 2022).

Regarding motivation, the organization shares with the state, the responsibility of influencing the destiny of the population by motivating the workforce in order to "generate adequate development in the country" (Castillo, 2016).

The quality of life outside of work guarantees the worker's satisfaction with personal and recreational situations such as: "the salary received and benefits" (Cordero, 2022), "the need for assistance, recreational and cultural services, aimed at employees and their families" since these benefits and compensations complement the economic retribution and offer improvement in the quality of life of employees and their families promoting an adequate integral development (Castillo, 2016).

Quality of life focuses on the well-being of the members of the organization, including concern for the problems faced by workers; because they participated in the arrangements in the company, this work "is adapted to people's needs, differences and abilities, although it is difficult to be dismissed and lacks incentives to productivity" (Hofstede et al., 1999).

Cameron and Quinn (1999), in the second quadrant of their theory known as Adhocratic Culture state that workers and leaders by their motivation are dynamic, innovative, entrepreneurial, risk-taking, and creative.

Quality of life implies a development of employees by providing opportunities to meet a wide range of labor, professional, personal, social and economic needs of the worker to learn knowledge and develop new skills useful in their job performance, "with the possibility of job promotion according to the capabilities, knowledge, results and work merits of the worker, contributing to the worker to have a career and long-term job perspective in the organization" (Betanzo, De la Cruz & Espinoza, 2017).

It coincides with the development of skills argued by Denison (1990), in which the company incessantly promotes improving workers' skills to maintain competitiveness and take advantage of business opportunities. Security Safety refers to the "set of technical measures implemented by organizations, aimed at the prevention, protection, and elimination of risks that endanger the health, life, physical integrity of workers and the development of healthy work" (Betanzo, De la Cruz & Espinoza, 2017).

Safety promotion involves physical and emotional safety (Lastra et al., 2019). Although safety and hygiene possess an environmental nuance, "they go hand in hand with psychological and social well- being" (Cordero, 2022). Castillo (2016) argues that organizations face problems daily in managing different financial, addiction, and stress problems, which correspond with physical and emotional safety aspects.

This human well-being implies individual and collective security, the ability to acquire material goods and services that allow the worker and his family to live in dignity and comfort in terms of housing and physical and social health. Thus, job security is a balance in which there must be a balance between the well-being of the worker and that of the organization, since both are interrelated, since "a healthy and safe environment allows for mental health, job security and thus ensures the productivity and quality of life of employees" (Cordero, 2022).

Both Cordero (2022) and Cameron and Quinn (1999) mention that recognition and rewards are part of the emotional and physical security, respectively, that workers require from the organization. Recognition consists of "recognizing, distinguishing, congratulating, estimating or thanking the work performed and the achievements obtained by the worker in the performance" of his work; it is a response to the need for quality of life granted by the leaders "being able to exist the possibility of giving feedback to the worker so that the worker is motivated in the achievement of goals" (Betanzo, De la Cruz & Espinoza, 2017). On the other hand, rewards are retributions "such as salary increases, vacations, incentives, bonuses and other prizes that make the worker feel satisfied, as well as obtaining recognition for the quality of the work done" (Betanzo, De la Cruz & Espinoza, 2017).

Values

For Schein (1998), values how subjects agree on beliefs, including norms and rules of behavior, strategies, philosophies, objectives, and principles, with intrinsic values from the formality of organizational activity. Adapted values determine how the organization performs activities, representing a higher knowledge of organizational culture. Companies and others promote values by individuals.

Within the values that organizations promote, Denison (1990) proposes the vision, since "every successful company must have a clear and shared image about the way it wants to be recognized," he proposes it as "a shared perspective composed of core values and is found in the minds and hearts of employees by giving them direction and guidance."

Another value promoted as a guideline of the organization is respect or consideration for others; this value marks limits to actions that may harm others, for example: "do not take what belongs to others, listen without disqualifying, do not harm, do not ignore, do not disturb, do not interrupt, or disturb with actions or words to co-workers" (Betanzo, De la Cruz & Espinoza, 2017).

The values manifested by workers are mainly commitment, honesty, and responsibility (Cordero, 2022; Cameron & Quinn, 1999; Betanzo, De la Cruz & Espinoza, 2017); however, there are also 13 values of flexibility, individuality, self-control, self-management and empowerment (Cameron & Quinn, 1999).

Honesty is a value expressed in behaviors of transparency of the individual to himself and those around him, discarding attitudes of hypocrisy, falsehood, and artificiality (Betanzo, De la Cruz & Espinoza, 2017). Responsibility implies acting with a sense of duty individually and socially based on an internal need of the subject that does not have a relationship with an external obligation (Betanzo, De la Cruz, & Espinoza, 2017). Finally, commitment is "the quality in the fulfillment of tasks, overcoming obstacles to carry them to their ultimate consequences, as well as the willingness to answer for one's actions" (Betanzo, De la Cruz & Espinoza, 2017).

TECHNOSTRESS AND ORGANIZATIONAL CULTURE

There is currently a large body of published research on psychosocial risks and technostress and their association with other variables (Gaudioso, Turel & Galimberti, 2017). In the review conducted by Cuervo, Orviz, Arce & Fernandez (2018, p. 18), 58 articles were identified, of which 30 were included in the final review. A further 14 articles were located through the manual literature search. These investigations "focus on analyzing the creators and inhibitors of technostress in workers, as well as the main consequences of materializing this risk on their work performance".

Additionally, they observed "a lack of empirical studies that allow establishing strategies to manage technostress adequately." Therefore, they concluded that "there is a need to delve deeper into technostress through empirical studies that are not only focused on proposing theoretical models for its conceptualization or on knowing its consequences in organizations, but also on proposing management strategies that reduce the impact of this new labor reality on workers".

Finally, Cuervo et al. (2018) propose new lines of research to understand and adequately manage technostress in workers, and it "highlights the lack of empirical studies that allow us to quantify the levels of technostress by business sectors" (p. 22). Although technology is present in practically any business sector, in the software industry sector technology abounds, so there is a need for future work focused on analyzing the incidence of technostress in this sector. Additionally, no research relates them to organizational culture and its measurement from quantitative methods in different types of organizations (Cuervo, Orviz, Arce & Fernandez, 2018, p. 18).

Employees of companies in the software industry have an imbalance between work and personal life due to social, demographic, health, and technological changes. The direct effects not only exclusively affect individuals but also companies by influencing staff turnover, job dissatisfaction, abstentionism, low innovation rates, low performance, and lack of

commitment to work (Ruiz, 2018). Furthermore, Martinench (2014) found an association between work stress and organizational culture, specifically in cultures focused on staff welfare: level of satisfaction, morale, communication, conflict resolution, and decisions aimed at continuous improvement change.

There is international evidence that health and productivity problems have a direct relationship with mental health problems, including stress, fatigue, workload, disabilities due to psychological disorders, phobias, compulsions, neurological diseases, psychiatric diseases, psychosomatic diseases, sleep disorders, depression, gastrointestinal diseases, anxiety, fibromyalgia, absenteeism, addictions, smoking, alcoholism, drug addiction, bad working environment, weak leadership, dissatisfaction, burnout, mobbing, lack of organizational commitment, among others (Uribe, López, Pérez & García, 2014; Cuervo, Orviz, Arce & Fernández, 2018; Ruiz, 2018; Uribe et al., 2020).

Based on the literature review, the Staff Well-Being Index was constructed, consisting of 3 sections. The General Data section includes information about the respondent, such as age, gender, academic background, and characteristics of the company where he/she works.

Section I. Technostress includes 36 items, divided into three dimensions: anxiety, fatigue, and lack of effectiveness, subdivided into two categories, each consists of 3 subcategories. For the construction of the instrument, the literature review was considered, and 12 items were taken from existing instruments: 1 from Cázares and Villavicencio (2019), two from Cuervo et al. (2018), two from Maslasch and Jackson (1986), four from NOM-035 (DOF, 2018) and three from Ruiz (2018) (table 2).

Section II. Organizational culture of staff well-being includes 36 items, divided into three dimensions: quality of life, safety, and values, subdivided into two categories; in turn, each category consists of 3 subcategories. These items were drafted based on the literature, and nine items were taken from the instrument developed by Patlán et al. (2021) (Table 2).

Table 2
Staff Well-Being Index items taken from authors.

Items	Authors
3	Cázares & Villavicencio, 2019
17 y 25	Cuervo et al., 2020
15 y 30	Maslash & Jackson, 1986
13, 14, 18 y 26	NOM-035
37, 39, 42, 46, 57, 58, 59, 60, 62	Patlán et al., 2021
21, 35 y 36	Ruiz, 2018

Source: Own elaboration.

The items of both questionnaires present the following considerations:

- Statements in declarative form,
- Concise and clear writing,
- Do not include confusing terms or words,
- They use simple sentence structure,
- The writing is in the first person singular,
- 41 statements were positively worded (direction of the construct),
- Thirty-one statements were written in the inverted form (opposite direction of the construct) to avoid acquiescence, i.e., the tendency of subjects to answer in the affirmative regardless of the content (Tomás et al., 2012, p. 105).

The instrument's structure is a Likert-type scalar, where one is "always" and four is "never", consisting of a set of items presented as statements or judgments to which individuals are asked to react. Thus, each statement is presented, and each response is assigned a numerical value so that the subject obtains a score about the statement and a total score, adding up the scores obtained in relation to all the statements. A characteristic of the items is that the response alternatives are fixed for all the propositions, and all have a designated weight or equivalent value (Fabila, Minami & Izquierdo, 2013, p. 33).

The instrument's content validity was carried out by expert judgment and by the method of individual aggregates. This validation was carried out by five management and software development researchers, who independently judged the relevance and congruence of the items. Within the necessary conditions for this validation, each expert received sufficient written information about the purpose of the test (objectives), the conceptualization of the universe of content, and the table of specifications of the study variables.

Each expert provided information regarding clarity, tendentiousness, biases, and observations. Thus, 68 items had 100% favorable agreement among the judges (congruent, clear in their wording, and not biased). Three items were modified in wording based on technical words according to the context. One item was modified for clearer wording. In the end, 72 items remained. It was "an economical method because it did not require gathering the experts in a particular place" (Corral, 2009, p. 231).

Technostress. It is the alteration of the worker's health characterized by anxiety, fatigue, and lack of work effectiveness generated by excessive technological requests.

- Anxiety. The discomfort manifested through emotional and physiological behaviors alters the worker's health and is related to technological aspects.
- Fatigue. The physical discomfort manifests as a lack of physical energy and disinterest in activities unrelated to technology that alters the health of the worker and is related to technological aspects.
- Lack of effectiveness. These behaviors affect the worker's performance in their work activities and can be adequate or inadequate.

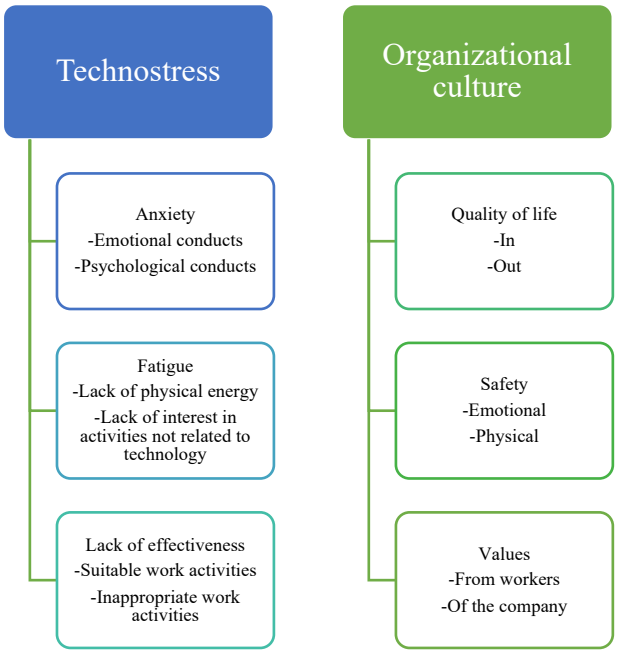
Organizational culture of staff welfare. It is the collective work identity in which workers' quality of life, safety, and values are sought and promoted to contribute to a balance between personal and work life.

Quality of life. These conditions of workers' social welfare are manifested inside and outside the company.

- Safety. The emotional and physical working conditions prevent harm to workers.
- Values. These are the principles, virtues, or qualities manifested by the workers, and those promoted by the organization.

Figure 1

Variables, dimensions, and categories



Source: Own elaboration.

This instrument can be analyzed using a transformation to the normal probability distribution function to obtain the values corresponding to each of the scales and thus establish the comparative level of each dimension (ranking).

It can also be analyzed with principal component analysis to find the structure of the correlations between many variables (Figure 1), in this case, each item, by defining a set of common underlying dimensions known as factors. The principal component analysis is a technique selected for the dimension reduction of the variables corresponding to the different categories included in the analysis (36 items of technostress and 36 items of organizational culture).

CONCLUSIONS

By relating the health and productivity problems previously exposed to family and social situations, they constitute psychosocial risks at work that impact unemployment, legal demands, and poor quality of life. This phenomenon, present in the international environment, is also identified in workers in the software industry of Mexico City (Villavicencio, Ibarra & Calleja, 2020).

Studies related to the quality of life of workers in the information technology sector (Al-Qallaf, 2006; Ayyagari et al., 2011) highlight the importance of having adequate conditions for the optimal performance of workers' activities, reducing overloads, providing adequate training, reducing extended working hours, and avoiding role ambiguity among others. In the same context, it is urgent to address the companies that make up the software industry due to the great economic and social impact generated in Mexico City, which faces more significant challenges arising from competition with transnational organizations, international markets, and globalization (Cázares, 2020).

The results in Mexico have "shown that psychosocial research of the negative effects related to illness at work shows significant prevalences and care related to productivity, health, empowerment, stress and its consequences" (Uribe, 2015). Therefore, technostress is an axis of attention for analyzing psychosocial risk factors based on their consequences in terms of health and productive matter (Juárez, 2015).

The characteristics of the culture of employee well-being can be promoted in the organization through transformative interventions. Hellriegel and Slocum (2009) argue that the basic methods used to preserve culture in a company can be used to transform it. So, culture is transformed by changing what managers and teams pay attention to, how a crisis is dealt with, the criteria for recruiting new members, the criteria for promotion within the organization, the criteria for rewards, and organizational rituals and ceremonies.

REFERENCES

Al-Qallaf, C. (2006). Librarians and Technology in Academic and Research Libraries in Kuwait: Perceptions and Effects. *Libri. 56*. 168-179. 10.1515/LIBR.2006.168.

Arangüez, L. (2017). El impacto de las tecnologías de la información y de la comunicación en la salud de los trabajadores: el tecnoestrés. *e-Revista Internacional de la Protección Social, 2* (2), 169-190. http://dx.doi.org/10.12795/e-RIPS.2017.i02.12.

Ayyagari, R., Grover, V. & Purvis, R. (2011). Technostress: Technological Antecedents and Implications. *MIS Quarterly,* 35(4),831-858, DOI:10.2307/41409963.

Benavides, F., Gimeno, D., Benacha, J., Martínez, J., Jarqueb, S., Berrac, A. & Devesad, J. (2002). Descripción de los factores de riesgo psicosocial en cuatro empresas. *Gac Sanit,* 16(3), 222-229.

Betanzo, S., De la Cruz, B. & Espinoza, V. (2017). *Diseño y construcción de una escala de cultura organizacional.* (Tesis de Licenciatura). Universidad Nacional Autónoma de México, México.

Bonilla, D. Osorio, K, & Naar, N. (2019). *Calidad de vida laboral y trabajo digno o decente*. Colombia. Editorial Universidad corporativa de Colombia.

Calderón, G., Murillo, S. & Torres, K. (2003). Cultura organizacional y bienestar laboral, *Cuadernos de Administración, 16*(25), 109-137.

Cameron, K. & Freeman, S. (1991). Cultural Congruence, Strength, and Type: Relationships to Effectiveness. *Research in Organizational Change and Development, 5*, 23-58.

Cameron, K., & Quinn, R. (1999). *Onderzoeken en veranderen van organisatiecultuur. Gebaseerd op het model van de concurrerende waarden*, Schoonhoven: Academic Service.

Cardona M, Kretschmer T, & Strobel T.(2013). ICT and productivity: conclusions from the empirical literature. *Information Economics and Policy, 25*, 109-125. Doi: 10.1016/j.infoecopol.2012.12.002

Carlotto M, Welter G, & Jones A. (2017). Technostress, Career Commitment, Satisfaction with Life, and Work-Family Interaction among Workers in Information and Communication Technologies. *Actual Psicol., 31,* 91-102.

Castillo, J. (2016). *Administración de personal*. Bogotá. Editorial Eco ediciones.

Cázares, C. (2020). La inclusión del salario emocional en México Norma Oficial Mexicana NOM-035-STPS-2018. Factores de riesgo psicosocial en el trabajo-Identificación, análisis y prevención. *Cambios Y Permanencias, 11*(1), 602–624.

Cázares, V., & Villavicencio, E. (2019). *Adaptación de dos escalas para medir tecnoestrés y tecnoadicción en una población laboral mexicana* (tesis de licenciatura). Facultad de Psicología, UNAM.

Ceceña, A., Palma, L. & Amador, E. (1995). La electroinformática: núcleo y vanguardia del desarrollo de las fuerzas productivas. In Ceceña, A. & Barreda, A. (coords.), *Producción estratégica y hegemonúz mundial*, México, Siglo XXI Editores, 52-140.

Cordero, N. (2022). *Cultura organizacional y Bienestar laboral.* Tesis de Licenciatura, Universidad Rafael Landívar.

Corral, Y. (2009). Validez y confiabilidad de los instrumentos de investigación para la recolección de datos. *Revista Ciencias de la Educación, 19* (33), 228-247.

Costa, J. (1992). *Identidad corporativa y estrategia de empresa*. Barcelona: Ediciones CEAC.S.

Cruz, J. (2022). *Cooperación Internacional para el Desarrollo Tecnológico: la Industria del Software en México y la India*. Tesis de licenciatura, Universidad Nacional Autónoma de México.

Cuervo, T., Orviz, N., Arce, S. & Fernández, I. (2018). Tecnoestrés en la Sociedad de la Tecnología y la Comunicación: Revisión Bibliográfica a partir de la Web of Science. *Arch Prev Riesgos Labor,* 21 (1): 18-25. DOI: 10.12961/aprl.2018.21.01.4

Cújar, V., Ramos, P., Hernández, R. & López, P. (2013). Cultura organizacional: evolución en la medición. *Estudios Gerenciales*, 29, 350-355. https://dx.doi.org/10.1016/j.estger.2013.09.009

Denison, D. (1990). *Corporate culture and organizational effectiveness*. John Wiley & Sons.

DOF. (2018). NOM-035-STPS-2018, 23 de octubre de 2018. México: Diario Oficial de la Federación.

Díaz, G., Plaza, M. & Hernández, H. (2020). Relación entre estrés laboral y cultura organizacional en empleados del sector Salud. *Revista Espacios, 41* (27), 109-122.

El CEO (2020). Impacto económico del estrés laboral. *EL CEO.* Link: https://elceo.com/economia/impacto-economico-del-estres-laboral/

Fabila, A., Minami, H. & Izquierdo, M. (2013). La escala de Likert en la evaluación docente: acercamiento a sus características y principios metodológicos. *Perspectivas docentes, 50,* 31-40.

Fernández, M., González, J., Iribar, C., & Peinado, J. (2013). Comentarios sobre riesgos psicosociales en el trabajo: Una aproximación evaluativa. *Revista Peruana de Medicina Experimental y Salud Pública*, 30,1, 149-150. https://doi.org/10.1590/S1726-46342013000100032

Fidalgo, M. (2006). *Síndrome de estar quemado por el trabajo o "burnout" (II): consecuencias, evaluación y prevención (NTP 705).* Madrid: INSHT.

Frank, M., Sadeh, A. & Ashkenasi, S. (2011). The relationship among systems engineers' capacity for engineering systems thinking, project types, and project success. *Project Management Journal, 42*(5), 31–41. 10.1002/pmj.20252

García, P., & Lucas, A. (2002). *Sociología de las organizaciones*. México: Mc Graw Hill.

García, A., & Ovejero, A., (2000). *Feedback Laboral y Satisfacción*. Universidad de Oviedo.

Gaudioso, F., Turel, O., & Galimberti, C. (2017). The mediating roles of strain facets and coping strategies in translating techno-stressors into adverse job outcomes. *Comput Human Behav.*, 69, 189-196.

Hellriegel, D., & Slocum, J. (2009). *Administración. Un enfoque basado en competencias*. México: Cengage learning.

Hofstede, G., Hofstede, J., & Minkov, M. (1999). *Culturas y organizaciones: El software mental. La cooperación internacional y su importancia para la supervivencia*. Alianza Editorial.

IMSS. (2019). *La salud mental es bienestar personal, familiar y social, no sólo ausencia de enfermedad*.México: IMSS. Archivo de prensa No. 418/2019

INEGI. (2019). Censos económicos 2019. México: Instituto Nacional de Estadística y Geografía. Link: https://www.inegi.org.mx/programas/ce/2019/

Jacques, E. (1972). *The Changing Culture of a Factory*. New York: Dryden Press.

Juárez, A. (2015). *Investigaciones psicométricas de escalas psicosociales en trabajadores mexicanos.* México: Plaza y Valdes.

Ladou, J. & Harrison, R. (2015). *Diagnóstico y tratamiento en medicina laboral y ambiental*. México: Editorial Manual Moderno.

Lastra, J., Méndez, J., Cuartas, G. & Álvarez, L. (2019). *Calidad de vida laboral y trabajo digno o decente: Nuevos paradigmas en las organizaciones.* Fondo Editorial – Ediciones Universidad Cooperativa de Colombia.

Llorens, S., Salanova, M. & Ventura, M. (2011). G*uías de intervención tecnoestrés*. España: Editorial Síntesis.

Martinench, A. (2014). La Cultura Organizacional y su relación con el Estrés Laboral del personal de la Dirección de Recursos Humanos del Ilustre Municipio de Quito. *Pontificia Universidad católica Del Perú, 8*(33), 44.

Maslach, C. & Jackson, S. (1986). *The Maslach Burnout Inventory.* Palo Alto: Consulting Psychologists Press.

Michael Page (2022). Reclutamiento TI. *Michael Page*. Link: https://www.michaelpage.com.mx/content/reclute-ti/

Moreno, B., & Báez, C. (2010). *Factores y riesgos psicosociales, formas, consecuencias, medidas y buenas prácticas*. Universidad Autónoma de Madrid, España: Ministerio del Trabajo e Inmigración, Instituto Nacional de Seguridad e Higiene del Trabajo.

OECD. (2017). *Digital Economy Outlook 2017*. Paris: OECD.

Organización Panamericana de la Salud (OPS/OMS, 2017). “Depresión: hablemos", dice la OMS, mientras la depresión encabeza la lista de causas de enfermedad. Ginebra/Washington, 30 de marzo de 2017.

Patlán, J., Betanzo, S., De la Cruz, B. & Espinoza, V. (2021). Escala para medir tipos de cultura organizacional: construcción y propiedades psicométricas. *Contaduría y Administración,* 66 (3), 1-29. http://dx.doi.org/10.22201/fca.24488410e.2021.2066

Peiró, J. (1990). *Organizaciones: Nuevas perspectivas psicosociológicas*. Barcelona, España: Promociones y Publicaciones Universitarias

Pettigrew, A. (1979). On studying organizational cultures. *Administrative Science Quarterly, 24*(4), 570-581. https://doi.org/10.2307/2392363

Robbins, S., (1994). *Comportamiento organizacional: conceptos, controversias y aplicaciones*. México, Prentice Hall.

Rodríguez, M. (2006). *Diagnóstico Organizacional.* Editorial Alfaomega.

Ruiz, V. (2018). Validez factorial de una escala de nivel de percepción de los factores psicosociales del Tecnoestrés en las pymes de Piedras Negras Coahuila. *Revista RAITES,* 4 (8), 58-77.

Salanova, M., Llorens, S., Cifre, E. & Nogareda, C. (2007). El Tecno-estrés: concepto, medida e intervención psicosocial. Nota técnica. Instituto Nacional de Higiene y Seguridad en el Trabajo. Link: https://prl-sectoreducativo.saludlaboral.org/documentos/documentacion/bibliiografia/ntp_730.pdf.

Sánchez, E. (2008). Las tecnologías de información y comunicación (TIC) desde una perspectiva social. *Revista Electrónica Educare,* XII, 155-162.

Sanz, J. (2013). Recomendaciones para la utilización de la adaptación española del Inventario de Ansiedad de Beck (BAI) en la práctica clínica. *Clínica y Salud, 25*, 39-48.

Schaufeli, W. & Enzmann, D. (1998). *The burnout companion to study and practice. A critical analysis.* London: Taylor & Francis.

Scheinsohn, D. (2001). *Más allá de la imagen corporativa*. Ediciones Macchi.

Schein, E. (1996). *Liderazgo y cultura organizacional.* Plaza & Janes; Barcelona.

Solleiro, J., Sánchez, L., Gónzalez, A., Vergara, J. & Salinas, C. (2015). *Estado del arte de clusters de tecnologías de la información.* México: Cambio Tec.

Spielberger, C., Gorsuch, R., & Lushene, R. (2015). *Manual for the StateTrait Anxiety Inventory.* Palo Alto, California: Consulting Psychologist Press.

Tomás, J., Sancho, P., Oliver, A., Galiana, L. & Meléndez, J. (2012). Efectos de método asociados a ítems invertidos vs. ítems en negativo. *Revista Mexicana de Psicología,* 29 (2), 105-115.

Ueki, Y., Masatsugu & Cárcamo, R. (2005). *Tecnología de la información y las comunicaciones (TIC) para el fomento de las pymes exportadoras en América Latina y Asia oriental*. Santiago de Chile: ECLAC.

Uribe, F., López, F., Pérez, G. & García, S. (2014). Síndrome de desgaste ocupacional (burnout) y su relación con salud y riesgo psicosocial en funcionarios públicos que

imparten justicia en México, D.F. *Acta de Investigación Psicológica*, *4*(2), 1554-1571. https://doi.org/10.1016/S2007-4719(14)70393-X

Uribe, F. (2015). *Clima y ambiente organizacional*. México: Editorial Manual Moderno.

Uribe, F., Gutiérrez, J. & Amezquita (2020). Crítica a las propiedades psicométricas de una escala de medición de factores de riesgo psicosocial propuesta en la NOM1 035 de la STPS en México. *Contaduría y Administración*, 65 (1), 1-32. http://dx.doi.org/10.22201/fca.24488410e.2019.1569

Villavicencio, E., Ibarra, D. & Calleja, N. (2020). Tecnoestrés en población mexicana y su relación con variables sociodemográficas y laborales. *Psicogente* 23(44), 1-27. https://doi.org/10.17081/psico.23.44.3473

Mercados y Negocios
1665-7039 printed
2594-0163 on line
Year 24, n. 48, January-April (2023)

The Resilience of Corporate Tourism: Bleisure, Digitalization, and Sustainability

Resiliencia del turismo corporativo: bleisure, digitalización y sustentabilidad

https://doi.org/10.32870/myn.vi48.7679

María Elena Puerta López
Universidad Complutense de Madrid (Spain)
elenaplc99@gmail.com
https://orcid.org/0000-0003-4269-7283
Julián Pindado Martínez
Universidad Complutense de Madrid (Spain)
j.pindado.martinez@ucm.es
https://orcid.org/0000-0001-8226-9916
Tania Elena González Alvarado
Universidad de Guadalajara (Mexico)
tania.gonzalez@cucea.udg.mx
http://orcid.org/0000-0002-3062-9665

Received: August 2, 2022
Accepted: November 4, 2022

ABSTRACT

The study aims to analyze the resilience of corporate tourism in the last three years. Interviews were conducted with industry professionals, and a questionnaire was applied to corporate clients. The results show that adaptation was achieved through short-term planning, bleisure tourism, digitalization, and sustainability. The main conclusion is that resilient companies have changed their line of business, accepted to operate in the short term, and offered more flexibility in pricing.

Keywords: corporate tourism, Covid-19, adaptation, resilience, digitalization

JEL CODE: M19

Mercados y Negocios por Departamento de Mercadotecnia y Negocios Internacionales. Universidad de Guadalajara se distribuye bajo una Licencia Creative Commons Atribución-NoComercial 4.0 Internacional. Basada en una obra en http://mercadosynegocios.cucea.udg.mx/index.php/MYN.

RESUMEN

El objetivo del trabajo es analizar la resiliencia del turismo corporativo en los últimos tres años. Para alcanzar dicho objetivo se hicieron entrevistas a profesionales del sector y se aplicó un cuestionario a clientes corporativos. Los resultados muestran que la adaptación se alcanzó mediante cuatro factores: planeación a corto plazo, el turismo bleisure, la digitalización y la sustentabilidad. La principal conclusión es que las empresas resilientes han cambiado su línea de negocios, aceptado operar a corto plazo y ofrecido mayor flexibilidad en los precios.

Palabras clave: turismo corporativo, Covid-19, adaptación, resiliencia, digitalización.

Código Jel**:** M19

INTRODUCTION

Corporate tourism is significant because it reduces seasonality (Durieux, Amaral & Lenzi, 2013; Cardona, 2014). Especially in Spain, where tourism is primarily seasonal. It is a fact that the impact of Covid-19 on corporate tourism was initially high. Everything seemed to return to normal after the first few months, but the Omicron variant's appearance caused the tourism market to suffer.

Mass vaccination gradually diluted the effect of Covid-19. Nevertheless, both tourism companies and corporate clients have been able to adapt. Segmenting corporate clients and identifying the economic agents involved in the sector (SMEs, multinationals, works, and projects) have been key to adaptation. Covid-19 has undoubtedly taught companies how to act in an extreme situation and has given hope that it is possible to recover with even better results than before (Lu et al., 2020; Ngutsav & Ijirshar, 2020)

Ignorance and permanent fear for two years have been other essential aspects. However, despite this, tourism companies and client companies have guaranteed all the security to continue their activity based on health, hygiene, and safety measures for clients and their employees. This situation leads to the following research question: What factors have contributed to the resilience of corporate tourism in the last two years?

THEORETICAL-CONCEPTUAL FRAMEWORK

Resilience depends on the ability to reinvent business models and strategies as circumstances change constantly (Demmer, Vickery & Calantone, 2011; Contreras & Alvarado, 2021; Adekola & Clelland, 2020).). Best practices are insufficient when changes in the global environment are radical and surprising (Hamel & Valikangas, 2003). Resilient companies can absorb change and disruption, both internal and external, without affecting their profitability (Swaminathan, 2022). They even gain extra benefits from adverse and unforeseen circumstances (Contreras & Alvarado, 2021).

The competitiveness of enterprises has been measured in terms of their market share and comparison with others (Umarov et al., 2019; Iversen et al., 2020). However, competitiveness must be challenged in the face of new realities. Therefore, competitiveness should be measured by how difficulties are converted into opportunities for the company's survival (Estrada & Alvarado, 2020).

Moreover, firm size only becomes an obstacle to resilience if those working in large organizations fall into the error of believing that success is self-perpetuating (Hamel & Valikangas, 2003; Minolli, 2005). On the other hand, smaller firms have shown greater resilience to rapid change (Belitski, 2022) because they have a more vital link to locality.

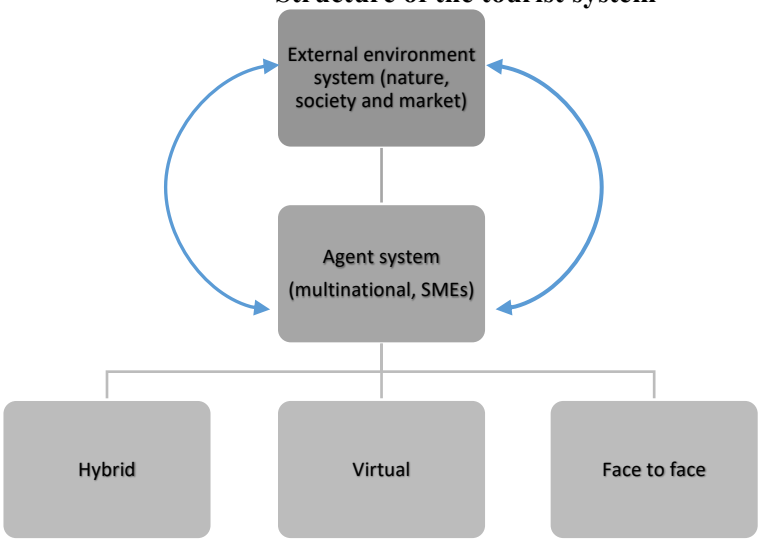
A study of small businesses in the accommodation sector in the city of Yogyakarta revealed remarkable resilience in local tourism businesses during the decade-long crisis that affected Indonesia's tourism industry (Dahles & Susilowati, 2015).

Business resilience is closely related to the resilience of the locality. The location of the enterprise can be a source of resources that strengthen resilience. It is the case as long as resources are channeled appropriately. How each organization, territory applies resources, or economic sector makes a difference in the adaptation period and results.

Complex adaptive systems theory is the basis for analyzing and understanding business resilience (Ma, Xue & Huang, 2020; Basile & Dominici, 2016; Langdon & Sikora, 2006; Haataja & Okkonen, 2004; Etemad, 2004; Rullani, 2002).

Complex adaptive systems are agents that perform actions from which they learn to adapt while interacting with each other (Figure 1). Thus, the company offering tourism services is an agent. This agent is linked to other agents (client companies).

Figure 1
Structure of the tourist system



Fuente: Own elaboration (Yang et al., 2019).

In turn, each of these enterprises is composed of learning individuals. Individual learning depends on the environment (it does not always encourage learning), the motivation to learn, and the capacity to do so (skills, aptitudes, and attitudes that lead to critical thinking) (Tejedor & Aguirre, 1998; Peña, Gómez & Rubio, 1999; Esteban, 2002; Pérez, 2002; Prot, 2004; González, 2006; de Medrano & de Paz Higuera, 2010; Morgado, 2014; Bruner, 2018).

Corporate tourism

Corporate or business tourism refers to tourism that involves travel to carry out business-related activities and whose primary purpose is for the company's work purposes (Belén, 2013). It involves a company member traveling to a different place of work and residence to attend a meeting, activity, or event. In addition, business tourism is combined with other types of tourism during the same trip.

This combination increases the company's productivity and profitability because the employee is motivated to do his or her job. In addition, it fosters the employee's sense of belonging to the company. Corporate tourism fosters commitment between both parties (company- employee).

The company to which the employee belongs is a customer of the companies offering corporate tourism services. However, the individual corporate tourist receives the service: the employee who travels. Therefore, it is necessary to analyze and identify their profile, needs, and expectations.

The individual corporate tourist is characterized by a more stable profile than the leisure tourist in terms of finances and travel planning. In addition, they do without personal belongings, so traveling with the essentials is an identifying feature. Finally, they seek well-being that prioritizes rest, concentration, security, and protection throughout the trip.

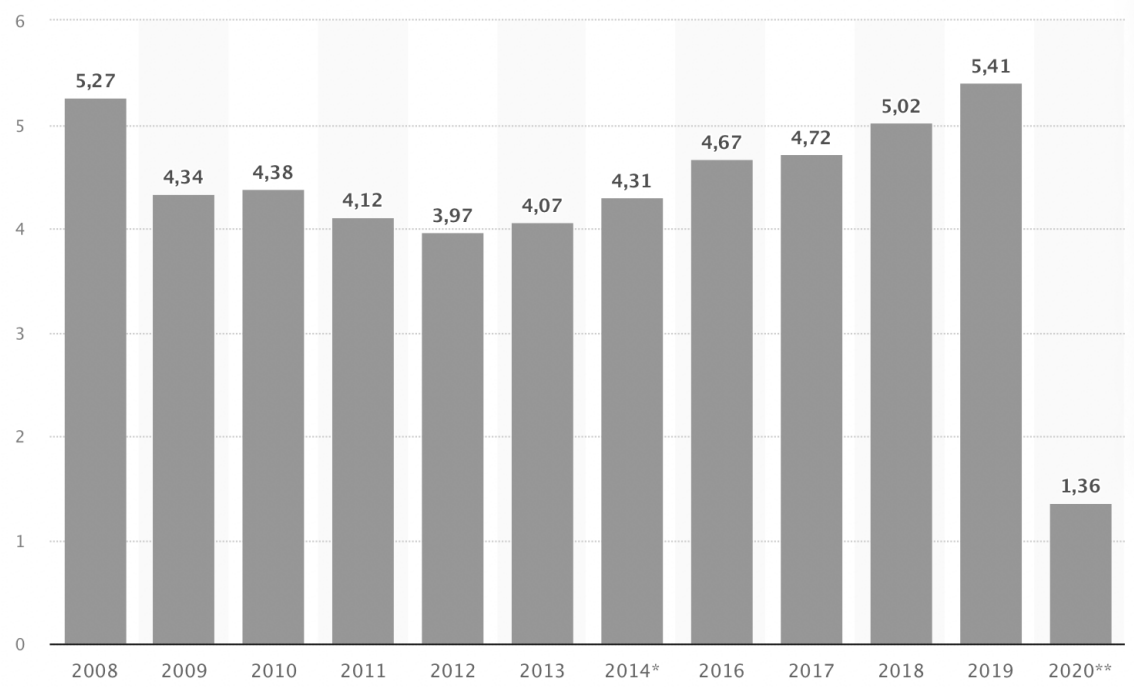
Aspects of agility in documentation, connectivity with co-workers and family members during the trip, and spaces dedicated to the work environment are essential. They also need extra services, such as transfers, laundry, and room service. Like any other tourist, the corporate tourist becomes demanding and requires only treatment for a satisfactory travel experience.

Pre-pandemic business tourism and COVID impact

Expectations for the business tourism sector were high in 2019 (Graph 1). World Tourism Organization (UNWTO, 2020) expected growth of 3-4% in 2020; the Middle East region had the fastest-growing region in terms of international tourist arrivals in 2019, almost doubling the global average (+8%). Growth in Asia and the Pacific slowed. Despite this, it had above-average growth, with a 5% increase in international arrivals. Europe, where growth was also

lower than in previous years (+4%), was leading in international arrivals, with 743 million international tourists in 2019 (51% of the global market) (UNWTO, 2020).

Graph 1
International tourists visiting Spain for work purposes, 2008-2020 (millions)



Source: Statista (2022).

Possible crisis threats such as Donald Trump's policies, Brexit, or the financial instability left by the previous crisis were possible. However, in recent years, none of these aspects had had a significant impact, so no one imagined that the arrival of a global pandemic, which would lead to one of the greatest catastrophes in history, was yet to come.

COVID meant that society had to adapt to a new life. Even the companies were surprised because all the people who contributed to the operation of the companies were affected by the health restrictions imposed by the situation. As a result, companies sometimes must resort to different decisions to continue their activities, although sometimes, they are forced to close down.

Others reduced staff through the innovative "Expediente de Regulación Temporal de Empleo" (ERTE), a working modality already being carried out in a small proportion in certain companies and on certain occasions, but which was now massively applied worldwide in the majority of companies: teleworking.

Teleworking and digital meetings had an impact in many ways, but what concerns us, which is corporate tourism, had a significant, almost decisive impact.

It affected the organization of corporate tourism events with a decrease in tourism services, venues, and transport. It was also required to bring venues up to sanitary standards, affecting costs and profitability. As a result, tourism, in general, underwent a significant transformation while simultaneously trying to provide the most significant possible security for the client regarding safety and hygiene measures.

In the first stage of COVID, the adaptation of spaces and measures led to higher costs and low profitability. On the other hand, in meeting rooms, the most used spaces by companies, there was a considerable decrease in prices as they had to be affordable for the few meetings that could be held face-to-face. It decreased by 40% in 2020/2021 and 15% in 2022 compared to 2019. Recovery will be a reality by 2022.

The latest UNWTO World Tourism Barometer shows that international tourism experienced a strong rebound in the first five months of 2022, with almost 250 million international arrivals recorded. This figure, compared to the 77 million arrivals recorded between January and May 2021, means that the sector has recovered almost half (46%) of the pre-pandemic level of 2019 (UNWTO, 2022).

In 2022 it tends to even out, as far as Spain is concerned, as the most reactivating client in the country is the national one. However, local business tourists cannot yet reach 2019 levels either, although they are in the process of doing so. The combination of leisure and business is a crucial element for the recovery of corporate tourism.

Bleisure travelers

Bleisure tourism combines business and leisure travel (Lichy & McLeay, 2018; Chung et al., 2020). It is the union of business and leisure. It changes people's travel and business and contributes to holiday leisure tourism (Pinho & Marques, 2021). In this way, they have more flexibility in their schedules during the working day, enjoying leisure tourism wherever they are.

Companies are increasingly seeing employees spend part of their day at work and leisure. Moreover, 2 out of 5 business travelers opt for bleisure, according to Braintrust (2019). It also has advantages for employees, as they can become happier and more productive, leading to higher productivity.

The economic factor is also noteworthy, as it allows workers to travel more cheaply and to enjoy a short holiday which, in many cases, they share with their families. It is the case when they include the weekend after working days. For companies, this translates into more motivated employees at work, more significant commitment to the company, and stronger bonds between staff. And, of course, higher productivity for the company.

Travel agencies are essential in corporate tourism due to their alliances with hotels. For medium and large corporate clients, it is easier and more accessible to manage their bookings through an agency.

Although there are different ways to make reservations in hotels or other tourist companies, traditional agencies are better positioned than other modalities. Bleisure tourists, due to their more demanding requirements than other types of tourists, opt for traditional agencies because of the specialized treatment they guarantee to the client. In addition, many travel agencies specialize in business travel, which is why they are indispensable in this trend for combining a few days' holidays.

Looking to the post-pandemic future, the expectation of the arrival of bleisure tourism will help the sector to recover and contribute positively to the attitude of company employees.

Digitalization

Telematic meetings were used before the pandemic. During 2020 and 2021, digitization was chosen as a form of company interaction. However, this threatened the tourism sector, as digitalization in companies is evolving very quickly.

The digitalization pandemic has also brought to light that companies realized a lot of unnecessary travel and face-to-face meetings could be solved remotely. As a result, it has allowed companies to cut costs. However, there is a recovery in conventional forms of business meetings.

Recent restrictions on mobility and direct contact with other people have reinforced the human need for personal relationships. After all, business tourism aims to connect employees and their involvement in the company.

On the other hand, other forms of business are helping the sector to recover significantly, such as digital nomads (workers who are not tied to a single workplace) and the bleisure typology, which, as mentioned in the previous section, could increase their stay by combining it with leisure. Spain is relevant as a setting for this new employment trend.

The elements that explain its potential as a tourist destination play an equally crucial role in positioning the country as a destination for these new professionals. Thus, several Spanish cities are at the top of the rankings of the best cities in the world to live and telework (Expat Insider 2020: https://www.eleconomista.es/economia/noticias/11166843/04/21/Estas-son-las-cuatro-ciudades-espanolas-favoritas-para-vivir-y-teletrabajar-entre-los-extranjeros.html).

It is also worth highlighting the case of Malaga, where large technology companies such as Google and Vodafone are opening hubs, to guarantee the best professional conditions to retain talent, which today go far beyond the salary itself.

The evolution and use of technology are significant here, as it helps to do away with paper and the expense of other scarce materials. For this issue, the pandemic has been positive since, on the one hand, telematic means were the primary means of communication, and on the other hand, the less contact (personal or through objects) there was, the more secure it was perceived to be.

Sustainability

Sustainability has been taking place in business for many years, but it remains an elusive challenge. It is not easy to achieve without prior awareness, not only within companies but also in society. There are many ideas about sustainability, but there are still no defined guidelines that smaller companies can apply. In addition, financing is a crucial aspect of sustainability, as it gives rise to conflicting economic interests on the part of different agents (governmental or business) that hinder progress.

The pandemic has greatly "helped" the sustainability of this sector; by telematically holding all these meetings and events, the environmental impact and carbon footprint that these face-to-face meetings or events used to produce have been significantly reduced.

The main reason for this is transport. People traveled by any means of transport to where the event or meeting was held. As a result, large-scale international events had a high polluting impact. The pandemic eliminated the environmental impact by telematically carrying out all these events and meetings. Therefore, companies are beginning to value proximity as a primary element in reducing their carbon footprint.

Choosing suppliers with strong environmental policies, such as hotels or airlines, is increasingly decisive in celebrating an event or company meeting. In addition, those who respect recycling management or develop Corporate Social Responsibility actions will go first in choosing companies.

It takes time for sustainability actions to be taken by most companies, with 31% currently willing to invest in more sustainable travel, according to GBTA (Global Business Travel Association). On the other hand, business travelers value choosing a sustainable hotel, as we will see below.

METHODOLOGY

A questionnaire was applied to 40 key informants (professionals involved in individual corporate tourism) to understand the changes in their profiles during the pandemic. Applying this questionnaire allowed us to build a different perspective on the corporate tourism market. The 40 people traveled for professional reasons, and their collaboration allowed us to learn about their habits and aspects that have changed during this time.

The number of informants was limited due to scope issues. The questionnaire was applied under limitations for contact with other people. On the other hand, applying it later would not have made it possible to know the actual situation of the sector in a critical situation that would be difficult to repeat. Essential details would have needed to be recovered. Additionally, the analysis of the interviews is complemented with secondary sources.

Firstly, a filter question was asked about whether the person currently travels for business purposes, and of all the respondents, 65% said yes. However, 30% said no but previously traveled for work purposes, which consider a high percentage, in line with what has been studied so far.

Based on people who used to travel but do not currently travel, information was extracted on their travel habits, frequency, and destination of travel. It is important to note that, in terms of destination, the percentages were equal both inside and outside Spain. There was a balance between domestic and international, which has changed in recent years.

Analyzing the opinion of experts in the sector helps to understand the sector's evolution during the pandemic. Furthermore, semi-structured interviews with experts complement the analysis of the questionnaire results. In addition, the interviews help to identify the resilience strategies followed by the different client companies (SME and Multinational). Finally, the results have been enriched with statistical data obtained from official sources and reports presented by the UNWTO (2020, 2022).

ANALYSIS OF RESULTS

The pandemic has not affected all businesses in the same way. As restrictions were lifted, what little activity there was mostly from SMEs and businesses whose services were needed and could not be interrupted by the pandemic. Smaller firms have shown greater resilience to rapid change because they have a more vital link to locality.

Interviews with industry experts

According to the interviews conducted, as of September 2020, hotel occupancy was around 10-15%, and most clients were companies whose work was essential, particularly medical, service and construction, and project companies.

The sector began to recover in 2021, with small and medium-sized companies leading the way due to their need to travel to survive. However, it should not be forgotten that, throughout this year, there were still restrictions on mobility within the national territory between the different autonomous regions.

However, business activity in the tourism sector was mainly domestic, as all the social and health restrictions made the international transit of people difficult. Each of these enterprises is composed of learning individuals. Individual learning depends on the environment (it does not always encourage learning), the motivation to learn, and the capacity to do so (skills, aptitudes, and attitudes that lead to critical thinking. This type of company requires continuous and direct contact with its customers or with its activity, as it does not have the resources and infrastructure of a multinational.

After going out for a short time, companies already needed employee training, team visits, and recruit meetings, so in the first quarter of 2021, trips began to be activated. From then on, new companies have been joining the program.

In the case of multinationals, activity came to a screeching halt. Leading companies were the first to interrupt travel and the last to reactivate it. For these companies, the health of their employees was paramount, and strict protocols were put in place to ensure the health and safety of employees. If the companies were doing well financially, they would consider traveling again, but if the situation was precarious, the first thing they would restrict was traveling, as it was an item that could reduce costs, and so they did.

As for Covid-19, the situation has been very variable. For example, considering the air mobility of each country, the requirements to present a PCR to enter many countries, and border closures, among others.

Telework was effective for large companies, and they have been able to afford it because of their telematic means, advertising, increased purchasing power, and online activities. It has allowed them to invest more in IT equipment and digitalization aspects. They have been able to give their employees the necessary materials to telework or carry out certain activities online.

In terms of teamwork, technology has been fundamental. In the past, if not travel and not see colleagues, but now with all the telematics options, it is possible to keep the team in contact and united.

In some companies, a "rebound effect" is observed when people have not seen each other in person for a long time; people need to see each other in person. There is a need for regular departmental meetings to restore or improve team spirit.

Involvement in the company and the belonging to the company is critical. There are small meetings in the short term, whereas before, it was the other way around. Instead of scheduling it for a few months from now in the hope that the situation would be more favorable, they are organized now. Before, the dynamics were different, long-term scheduled meetings with many people.

They are now resuming face-to-face visits, although only for those situations considered vital for the business, and the rest of the contacts are maintained by teleconferences. For these face-to-face visits, they adjust their trips in terms of number, frequency, and purpose.

On the other hand, health and safety measures are still required, as the safety of their employees is still of paramount importance in large companies. Furthermore, as a supplier, tourism companies must meet their requirements and offer all the needs and conditions demanded by multinationals. Therefore, tourism companies are constantly changing, adapting, and anticipating the client's needs.

Within corporate tourism, the MICE (Meetings, Incentives, Conventions, and Exhibitions/Events) section has been particularly hard hit by the pandemic. As we have already stressed, companies cannot put the health of their employees at risk. Therefore, all pandemic travel restriction policies ensure that the company can continue to operate without the risk of making many people ill if they were to gather for such events. Again, it occurs primarily at the national level, as with SMEs, due to international restrictions and limitations.

However, the MICE section is currently the one that is most influencing the recovery of the business tourism sector and is the basis for the survival of hotels. However, reaching the billing levels of 2019 is difficult, although the volume will increase significantly. Therefore, the possibility of raising prices is expected in the medium term, not before 2023. Remember, complex adaptive systems are agents (SMEs, Multinationals) that perform actions from which they learn to adapt while interacting with each other. (Table 1)

Table 1
Company resilience 2020-2022

	2020	2021	2022
SMES	They did not stop traveling in full	First to be reactivated and quickly	Activated

MULTINATIONALS	They stopped traveling altogether	Last to be reactivated	Some activated

Source: Own elaboration based on expert interviews.

The recovery is expected to be almost complete in the coming years. First, however, it will integrate a new way of meeting: the hybrid model. This new trend allows companies to meet from different locations without requiring many people to travel to another city or country.

The hybrid model has the particularity that part of the attendees is at the meeting place, and another part follows a streaming broadcast. It can be unidirectional or bidirectional, and everyone can participate. For this reason, it is not known whether face-to-face work will be fully recovered, as there is the advantage that having it streamed gives the option of reaching a much broader market.

In addition, experts say that there has been a major shift in how companies plan meetings. Companies have not been traveling and, therefore, not meeting for a long time. They see that as the social beings that we are, we have this need, and now, it is very noticeable as the health situation has been at its best since it began. So, they want to regain that movement and socialization.

Prices

SMEs are now practically reactivated and sometimes exceed pre-pandemic levels in hosting volumes. However, the most changing aspect has been price. With the total paralysis of activity in the country, tourism companies were forced to close their establishments, and not only that, but when they reopened, they had to adjust their prices to a loss-making level for a period.

Gradually it is increasing as demand has grown, but even so, companies going to hotels are still going at tight prices; they have become accustomed to lower rates. It should be noted that, although prices are still far from pre-pandemic, the volume is very even in some companies; it is being exceeded. For comparison, the first quarter of 2022 exceeds 2021, in this case, both in terms of production and nights. Moreover, concerning 2019, it may exceed volume, but not production, mainly because it used to sell higher.

According to professionals, 2022 is excellent—companies to bring their employees together again and, of course, by removing the Covid-19 restrictions. Companies now want face-to-face meetings and not only that, but they are increasing the number of people per event, in

some cases even bringing the whole company together to reactivate the feeling of belonging to the company.

The spring of 2022 saw a significant increase in short-term requests for events or hotel bookings, making sure that the health situation makes it possible and not taking the risk that there might be an unforeseen event in a few months. So again, teleworking was the primary tool to continue the business activity.

Many companies continue to telework, as the pandemic has changed the structure of companies and how they work. For this reason, some companies do not need to travel in the same volumes as before because they have parameterized the online mode, and this modality may be here to stay.

Many companies are keen to get back to doing events, as it will always be different to do it online as it is in person. Face-to-face work involves ways of selling any company and actions for it.

The hybrid model will be maintained for now. It is a balance between essential travel and meetings that are optional or different ways of bringing a company together from different places. This hybrid model will also incentivize MICE, as people see less of each other but will want to do so with better quality when they meet.

On the other hand, eliminating the mask and other restrictions as compulsory will improve the situation by itself, and the fear of meeting again will disappear. Teleworking is going to stay, it has already been adopted by companies (not 100%), but it does not have to affect travel. They just only go to the office sometimes, but if they must travel, they will travel, in any case.

Small meetings may still be able to be held online, but business travel will be resumed. However, from then on, the savings from eliminating travel would have to be replaced by telematic improvements in companies with the consequent investment in digitalization. Therefore, the trend in companies will be to find a balance between meetings that can be done electronically and those that must be face-to-face.

The most striking changes in the corporate customer are the variations in the flexibility conditions for event cancellations or bookings. It is mainly due to the uncertainty we had for two years, as nothing was known for sure, and when everything seemed to recover in the last quarter of 2021, everything went down again.

Customers are uncertain about the future and want to avoid losing money. As a result, it results in fewer long-term confirmations, which experts say used to be the norm. As a result, they are now very short-term bookings, having been a medium to long-term segment.

Travel agencies have an essential role to play here, as many companies will use them as mediators in this respect. It is expected that their activity will increase again and that large companies will use them above all. In the end, it is an agent that guarantees certainty regarding cancellations, Covid measures, and security, among others.

Consequently, tourism companies have adapted to this situation by increasing and relaxing cancellation policies. Moreover, it should be borne in mind that although the Covid-19 era is behind us, issues continue to cause uncertainty, such as Brexit or the ongoing war in Ukraine. These conflicts may similarly affect corporate tourism as the pandemic has.

On the other hand, quality and hygiene standards are aspects customers expect and need to know in advance. In this respect, the tourism companies' rapid adaptation is worth noting, so the client companies hardly had any demands.

Today, the situation has relaxed, but the customer takes it for granted that these measures will be present. Tourism companies have changed their lines of business, specializing in sectors in which they were less focused than small and medium-sized companies since, during this period, they have had more significant and more constant activity. They had to search for the client; after a privileged situation until 2020 where there were no problems, they could even afford to reject specific requests.

At this time, they learned how to attract new customer segments to survive. They had to diversify. Some hotels were very focused on a particular customer segment, but the pandemic has led them to become multi-segment to achieve higher occupancy.

Price flexibility

Before the pandemic, the business was substantial; there was a great demand nationally and internationally. The price was fixed and did not move. Today, in the wake of the situation, a more commercial vision of the segment has been developed, and prices are negotiated and made more flexible, considering customers' different segments and needs.

Response times are changing.

Tourism companies must adapt. Orders are being placed at shorter notice, and adjusting the response to the customer's need is essential. After a situation of zero turnovers, which led to minimal staffing levels, there is now a workload that exceeds the current existing staff, and this must be balanced as soon as possible to continue providing quality service to the customer.

Sustainability

Sustainability has become very important as demand from companies to tourism organizations. Although professionals still need to consider it a decisive aspect in the choice of supplier, it can be a differentiating factor.

The reality is that the current expectations for sustainability are years away. Although the ideas exist, the infrastructure and the mentality to achieve these goals still need to be implemented. Moreover, there is a conflict between the cost ratio and the measures requested by the customer, as they want to avoid assuming higher costs for sustainable services. The road to sustainability is long; if sustainability costs so much, companies with less economic capacity will not be able to adopt sustainable measures.

Future

The recovery in 2022 is going fast. The multinationals have yet to reactivate fully; professionals expect that by the end of the year, it will have increased to a large extent, assuming an almost complete recovery in volumes throughout 2023. As mentioned above, demand will have to increase, considering all types of tourism and a return to regular activity in society.

Once leisure tourism becomes active, it will help corporate tourism. If the pandemic is treated in the same way in all countries, this will give more social flexibility in all aspects so that companies will be less pressured and can return to the usual business of traveling and meeting. By September 2022, activity levels of 80% to 90% compared to 2019 are expected, and by 2023 95%. The trend is for stabilization to be achieved by the end of 2023.

Results of the questionnaire

Based on those who used to travel but are not currently traveling, interesting data was obtained on the alternatives travel companies have sought from these corporate tourists, and thus understand their travel decrease. A total of 91.7% said that the alternative to travel was videoconferencing, which confirms that internal company activity is still on the move, although not face-to-face. Looking to the future, the majority (66.7%) think that their company will resume business travel, although some do not know or even say no. In addition, all of those who used to travel on business feel that the pandemic has been the determining factor in their company's elimination of travel.

Concerning the responses of corporate tourists who currently travel, the following results were obtained: 65.4% say that they travel less than before because of the pandemic and therefore carry out their tasks via teleworking and videoconferencing. 19.2% say that they

have remained the same. 15.4% have traveled more because of changes in their jobs, increased responsibilities, and the drop in the incidence of Covid-19.

For individual corporate tourism, customer habits about how much they traveled and where they went have been ascertained. The answers are similar. However, we also asked where they travel now and saw that domestic travel had increased considerably. 61.5% travel domestically, 19.2% travel only internationally, and another 19.2% travel domestically and internationally. 57.7% indicated traveling to the same destinations as always and to the same hotels; 23.1% mentioned the same but different hotels, and 19.2% indicated different destinations and hotels.

As for expecting different quality and hygiene standards than before the pandemic, the free responses are divided into three blocks: 52% expect better quality and hygiene, 32% expect it to be the same as before, and 16% do not expect it to have to be better.

A fascinating question is about the difference in travel expenditure between before and now. Although more companies say they would maintain the same expenditure, 42.3% confirm that expenditure has increased. They explain the reason for their higher spending and comment that, on the one hand, it is due to the measures and services adapted to COVID-19 and, on the other hand, the price increase.

Regarding alternatives to travel, a high percentage (53.8%) indicated that they were videoconferences. We can see that this is a high percentage and confirms what we saw in the interviews with professionals; some companies have been unable to stop. 34% expressed that the alternative was teleworking, and 11.5% indicated using other alternatives. 88.5 percent of respondents said the pandemic influenced their company's travel, while 11.5 percent said it did not. 11.5% said it did not.

About sustainability, we wanted to know whether the companies surveyed had developed measures for implementing aspects related to sustainability, and the answer was as follows: 65.8% stated that they had, 23.7% said that they had not, and 10.5% did not know.

It confirms that although the road is long, companies gradually acquire sustainable guidelines. Furthermore, it is interesting to know if corporate tourists would go to a sustainable hotel and if they would pay more for it, and although most of them are willing to stay in one (73.7% said yes), only 47.2% agree to pay a higher price (52.8% indicated that they would not pay more). So here we see the problem between sustainability and the economic expense involved.

CONCLUSIONS

The analysis of the resilience of corporate tourism in the last three years was made thanks to the results obtained from interviews with industry experts and questionnaires to corporate clients. The results show that adaptation was achieved through four factors: short-term planning, hybrid model, sustainability, and bleisure tourism.

Digitalization has played a significant role in this time. All existing technological means have been exploited and have even evolved favorably. It is not to say that it has threatened business tourism. In the end, it has made a place for itself between travel and meetings, giving rise to the hybrid system, which will endure in the long term because of its cost-effectiveness in terms of price, comfort, and security.

Travel will not be stopped because of health measures because, at the time of writing, there are few restrictions associated with Covid-19, although there may still be more fear than limitations. Therefore, the health risk will not be a lasting reason, although we must remember that it has been for many months.

In support of the fact that travel will not stop, we can add the creation of many new start-up companies in the wake of the pandemic, which means that they are adding to the business tourism activity. However, others have disappeared. It means that the market has shown itself to be flexible and agile and is restructuring. Despite the restrictions suffered and the digital solutions found, there is a relevant aspect to be considered: telematic developments are functional, but connection, bonding, engagement, team spirit, and even creativity also need scenarios in which to meet and experiment physically, and here we can expect further development of MICE in the future.

In addition, the bleisure concept is also relevant, as it improves involvement with the company and its purpose, helping companies nurture and retain the talent of their workforces, which is a fundamental element of differentiation.

As far as sustainability is concerned, it has proved to be a complicated issue. First, a change in the mentality of groups and individuals in society is necessary, as more is needed for companies to establish sustainability guidelines, which only some of them would be able to meet.

It is mainly because financial budgets are proposed that companies with less purchasing power are unwilling to assume today. In addition, there needs to be more accurate and complete information from the media, which would help this global awareness. So, although

many companies have high sustainability values, we have realized the difficulty of implementing sustainable parameters without collaborating with other sectors.

The trend in corporate tourism is positive, as confirmed by professionals in the sector. Likewise, the data estimate that the pre-pandemic levels of 2019 will be surpassed in the coming years.

It is a fact that uncertainty and fear have grown in society as a result of this virus, and any situation that arises in the coming years will keep businesses, individuals, and society in general on their toes. It will mean that everything will be done cautiously so that any threatening situation will be dealt with one step at a time. Both the current war in Ukraine and the emergence of a new strain of the virus in Shanghai are issues that cause us to be on constant alert and that, for the time being, prevent the return to normality that we all hope for

Finally, it is concluded that resilient corporate tourism companies have changed their line of business, accepted to operate in the short term, and offered greater flexibility in pricing. The pandemic has had many positive effects on corporate tourism. Thinking about ways of action and recovery to adapt to the situation has made business lines change, leading to good results that have contributed not only to the exit of the crisis but also to the personal growth of the companies.

REFERENCES

Adekola, J., & Clelland, D. (2020). Two sides of the same coin: Business resilience and community resilience. *Journal of Contingencies and Crisis Management, 28*(1), 50-60.

Basile, G., & Dominici, G. (2016). A complex adaptive system framework for management and marketing studies. In *Chaos, Complexity and Leadership* (83-97). Springer, Cham

Belén, C. (2013). *Turismo de Negocios*. Tesis para obtener el grado de la Licenciatura en Turismo. Buenos Aires: Universidad Abierta Interamericana.

Belitski, M., Guenther, C., Kritikos, A. & Thurik, R. (2022). Economic effects of the COVID-19 pandemic on entrepreneurship and small businesses. *Small Business Economics, 58*(2), 593-609.

Braintrust. (2019). Estrategia hotelera para conectar con los viajeros bleisure. *Braintrust*. Recuperado de: https://w.tvw.braintrust-cs.com/estrategia-hotelera-viajeros-bleisure/

Bruner, J. (2018). *Desarrollo cognitivo y educación*. Ediciones Morata

Cardona, J. (2014). La estacionalidad turística e sus potenciales impactos. *Rosa dos Ventos*, *6*(3), 446-468.

Contreras, F., & Alvarado, T. (2021). Resilience and Social Inclusion: A Critical Reflection on Internal Marketing. *Mercados y Negocios,* (43), 77-96.

Chung, J., Choi, Y., Yoo, B.., & Kim, S. (2020). Bleisure tourism experience chain: implications for destination marketing. *Asia Pacific Journal of Tourism Research*, *25*(3), 300-310.

Dahles, H., & Susilowati, T. (2015). Business resilience in times of growth and crisis. *Annals of Tourism Research, 51*, 34-50.

De Medrano, C., & de Paz Higuera, A. (2010). Investigar sobre el derecho, el deseo y la obligación de aprender en la sociedad del conocimiento. *Revista de Educación,* (1), 17-30.

Demmer, W., Vickery, S., & Calantone, R. (2011). Engendering resilience in small-and medium-sized enterprises (SMEs): a case study of Demmer Corporation. *International journal of production research, 49*(18), 5395-5413.

Durieux, F., do Amaral, S. & Lenzi, F. (2013). Superando la estacionalidad turística: planificación y gerenciamiento de eventos y comunicación integrada de marketing. *Estudios y perspectivas en turismo*, *22*(6), 1214-1231.

Esteban, M. (2002). El diseño de entornos de aprendizaje constructivista. *Revista de educación a distancia (RED),* (6).

Estrada, K., & Alvarado, T. (2020). Capacidad dinámica y recursos para la resiliencia en empresas artesanales de cerámica en Jalisco, México. *Cuadernos Latinoamericanos de Administración*, 16(30).

Etemad, H. (2004). International entrepreneurship as a dynamic adaptive system: towards a grounded theory. *Journal of international entrepreneurship*, 2(1),5-59.

González, R. (2006). Diseño de entornos para el desarrollo de la autonomía en el aprendizaje. *Aula abierta*, (87), 89-103.

Haataja, M., & Okkonen, J. (2004). Competitiveness of knowledge intensive services. *Frontiers of e-business research*, 255-266.

Hamel, G., & Valikangas, L. (2003). En busca de la resiliencia. *Harvard Business Review*, 81(9), 40-52.

Iversen, A., Asche, F., Hermansen, Ø., & Nystøyl, R. (2020). Production cost and competitiveness in major salmon farming countries 2003–2018. *Aquaculture, 522*, 735089.

Langdon, C., & Sikora, R. (2006). Conceptualizing co-ordination and competition in supply chains as complex adaptive system. *Information Systems and e-Business Management, 4*(1), 71-81.

Lichy, J., & McLeay, F. (2018). Bleisure: motivations and typologies. *Journal of Travel & Tourism Marketing*, *35*(4), 517-530.

Lu, Y., Wu, J., Peng, J., & Lu, L. (2020). The perceived impact of the Covid-19 epidemic: evidence from a sample of 4807 SMEs in Sichuan Province, China. *Environmental Hazards, 19*(4), 323-340.

Ma, F., Xue, T., & Huang, S. (2020). On the Conceptual Framework of Tourism Complex Research from the Perspective of the Theory of Complex Adaptive System. *Tourism Management & Technology Economy, 3,* 1-15.

Minolli, C. (2005). Empresas resilientes algunas ideas para construirlas. *Temas de Management, 3(*1), 20-25.

Morgado, I. (2014). *Aprender, recordar y olvidar.* Ariel.

Ngustav, A., & Ijirshar, V. (2020). SMEs as drivers of economic recovery and sustainability during covid-19 and beyond in Nigeria. *Journal of Economics and Allied Research, 4*(4), 234-247.

Ostelea. (2020). *Las empresas sostenibles generan nuevos escenarios*. Ostelea Tourism Management School. https://www.ostelea.com/actualidad/blog-turismo/sostenibiIidad/Ias-empresassostenibles-generan-nuevos-escenarios

Peña, A., Gómez, J., & Rubio, A. (1999). *Potenciar la capacidad de aprender y pensar: qué cambiar para aprender y cómo aprender para cambiar*, 149. Narcea Ediciones

Pérez, A. (2002). Elementos para el análisis de la interacción educativa en los nuevos entornos de aprendizaje. *Pixel-Bit. Revista de Medios y Educación, 19*, 49-61.

Pinho, M., & Marques, J. (2021, September). The bleisure tourism trend and the potential for this business-leisure symbiosis in Porto. *Journal of Convention & Event Tourism,* 22 (4).

Prot, B. (2004). *Pedagogía de la motivación: cómo despertar el deseo de aprender,* 171.Narcea Ediciones.

Rullani, E. (2002). The industrial cluster as a complex adaptive system. In *Complexity and industrial clusters* (35-61). Physica-Verlag HD

Statista (2022). *Evolución anual del número de turistas internacionales que visitaron España por motivos laborales de 2008 a 2020.* Hamburgo: Statista. Link: https://es.statista.com/estadisticas/475389/numero-de-turistas-extranjeros-de-negocios-en-espana/

Swaminathan, R. (2022). How Can Resilience Create and Build Market Value?. *Journal of Creating Value, 8*(2), 204-218.

Tejedor, B., & Aguirre, A. (1998). Proyecto Logos: investigación relativa a la capacidad de aprender de las empresas españolas. *Boletín de estudios económicos, 53*, 231.

Umarov, S., Durmanov, A., Kilicheva, F., Murodov, S., & Sattorov, O. (2019). Greenhouse vegetable market development based on the supply chain strategy in the Republic of Uzbekistan. *International Journal of Supply Chain Management,* 8(5), 864-874.

UNWTO. (2020). *El turismo internacional sigue adelantado a la economía global*. Ginebra: UNWTO.

UNWTO. (2022). *El turismo internacional consolida su fuerte recuperación en medio de crecientes desafíos*. Ginebra: UNWTO.

Yang, Z., Yin, M., Xu, J., & Lin, W. (2019). Spatial evolution model of tourist destinations based on complex adaptive system theory: A case study of Southern Anhui, China. *Journal of Geographical Sciences, 29*(8), 1411–1434. doi:10.1007/s11442-019-1669

Mercados y Negocios
1665-7039 printed
2594-0163 on line
Year 24, n. 48, January-April (2023)

Managerial Skills and Organizational Performance: Competitive Advantage

Habilidades gerenciales y desempeño organizacional: ventaja competitiva

https://doi.org/ 10.32870/myn.vi48.7688

Fernando Penagos Guzmán
Universidad de la Amazonia (Colombia)
https://orcid.org/0000-0002-5252-9569
f.penagos@udla.edu.co
Octavio Hernández Castorena
Universidad Autónoma de Aguascalientes (Mexico)
https://orcid.org/0000-0002-2609-6616
octavio.hernandezc@edu.uaa.mx
Mónica García Solarte
Universidad del Valle (Colombia)
https://orcid.org/0000-0001-6219-0012
monica.garcia@correounivalle.edu.co

Received: August 16, 2022
Accepted: December 29, 2022

ABSTRACT

The purpose of the following research was to analyze how management skills affect organizational performance and contribute to SMEs' competitive advantage. This study has a quantitative approach by applying questionnaires to a sample of 273 companies in Caquetá, mainly in the commerce, manufacturing, and services sectors. The main results reveal that managerial skills and organizational performance are variables that impact the competitive advantage of SMEs in the department of Caquetá.

Keywords: Management skills, organizational performance, competitive advantage, SMEs

JEL CODE: M19

Mercados y Negocios por Departamento de Mercadotecnia y Negocios Internacionales. Universidad de Guadalajara se distribuye bajo una Licencia Creative Commons Atribución-NoComercial 4.0 Internacional. Basada en una obra en http://mercadosynegocios.cucea.udg.mx/index.php/MYN.

RESUMEN

El propósito de esta investigación fue analizar cómo las habilidades gerenciales inciden en el desempeño organizacional y contribuyen a la ventaja competitiva de las PYMES del departamento de Caquetá, Colombia. Este estudio tiene un enfoque cuantitativo mediante la aplicación de cuestionarios a una muestra de 273 empresas del Caquetá, principalmente del sector comercio, manufactura y servicios. Los principales resultados revelan que las habilidades gerenciales y el desempeño organizacional son variables que impactan en la ventaja competitiva de las PYMES del departamento de Caquetá.

Palabras clave: habilidades gerenciales, desempeño organizacional, ventaja competitiva, PYMES

Código Jel**:** M19

INTRODUCTION

Technological advances, industrial development, globalization, and the evolution of work, have caused significant changes in the styles and dynamics of companies, generating new challenges for developing competitive advantage as business dynamics. Therefore, developing new strategies and tools is necessary to adapt to this reality, where the manager's role is paramount (Minh, 2020).

Different sectors in Colombia have been affected by new economic realities caused by internationalization, globalization, innovation, emerging markets, technology, and others, which in turn create changes in the structure, strategic development, and decision-making. From this perspective, it can be inferred that aspects such as management skills and the study of organizational performance can identify factors of competitive sales and SMEs to achieve better adaptability and competitiveness.

In this sense, for the context of the research paper, SMEs are defined as the type of company of greater participation in emerging and highly competitive markets where, for Jennings and Beaver (1997), one of the main problems that this type of companies have is due to little planning since their management is focused on the solution of problems as they arise, generating in this way short-term solutions. In addition, the development and handling of management tools and techniques could be more efficient since it is centered on planning developed more at the internal operative level rather than as a strategic vision of the organization (Cagliano et al., 2001).

Some of the main limitations SMEs face is based on access to new technologies (Fajardo et al., 2017), which prevent the efficient structuring of internal processes and optimization of the value chain. Similarly, there is a direct relationship between the performance of organizations and the role of the manager in SMEs since they are responsible for various operational and strategic functions (Fuller-Love, 2006). For example, it is seen in the companies' minor expansion because there is no specialized personnel for each type of task, and the manager oversees most of them (Gray, 2002).

Sometimes, the owner sees the company as a source that covers his basic needs (Frangieh & Rusu, 2021). Therefore, SMEs' success and business management are due to the individual skills of the manager (usually the owner) rather than the design and application of specific management processes or practices (Hudson & Smith, 2007; Hoffman & Tadelis, 2021).

It is acknowledged that managers of SMEs play a central role in the success or failure of SMEs (Lepak & Snell, 1999; Audretsch & Belitski, 2021) as they are the main actors of

performance units, economic gains, and the creation of competitive advantage (Woodruffe, 1993; Fatonah & Haryanto, 2022). Because of these factors, that competitive advantage is seen as a reflection of the manager's skills supported by the capability and commitment of the workforce (Liu & McMurray, 2004).

Different conceptual and empirical articles present arguments that show that high levels of skills provide advantages in organizations (Adner & Helfat, 2003; Tiron et al., 2020). Although different studies have been conducted to identify the development of managerial skills of most significant importance to managers (Mintzberg, 1973; Mumford et al., 2002, Mumford et al., 2007), there is still no agreement, especially on those skills that enable better organizational performance and in turn a better competitive advantage (Yukl et al., 2002).

For this reason, the research proposal is established here, which aims to identify the managerial skills the manager has in an organization and how these skills are related to competitive sales and the economic development of SMEs by establishing a new paradigm of the contemporary version of organizational management. Thus, the objective of this research proposal is based on the preliminary analysis of managerial skills and their influence on the competitive advantage and business performance of SMEs in the department of Caquetá, Colombia.

RESEARCH QUESTION

How do managerial skills affect the competitive advantage and organizational performance of SMEs in the department of Caquetá, Colombia?

SMEs

Micro, small and medium-sized enterprises (SMEs) in the country are increasingly integrated into different industrial sectors; they currently account for many employment opportunities for Colombian citizens. According to figures from the Ministry of Commerce, Industry and Tourism (2019), SMEs represent 90% of the companies in Colombia and produce 80% of the national employability, contributing around 50% of the Gross Domestic Product (GDP). Therefore, it is considered that the effectiveness of organizations is measured through their management levels. This indicator transcends all areas of a company (Table 1).

Table 1. Classification of SMEs in Colombia

Economic sector	Micro enterprises	Small businesses	Medium-sized enterprises
Manufacturing sector	Those whose income from the ordinary annual activities is less than or equal to twenty-three thousand five hundred and sixty-three Tax Value Units (23,563 UVT).	Those whose income from ordinary annual activities is higher than twenty-three thousand five hundred and sixty-three Tax Value Units (23,563 UVT) and less than or equal to two hundred and four thousand nine hundred and ninety-five Tax Value Units (204,995 UVT).	Those whose income from ordinary annual activity is higher than two hundred and four thousand nine hundred and ninety-five Tax Value Units (204,995 UVT) and less than or equal to one million seven hundred and thirty-six thousand five hundred and sixty-five Tax Value Units (1'736,565 UVT).
Service sector	Those whose income from ordinary annual activities is less than or equal to thirty-two thousand nine hundred and eighty-eight Tax Value Units (32,988 UVT).	Those whose income from ordinary annual activities is higher than thirty-two thousand nine hundred and eighty-eight Tax Value Units (32,988 UVT) and less than or equal to one hundred and thirty-one thousand nine hundred and fifty-one Tax Value Units (131,951 UVT).	Those whose income from ordinary annual activities is higher than one hundred and thirty-one thousand nine hundred and fifty-one Tax Value Units (131,951 UTV) and less than or equal to four hundred and eighty-three thousand thirty-four Tax Value Units (483,034 UVT).
Commerce sector	Those whose income from ordinary annual activities is less than or equal to forty-four thousand seven hundred sixty-nine Tax Value Units (44,769 UVT).	Those whose income from annual activities is higher than forty-four thousand seven hundred and sixty-nine Tax Value Units (44,769 UVT) and less than or equal to four hundred and thirty-one thousand one hundred and ninety-six Tax Value Units (431,196 UVT).	Those whose income from ordinary annual activities is higher than four hundred and thirty-one thousand one hundred and ninety-six Tax Value Units (431,196 UVT) and less than or equal to two million one hundred and sixty thousand six hundred and ninety-two Tax Value Units (2'160,692 UVT).

Source: Ministry of Commerce. Decree 957 of June 5, 2019.

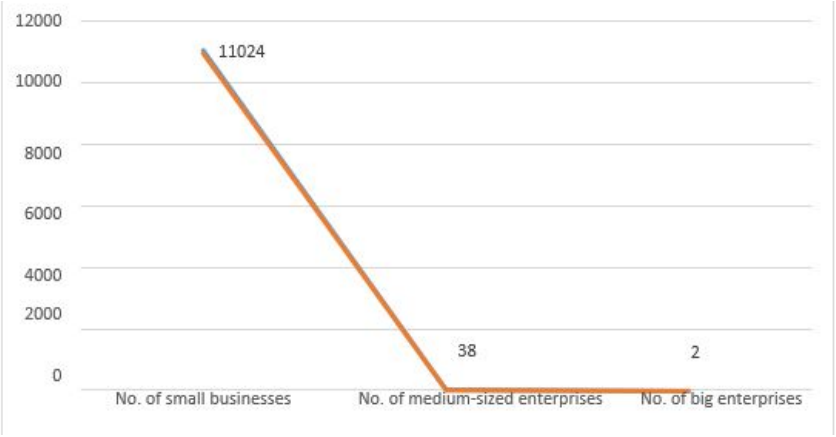
In Colombia, according to Decree number 957 of June 5, 2019, for a company to be considered Micro, Small or Medium, it must consider the criterion of gross sales assimilated according to income from ordinary annual activities, “according to the provisions of Article 2 of the Law of 2000, as amended by Article 43 of Law 1450 of 2011”.

The income level according to the development of ordinary activities that determines the business size varies depending on the economic sector where the company develops. In this regard, according to what is dictated by Decree 957 of 2019, the classification is shown in the previous table.

Another aspect of analyzing SMEs has based on their presence in the department of Caquetá. The Graphic 1 presents the number of companies in the department by size for 2018. Small

companies represent 99,6%, with 11,024, 38 are medium-sized, and only two are registered as large companies (Ministry of Commerce, 2019).

Grpah 1
Number of companies by size



Source: Report of Socioeconomic Indicators from the department of Caquetá 2018 -2019 (Ministry of Commerce (2019).

The counties with the highest number of companies in 2018 were Florencia with 6,431, San Vicente del Caguán with 1,405, and Cartagena del Chaira with 603 companies. Conversely, the number of companies decreased between 2017 and 2018. The counties with the most significant decrease were Solano with 26%, Albania with 20%, and Alone with 16%.

According to the Competitiveness Department Index (CDI), determined by the Private Competitiveness Council (PCC) and the University of Rosario (2015), the department of Caquetá is in stage 1 of competitive development, ranking 22nd in the overall ranking. This position which has been kept for three consecutive years. The measurement comprises 90 variables grouped into ten dimensions or pillars of competitiveness. (Gil, 2019).

In the regional context, there is a high presence of micro, small and medium-sized family-owned businesses. According to the Caquetá Regional Economic Situation Report (DANE, 2014), 174 companies were constituted in the Chamber of Commerce of Florencia for Caquetá with a capital of $8,262 million, which achieved a growth of 64% compared to the previous year; the activity with the highest participation was services with 39.3%, followed by transport with 22.2%.

MANAGEMENT SKILLS IN SMES

Concerning the discussion of management skills in small and medium enterprises as a fundamental part of strategic direction, Laguna et al. (2012) identified the value of general competencies that allow the success of SMEs to the extent that the development of specific managerial skills is achieved. Management skills are due to personality traits and managerial traits, managing to establish processes and goals that directly influence the success of organizations (Rauch & Frese, 2007a, 2007b).

Regarding the theoretical discussion on the influence of managerial skills in SMEs, Rauch and Frese (2007a) identified that managerial competencies (organizational ability and ability to recognize opportunities) directly affect strategic performance, while skills focus on technical and industry aspects that influence business growth.

One of the aspects that measure the relationship of managerial skills in SMEs is based on personality factors in the development of the entrepreneurial activity, but not as factors of entrepreneurial actions but rather as an ability for the development of models that allow better performance in SMEs with the possibility of change (Markman, 2007).

That is why general competencies become a predictor of success in SMEs, focusing on specific skills for developing business management activities in changing environments (Laguna et al., 2012). Another aspect that defines performance in SMEs is the ability of the manager to influence their employees and thus increase the possibility of success of the company (Vazirani, 2010).

However, these skills depend on the manager's training, experience, and capabilities (Hezlett, 2004). Therefore, a high level of general skills (leadership, teamwork, communication, cooperation) increases the ability to develop management skills (market knowledge, organizational performance, logistics) which are crucial to success in SMEs (Laguna et al., 2012).

Organizational performance in SMEs

Small and medium enterprises are an essential part of the economic growth of nations. However, there is a great challenge to keep their performance in the long term. For this reason, adopting management systems focused on administrative practices is key to achieving better business performance focusing on competitiveness (Cagliano et al., 2001).

Nonetheless, it is complex to define a single style of management system that allows better performance in companies; that is why it is clear the need to achieve better development of management skills in SMEs according to the characteristics of each company (Fuller-Love, 2006). Moreover, attempting to define or integrate the various perspectives or inputs that allow better performance in SMEs is complex due to the variety of structures of these

companies. For this reason, the performance management process is based on individual and collective work between all areas (Ates et al., 2013).

Consequently, the process of performance in the organization focuses on the development of strategies. For this, it is necessary to have a clear idea of the vision, mission, values, and objective, at the corporate and individual levels (Bititci et al., 1997; Otley, 1999; Armstrong, 2017; Hagos & Pal, 2010).

Other aspects that measure SME performance are the requirement and management of financial and human resources as well as training and development at individual and corporate levels (Lansbury, 1988). With the implementation of strategies as objectives, it is necessary to design performance indicators (Otley, 1999; Busi & Bititci, 2006) where the objectives must be related to individual work to identify responsibilities and define appropriate behavior to achieve a better performance, especially talking about small companies (Otley, 1999; Agunis & Kraiger, 2009).

From this perspective, one of the most influential variables to measure performance in SMEs is the verification of planned and executed objectives; when managers know this information so they can confirm or change current action plans, improve strategic objectives if necessary, and define more accurate activities to the reality of the organization (Bititci et al., 1997; Otley, 1999).

Furthermore, measuring the performance of companies, especially SMEs, allows decision-making based on the feedback of what is being done and the successes or failures that have been obtained to meet changing environments and understand current behaviors of the organization, such as the market (Bititci et al., 1997; Otley, 1999; Barnes & Radnos, 2008; Moynihan, 2008).

In an organization, this means challenging and revising the current strategy to adapt to the changing business environment according to emerging needs (Otley, 1999; Busi & Bititci, 2006; Stiffler, 2006; Parthiban & Goh, 2011). Finally, another aspect that enables better performance in companies is based on communication, which is the process and the use of appropriate and effective means of communication (i.e., what to communicate and how) as a mechanism to create more significant commitment and interest in the development of different activities (Otley, 1999; Verweire et al., 2004; Barnes & Radnor, 2008).

According to the literature, there are different approaches to measuring performance in organizations, but the adoption of this practice in SMEs is low, so it fails to define a straightforward approach to assess the specific needs of these companies in the pursuit of performance (Bititci et al., 1997; Hudson & Smith, 2007).

In addition, the definitions of performance and its activities do not consider the size of the company, so performance management in the context of SMEs requires a deeper understanding of the specific characteristics of SMEs (Ates et al., 2013). Similarly, Cangliano et al. (2001) accepted that the development of better performance in SMEs requires the adoption of advanced methods and better management practices in management systems, which is affected by the lack of management for decision-making and control in these companies since the individual who oversees this work in SMEs focuses more on operational work, the development of multi-functions and short-term planning. For this reason, SMEs that look for a high level of sustainable performance must develop capabilities for the practice of performance management with knowledge of all areas involved (Piwowar-Sulej, 2021; Malik et al., 2021).

Competitive advantage in SMEs

Micro and small companies usually do not have a highly structured hierarchy that allows them to adapt better to change, so organizational flexibility is considered a fundamental tool to achieve better performance and competitive success (Heredia et al., 2009). In this scenery, this type of company must adjust its human talent according to the variations in demand and budget variables to anticipate environmental changes (Pacheco, 2005).

Developing strategies focused on better organizational performance requires the creation of competitive advantages in micro and small enterprises (Valenzo et al., 2021; Pardo et al., 2022), for which it is required to determine different historical data that allows knowing and analyzing the behavior of these companies in terms of their competitive strength (García, 2021). The competitive advantage of company is focused on its ability to learn from measuring the variables of productivity and efficiency (Ballina, 2015).

For Grant (2005), the competitive advantage in companies depends on the combination of resources and strategies, thus achieving organizational capabilities, which is a critical factor for business development. Therefore, managerial skills as an organizational capacity represent a factor of primary importance in SMEs (Audretsch & Belitski, 2021).

However, in this type of company, managers usually have the little strategic capacity in a predominantly function-oriented culture, which prevents the delegation and development of management initiatives, limiting continuous learning (Camisón, 1997). In addition, the limited use of technologies (Zevallos, 2006) and the short professional positions prevent the development of organized processes focused on a competitive advantage.

The ability to generate products and compete concerning costs is complex for SMEs, unlike large industries (Marino & Pariso, 2021). However, their proximity to customers allows them to differentiate themselves in more specific products and better adapt to their needs (Pelham, 1997).

In this scenery, the competitive advantage of SMEs is based on the development of products according to the knowledge of customer needs, thus managing to define a target market and reducing production costs (Fernández & Martos, 2014). Similarly, if SMEs want to reach global markets, they must adopt information and communication technologies (Tarutea & Gatautis, 2014). These tools allow better business management and a better competitive advantage (Levi & Powell, 2005).

In other words, SMEs must be beyond the traditional management system, representing the correct way to carry out organizational activities However, more is needed because it is necessary to identify sustainable factors over time with a differential mark in the competitive market (Ferrer & Clemenza, 2006).

METHODOLOGY

The following section contains the methodological design implemented in this research work that describes how the empirical work was developed:

a) The data analysis is quantitative, descriptive, correlational, and explanatory. It works as an explanation of two variables and the degree of influence of these. Identifies the management skills assumed by the manager in an organization and their relationship with the competitive advantages and economic development of SMEs

b) From another perspective, the current deductive research attempts to achieve some conclusions starting from diverse theoretical premises, which are evaluated from an empirical work of cross-sectional character that yields data of quantitative type from the implementation of the instruments of investigation.

c) The process to collect relevant information according to the study's objective will be carried out according to the research topics. For the study of managerial skills, the proposal of Katz (1955) will be applied according to the instrument made and applied in the research of Khan and Ghouri (2011), eliminating variables into factors and sub-factors, which measure technical skills, human skills, and conceptual skills. The study of variables related to business performance will be measured according to the rational model presented by Quinn and Rohrbaugh (1983); this model evaluates measurement sub-variables such as Human Relations, Open Systems, Internal Processes, and Rational Goals

d) A survey of two blocks identified as Management Skills and Organizational Performance was implemented.

e) The sample is stratified random with a sample of 273 units (SMEs in the department of Caquetá, Colombia).

Development of measures

As for the instrument implemented in this research of SMEs in the department of Caquetá, Colombia, it was designed with two blocks identified as Managerial Skills, implementing the instrument made by Northouse (2010); and Organizational Performance, implementing the instrument made by Quinn and Rohrbaugh (1983). The blocks were measured with a 1-5 Likert scale with the following values: 1 (Strongly disagree), 2 (Disagree), 3 (Neither agree nor disagree), 4 (Agree), and 5 (Strongly agree).

RESULTS: MANAGEMENT SKILLS

The reliability and validity of the questionnaire (18 items) prepared for this analysis were evaluated considering all the questions, and as Table 2 indicates, Cronbach's Alpha coefficient was 0.953. Therefore, considering it is a value higher than 0.7,
it is a reliable data collection instrument with strong internal consistency.

Table 2
Reliability statistics

Cronbach's alpha	Number of questions (items)
0,953	18

Source: Own elaboration.

Table 3 shows the descriptive statistics comprising the managerial skills questions of the 273 companies surveyed. The question with the highest relevance is "I would like to develop strategies for the growth of my company," with an average of 4.45. It is followed by "I am good at completing the things assigned to me," with a mean of 4.38, and the third most relevant question is "I like to go into detail on how things work," with a mean of 4.37.

Table 3
Item statistics

	Median	Deviation
I like to go into detail about how things work	4,37	,931
Generally, I find it relatively easy to adapt ideas to people's needs.	4,29	,887
I like to work with abstract ideas (indeterminate, indefinite, imprecise).	3,42	1,381
I'm fascinated by technical things	3,93	1,034
Being able to understand others is the most critical part of my job.	4,29	,866
Seeing the "big picture" is easy for me	4,08	,883
One of my skills is being good at making things work.	4,34	,860
My main concern is to have a supportive communication climate.	4,25	,868

I am intrigued by complex organizational problems	3,98	,923
I find it easy to follow instructions and fill out forms	4,16	,916
For me, it is crucial to understand the social fabric of the company	4,29	,891
I would like to develop strategies for the growth of my company	4,45	,882
I am good at completing the things that have been assigned to me	4,38	,846
Getting all the parts to work together is a challenge I enjoy	4,28	,897
Creating a mission statement is rewarding work.	4,25	,824
I understand how to do the basic things that are expected of me	4,34	,842
I am concerned about how my decisions affect the lives of others.	4,16	,964
I am attracted to thinking about the values and philosophy of the organization.	4,24	,895

Source: Own elaboration.

Organizational Performance

The reliability and validity of the questionnaire were evaluated by taking all the questions as indicated in Table 4. The reliability and validity of the questionnaire were assessed by taking all the questions as indicated in Table 4, where the Cronbach's Alpha coefficient is 0.944 with a value higher than 0.7 which shows that it is a reliable data collection instrument with strong internal consistency.

Table 4
Reliability statistics

Cronbach's alpha	Number of questions (items)
0,944	12

Source: Own elaboration.

Regarding organizational performance, Table 5 shows the descriptive statistics of the organizational performance questions. The question with the highest relevance is "quality of the product and/or service" with an average of 4.45. The "customer satisfaction" question has an average of 4.43, and the "image of the company and its products/services" has an average of 4.37.

Table 5
Item statistics

	Media	**Deviation**
Quality of the product and/or service	4,45	,804
The efficiency of internal operational processes	4,30	,803
The efficiency of staff tasks	4,32	,798
Customer satisfaction	4,43	,774
Quick adaptation to market needs	4,29	,783
Image of the company and its products/services	4,37	,751
Increased market share	4,03	,884
Increased profitability	4,04	,922
Increased productivity	4,14	,903
Employee motivation/satisfaction	4,25	,839
Reduced staff turnover	3,85	1,094
Reduced absenteeism	3,89	1,099

Source: Own elaboration.

Table 6

Input / eliminated variables

Model	Input variables	Eliminated variables	Method
1	HGTOTALb	.	Enter

a. dependent variable: TOTAL PERFORMANCE
b. All requested variables entered.

Source: Own elaboration.

Table 7
Summary of the model

Model	R	Adjusted R-Squared	Adjusted R-Squared	Standard error of estimate
1	,246a	,060	,057	,67198

a. Predictors: (Constant), TOTALHG

Source: Own elaboration.

Table 8
ANOVA

Model		Sum of Squares	gl	Root mean square	F	Sig.
1	Regression	7,873	1	7,873	17,435	,000b
	Residual value	122,371	271	,452		
	Total	130,244	272			

a. Dependent variable: TOTAL PERFORMANCE
b. Predictors: (Constant), TOTALHG

Source: Own elaboration.

Table 9
Coefficients[a]

Model		Non-standardized coefficients		Standardized coefficients	t	Sig.
		B	Dev. Error	Beta		
1	(Constant)	3,166	,250		12,650	,000
	TOTALHG	,246	,059	,246	4,175	,000

a. Dependent variable: TOTAL PERFORMANCE

Source: Own elaboration.

By obtaining 0.00 significant (Table 8), managerial skills do affect the organizational performance of SMEs in the department of Caquetá, Colombia (Table 9).

CONCLUSION

Management skills and organizational performance are terms that allude to the experience and knowledge of staff, leading to developing competitive advantages, which generate value for organizations. In this case, the objective of this research was to analyze how managerial skills affect organizational performance and contribute to SMEs' competitive advantage in the Caquetá, Colombia department.

As the most important conclusions of the current research, it can be mentioned that through the statistical analysis carried out (variables, correlation, and simple linear regression), it was possible to establish that there is a relationship between the constructs taking into account the observed data, which is a positive thing for both constructs, considering a five-point Likert-type response scale.

The relevance of managerial skills and organizational performance in SMEs' competitive advantages in Caquetá Colombia's department is acknowledged. However, it is suggested to implement future studies within this area of investigation since the results obtained are based on a preliminary sample.

REFERENCES

Adner, R., & Helfat, C. (2003). Corporate effects and dynamic managerial capabilities. *Strategic Management Journal, 24*(10 SPEC ISS.), 1011–1025. https://doi.org/10.1002/smj.331

Aguinis, H. & Kraiger, K. (2009). Beneficios de la formación y el desarrollo para las personas y los equipos, las organizaciones y la sociedad. *Revista anual de psicología, 60* (1), 451-474.

Armstrong, M. (2017). *Armstrong sobre la reinvención de la gestión del desempeño: construir una cultura de mejora continua*. Editores de páginas de Kogan.

Ates, A., Garengo, P., Cocca, P. & Bititci, U. (2013). El desarrollo de la práctica de gestión de las PYME para una gestión eficaz del desempeño. *Revista de desarrollo de pequeñas empresas y empresas*.

Audretsch, D., & Belitski, M. (2020). Knowledge complexity and firm performance: evidence from the European SMEs. *Journal of Knowledge Management*, 25(4), 693-713.

Ballina, F. (2015). Ventajas competitivas de la flexibilidad numérica en micro, pequeñas y medianas empresas del Distrito Federal. *Revista Problemas Del Desarrollo, 183*(46), 165– 188.

Barnes, D. & Radnor, Z. (2008). La medición del rendimiento y gestión del rendimiento: la perspectiva de gestión de operaciones. En Thorpe, R. & Holloway, J. (Eds), *Performance Gestión: perspectivas multidisciplinarias*, Palgrave Macmillan, Basingstoke, págs. 89-106.

Bititci, EE. UU., Carrie, AS & McDevitt, L. (1997). Sistemas integrados de medición del desempeño: una guía de desarrollo. *Revista Internacional de Gestión de Operaciones y Producción, 17*(5), 522-34.

Busi, M. & Bititci, EE. UU. (2006). Gestión colaborativa del desempeño: brechas actuales e investigación futuras. *Revista Internacional de Productividad y Gestión del Desempeño, 55*(1), 7-25.

Cagliano, R., Blackmon, K. & Voss, C. (2001). Small Companies under microscope: international diferencias en las prácticas y el desempeño de la gestión de producción / operaciones. *Sistemas de fabricación integrados, 12*(7), 469-82.

Camisón, C. (1997). *La competitividad de la PYME industrial española: estrategia y competencias distintivas*. Madrid: Civitas.

DANE. (2014). *Informe de Coyuntura Económica Regional Caquetá*. Florencia: Dane.

Fajardo M., Cuellar, Y. & Vargas, F. (2017). Las TIC como estrategia en la mejora y desarrollo de las pymes en el Municipio de Florencia Caquetá para su mayor competitividad. *XI congreso de las Red Internacional de Investigación en Competitividad.* México: Universidad de Guadalajara

Fatonah, S., & Haryanto, A. (2022). Exploring market orientation, product innovation and competitive advantage to enhance the performance of SMEs under uncertain evens. Uncertain Supply Chain Management, 10(1), 161-168.

Fernández, C. & Martos, M. (2014). Intellectual capital and distinctive skills in SMEs of the timber industry in Argentina. *Revista de Administração de Empresas, 54*(6), 634-646. doi: 10.1590/S0034-759020140604

Fernández, C., & Martos, M. (2016). Capital intelectual y ventajas competitivas en pymes basadas en recursos naturales de Latinoamérica. *Innovar, 26*(60), 117-132

Ferrer, J. & Clemenza, C. (2006). Habilidades gerenciales como fundamento de la estrategia competitiva en los sectores de actividad metalmecánica venezolana. *Tendencias, 7*(1), 81-100.

Frangieh, M., & Rusu, D. (2021). The effect of the carrot and stick transactional leadership style in motivating employees in SMEs. *Revista de Management Comparat International, 22*(2), 242-252.

Fuller-Love, N. (2006). Desarrollo gerencial en pequeñas empresas. *Revista Internacional de Revisiones de gestión 8*(3), 175-90.

García, A. (2021). Las ventajas competitivas y su alcance en posicionamiento estratégico. Universidad Tecnológica de San Juan del Río. Ponencia. Recuperado de https://www.researchgate.net/publication/356784322_Las_ventajas_competitivas_y_su_alcance_en_el_posicionamiento_de_las_pymes

Gil, C. (2019). Analisis de la aplicación de la gestión integral en seis empresas comerciales de tipo familiar en Florencia. *Desarrollo e Innovación*, 273 - 288.

Grant, R. (2005). *Contemporary Strategy Analysis*. New York: John Wiley & Sons.

Gray, C. (2002). Emprendimiento, resistencia al cambio y crecimiento en pequeñas empresas. *Diario de Desarrollo de pequeñas empresas y empresas, 9*(1), 61-72.

Hagos, T. & Pal, G. (2010). Los medios de análisis y evaluación del desempeño societario. *Annales Universitatis Apulensis-Series Oeconomica* , *12* (1).

Heredia, A., Castillo, M. & Juárez, S. (2009). Innovación-competitividad, relación fundamental en el funcionamiento de las micro, pequeñas y medianas empresas. *Mercados y Negocios., 10*(2), 48–67.

Hezlett, S. (2004). Las ventajas de informar a su mentor: una comparación de gerentes con supervisores y mentores no supervisores. *Academia Internacional de Desarrollo de Recursos Humanos Conferencia (AHRD),* Austin, marzo.

Hoffman, M., & Tadelis, S. (2021). People management skills, employee attrition, and manager rewards: An empirical analysis. *Journal of Political Economy*, 129(1), 243-285.

Hudson, M. & Smith, D. (2007). Implementación de desempeño alineado estratégicamente medición en pequeñas empresas. *Revista Internacional de Economía de la Producción,* 106(2) 393-408.

Jennings, P. & Beaver, G. (1997). El desempeño y la ventaja competitiva de las pequeñas empresas: una perspectiva de gestión. *Revista Internacional de Pequeñas Empresas 15*(2), 34-58.

Laguna, M., Wiechetek, M. & Talik, W. (2012). Las competencias de los gerentes y su éxito empresarial. *Revista de Negocios de Europa Central, 1* (3).

Lansbury, R., & Quince, A. (1988). Performance appraisal: A critical review of its role in human resource management. *Australian Personnel Management*, 75-96.

Lepak, D. , & Snell, S. (1999). The human resource architecture: Toward a theory of human capital allocation and development. *Academy of Management Review, 24*(1), 31–48.

Levi, M., & Powell, P. (2005). *Strategies for Growth in SMEs: the role of information and information systems.* London: Elsevier Limited.

Liu, L., & McMurray, A. (2004). Frontline leaders. *Journal of European Industrial Training, 28*(2/3/4), 339–352. https://doi.org/10.1108/03090590410527708

Malik, A., Budhwar, P., Patel, C., & Laker, B. (2021). Holistic indigenous and atomistic modernity: Analyzing performance management in two Indian emerging market multinational corporations. Human Resource Management, 60(5), 803-823.

Marino, A., & Pariso, P. (2021). The transition towards to the circular economy: European SMEs' trajectories. Entrepreneurship and Sustainability Issues, 8(4), 431.

Markman, G. (2007). *Competencias del emprendedor,* en *el psicología del emprendimiento, eds.* Baum, JR, Frese, M. y Baron, R., A., Mahwah,Londres: Lawrence Erlbaum Assoc., 67-92.

Minh, H. (2020). Revisión de capacidades dinámicas, capacidad de innovación, capacidades emprendedoras y sus consecuencias. *Journal of Asian Finance, Economics and Business 7*(8), 485-494. doi: 10.13106 / jafeb.2020.vol7.no8.485

Ministry of Commerce (2019). *Informe indicadores socioeconómicos del Departamento de Caquetá*. Florencia: Ministry of Commerce.

Ministerio de Comercio, Industria y Turismo. (2019). www.mincit.gov.co. Obtenido de http://www.mincit.gov.co/CMSPages/GetFile.aspx?guid=9ab3dec0-e908-4697-a21fa28e8a5efb65

Mintzberg, H. (1973). *La naturaleza del trabajo directivo*, New Jersey: Prentice-Hall.

Moynihan, D. (2008), *The Dynamics of Performance Management: Construyendo información y Reforma*, Washington: Georgetown University

Mumford, M., Scott, G., Gaddis, B., & Strange, J. (2002). Leading creative people: Orchestrating expertise and relationships. *The leadership quarterly, 13*(6), 705-750.

Mumford, T., Campion, M., & Morgeson, F. (2007). The leadership skills strataplex: Leadership skill requirements across organizational levels. *The Leadership Quarterly, 18*(2), 154-166.

Northouse, P. (2010). *Leadership: theory and practice (5th edition).* Los Angeles: Sage Publications

Otley, D. (1999). Gestión del rendimiento: un marco para los sistemas de control de la gestión. *Management Accounting Research, 10*(4), 363-82.

Pacheco, M. (2005). Ventaja competitiva: gestión en el nivel de empresa. *Mercados y Negocios., 12*, 125–146.

Pardo, Y., Hernández, O., & Andrade, M. (2022). Key Factors of Competitiveness and Sustainability in Livestock Systems of The Andean-Amazonian Piedmont. *Mercados y Negocios*, (45), 27–48. https://doi.org/10.32870/myn.vi45.7663

Parthiban, P. y Goh, M. (2011). Un modelo integrado para la gestión del rendimiento de las unidades de fabricación. *Evaluación comparativa: una revista internacional*, *18* (2), 261-281.

Pelham, A. (1997). Mediating Influences on the Relationship between Market Orientation and Profitability in Small Industrial Firms. *Journal of Marketing Theory and Practice*, *5*(3), 55-76.

Piwowar-Sulej, K. (2021). Core functions of Sustainable Human Resource Management. A hybrid literature review with the use of H-Classics methodology. Sustainable Development, 29(4), 671-693.

Quinn, R. & Rohrbaugh, J. (1983). Un modelo espacial de criterios de efectividad: Hacia un enfoque de valores competitivos para el análisis organizacional. *Ciencias de la administración, 29* (3), 363-377.

Rauch, A. & Frese, M. (2007a). Volvamos a poner a la persona en la investigación empresarial: un metanálisis sobre la relación entre los rasgos de personalidad de los propietarios de empresas, la creación de empresas y el éxito. *Revista europea de psicología del trabajo y de las organizaciones, 16* (4), 353-385.

Rauch, A. & Frese, M. (2007b). Devolvamos a la persona en la investigación sobre el espíritu empresarial: un metaanálisis sobre la relación entre los rasgos de personalidad de los dueños de negocios, creación de empresas y éxito. *Revista europea de trabajo y Psicología Organizacional*, *16*, 353-385.

Stiffler, M. (2006), *Performance: Creando la organización impulsada por el rendimiento*, New York: Wiley.

Tarutea, A., & Gatautis, R. (2014). ICT impact on SMEs performance. *Procedia - Social and Behavioral Sciences*, *110*, 1218-1225.

Tiron, A., Deliu, D., Farcane, N., & Dontu, A. (2020). Managing change with and through blockchain in accountancy organizations: a systematic literature review. Journal of Organizational Change Management, 34(2), 477-506.

Valenzo, M., & Gonzaléz, A. (2021). Capacidad de adaptación y competitividad en microempresas de abarrotes en Cuitzeo, México. *Mercados y Negocios*, (43), 49–76. https://doi.org/10.32870/myn.v0i43.7629

Vazirani, N. (2010). Competencias y modelo de competencias: Una breve descripción de su desarrollo y aplicación. *Journal of Management, 7*: 121-131.

Verweire, K., Van Den Berghe, L. & Berghe, L. (Eds.). (2004). *Gestión integrada del desempeño: una guía para la implementación de la estrategia*. Sabio.

Woodruffe, C. (1993). What Is Meant by a Competency? *Leadership & Organization Development Journal, 14*(1), 29–36. https://doi.org/10.1108/eb053651

Yukl, G., Gordon, A., & Taber, T. (2002). Taxonomy of Leadership Behavior: Half Century of Behavior Research. *Journal of Leadership & Organizational Behavior, 9*(1), 15–32. https://doi.org/10.1177/107179190200900102

Zevallos, E. V. (2006). Obstáculos al desarrollo de las pequeñas y medianas empresas en América latina. *Cuadernos de Difusión, 11*(20), 75-97.

Mercados y Negocios
1665-7039 printed
2594-0163 on line
Year 24, n. 48, January-April (2023)

FINANCIAL AND ECONOMIC INDICATORS

Break-even point

https://doi.org/10.32870/myn.vi48.7690

Juan Gaytán Cortés
Universidad de Guadalajara (México)
jgaytan@cucea.udg.mx
https://orcid.org/0000-0002-4388-0138

The break-even point is one of the most used tools when carrying out financial analysis in order to make the most appropriate business decisions, the calculation and result of this tool is used to determine the economic amount in sales and the volume of units of products or necessary services to cover operating expenses and variable costs, showing its result that there is no profit or loss in the business activity, thus achieving the operating break-even point.

The calculations necessary for profitability are made based on the assumption of the expected normal level of operations of a project, which is why the calculation considers the normal use of installed capacity, but the entrepreneurs know that normal capacity is rarely used, or total in the actual operations of the Project. The uncertainty related to internal supply and external demand forces entrepreneurs to ask themselves: What happens if the project is not executed at the assumed capacity level? Will the project be in a position to at least recover its costs? Among others, these risk-induced questions motivate the calculation of the break-even point (Satya & Deshpande, 1982).

The historical background of the break-even point as a tool that is part of the financial analysis for decision-making in organizations can be found in an accumulation of works carried out by various authors, highlighting the following among others:

Henry Hess (1903), who graphically raised the relationship between utility, cost, volume and price, capturing it through the "crossing point graph" (cross over chart).

Knoeppel & Seybold (1918) reflected in his book, Graphic Production Control, the classification between fixed and variable costs of the company. Until the 1960s some authors still referred to this representation as: Knoeppel graph.

Mercados y Negocios por Departamento de Mercadotecnia y Negocios Internacionales. Universidad de Guadalajara se distribuye bajo una Licencia Creative Commons Atribución-NoComercial 4.0 Internacional. Basada en una obra en http://mercadosynegocios.cucea.udg.mx/index.php/MYN.

Walter Rautenstrauch (1930), in his book: The Successful Control of Profits, uses the name break-even point to describe the relationships of cost, volume, price and profit. In his book too, he gives a detailed explanation of its use for decision-making in the company.

In the investigation carried out by Fordon (1951), mention is made of the Graph of Results (profit-volume graph). As a consequence of this graph, in the 1970s the denomination began to be used: Palanca Operativa (Operating Leverage), named after its similarity of the graph with a lever.

At present, in financial analysis and in decision-making by organizations, the break-even point tool is used very frequently in its classification as operational break-even point and financial break-even point.

The operating break-even point is a financial ratio used to measure the degree of operating leverage that a company has. The objective of the calculation of the operating break-even point is to determine the amount of sales or income sufficient to cover the fixed operating expenses and the variable costs in a project or an organization.

The financial break-even point is a financial ratio that is used to measure the degree of financial leverage that a company has. The objective of calculating the financial break-even point is to determine the amount of sales or income sufficient to cover fixed expenses, variable costs and the cost or interest generated by the debt contracted to support the tangible and intangible investments in a project or a company. organization.

Economic and financial indicators are useful tools that benefit organizations by facilitating timely and appropriate decision-making in relation to their corporate and financial strategies.

Next, the evolution of some economic and financial indicators of the Mexican environment is described and shown to facilitate decision-making related to personal and business strategies in an integral manner.

1. National Consumer Price Index (INPC, Spanish)
2. The Price and Quotation Index of the Mexican Stock Exchange (IPC, Spanish)
3. Exchange rate
4. Equilibrium interbank interest rate (TIIE, Spanish)
5. CETES rate of return
6. Investment units (UDIS, Spanish)

1. NATIONAL CONSUMER PRICE INDEX (INPC)

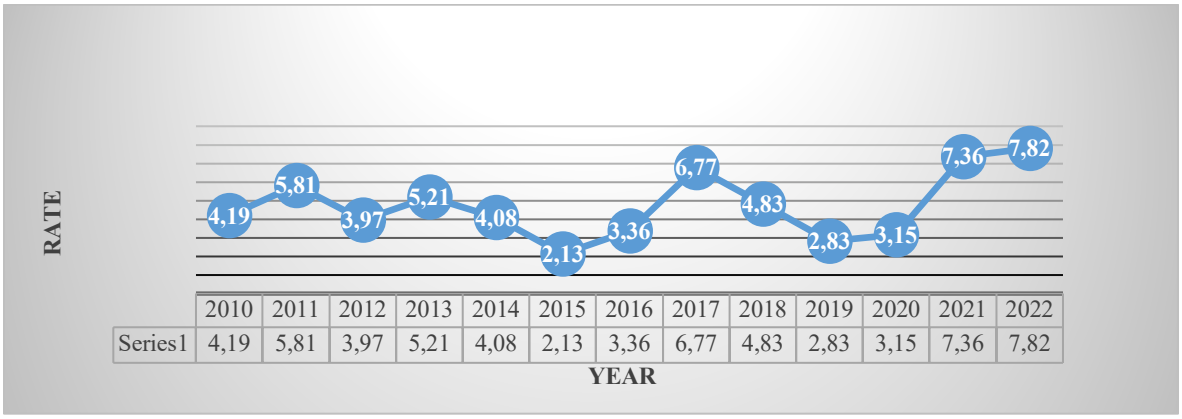
Born in 1995 and reflecting changes in consumer prices, measures the general increase in prices in the country. It is calculated fortnightly by the Bank of Mexico and INEGI (2022). INPC is published in the Official Gazette of the Federation on the 10th and 25th of each month. The reference period is the second half of December 2010.

Table 1. Accumulated inflation in the year (Base: 2nd. Fortnight of December 2010 = 100 with data provided by *Banco de México*)

Periodo	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*
Enero	1.48	0.77	0.98	0.79	0.90	-0.09	0.38	1.70	0.53	0.09	0.48	0.86	0.59
Febrero	2.15	1.42	1.47	1.46	1.15	0.09	0.82	2.29	0.91	0.06	0.90	1.50	1.43
Marzo	2.52	1.84	1.55	1.99	1.43	0.51	0.97	2.92	1.24	0.44	0.85	2.34	2.43
Abril	1.98	0.72	0.69	1.81	1.24	0.25	0.65	3.04	0.90	0.50	-0.17	2.67	2.98
Mayo	0.60	-0.70	-0.65	0.95	0.91	-0.26	0.20	2.92	0.73	0.21	0.22	2.88	3.17
Junio	0.49	-0.41	-0.41	1.12	1.09	-0.09	0.31	3.18	1.12	0.27	0.76	3.43	4.04
Julio	0.56	-0.04	0.32	1.14	1.42	0.06	0.57	3.57	1.66	0.65	1.43	4.04	4.81
Agosto	0.91	0.30	0.92	1.31	1.73	0.27	0.86	4.08	2.26	0.63	1.82	4.24	5.54
Septiembre	1.27	0.73	1.12	1.61	2.18	0.27	1.47	4.41	2.69	0.89	2.06	4.88	6.19
Octubre	2.35	2.33	2.12	2.77	2.74	1.16	2.09	5.06	3.22	1.44	2.68	5.76	6.79
Noviembre	3.89	4.87	3.86	4.57	3.57	1.71	2.89	6.15	4.10	2.26	2.76	6.97	7.41
Diciembre	4.19	5.81	3.97	5.21	4.08	2.13	3.36	6.77	4.83	2.83	3.15	7.36	7.82

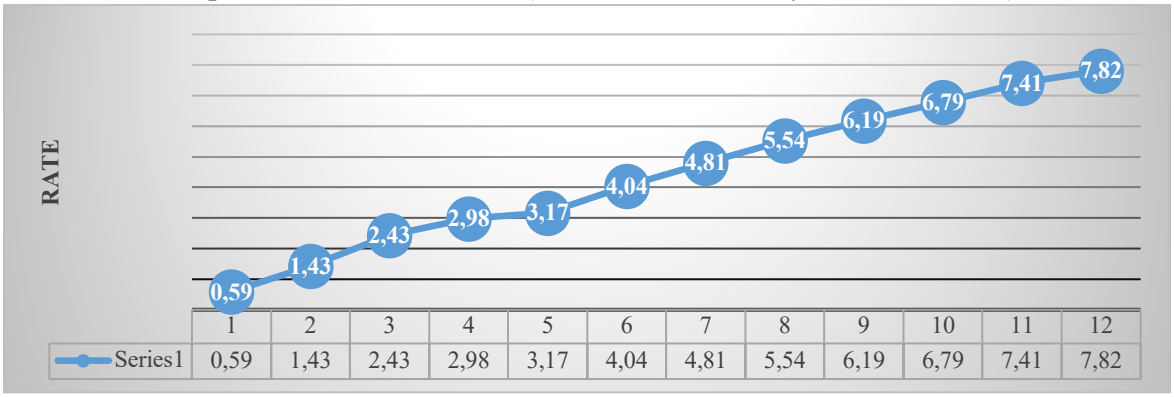
Source: Own elaboration (INEGI, 2022). Route: Indicadores económicos de coyuntura > Índices de precios > Índice nacional de precios al consumidor. Base segunda quincena de julio de 2018=100 > Mensual > Índice > Índice general

Graph 1. Inflation in Mexico (2010-2022 accumulated at the end of the year)



Source: Own elaboration (INEGI, 2022). Route: Indicadores económicos de coyuntura > Índices de precios > Índice nacional de precios al consumidor. Base segunda quincena de julio de 2018=100 > Mensual > Índice > Índice general

Graph 2. Inflation in Mexico (accumulated January-December 2022)



Source: Own elaboration (INEGI, 2022). Route: Indicadores económicos de coyuntura > Índices de precios > Índice nacional de precios al consumidor. Base segunda quincena de julio de 2018=100 > Mensual > Índice > Índice general

2. THE PRICE AND QUOTATION INDEX OF THE MEXICAN STOCK EXCHANGE (IPC)

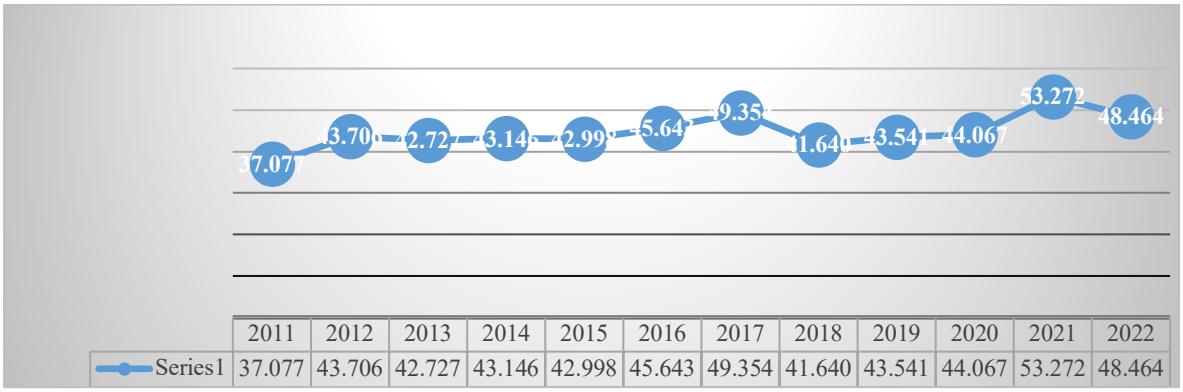
Represents the change in the values traded on the Mexican Stock Exchange concerning the previous day to determine the percentage of rising or fall of the most representative shares of the companies listed therein.

Table 2. The Price and Quotation Index of the Mexican Stock Exchange (Base: October 1978, 0.78=100)

Periodo	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*
Enero	30,392	36,982	37,422	45,278	40,879	40,951	43,631	47,001	50,456	43,988	44,862	42,986	51,331
Febrero	31,635	37,020	37,816	44,121	38,783	44,190	43,715	46,857	47,438	42,824	41,324	44,593	53,401
Marzo	33,266	37,441	39,521	44,077	40,462	43,725	45,881	48,542	46,125	43,281	34,554	47,246	56,537
Abril	32,687	36,963	39,461	42,263	40,712	44,582	45,785	49,261	48,354	44,597	36,470	48,010	51,418
Mayo	32,039	35,833	37,872	41,588	41,363	44,704	45,459	48,788	44,663	42,749	36,122	50,886	51,753
Junio	31,157	36,558	40,199	40,623	42,737	45,054	45,966	49,857	47,663	43,161	37,716	50,290	47,524
Julio	32,309	35,999	40,704	40,838	43,818	44,753	46,661	51,012	49,698	40,863	37,020	50,868	48,144
Agosto	31,680	35,721	39,422	39,492	45,628	43,722	47,541	51,210	49,548	42,623	36,841	53,305	44,919
Sep.	33,330	33,503	40,867	40,185	44,986	42,633	47,246	50,346	49,504	43,011	37,459	51,386	44,627
Oct.	35,568	36,160	41,620	41,039	45,028	44,543	48,009	48,626	43,943	43,337	36,988	51,310	49,922
Nov.	36,817	36,829	41,834	42,499	44,190	43,419	45,286	47,092	41,733	42,820	41,779	49,699	51,685
Dic.	38,551	37,077	43,706	42,727	43,146	42,998	45,643	49,354	41,640	43,541	44,067	53,272	48,464

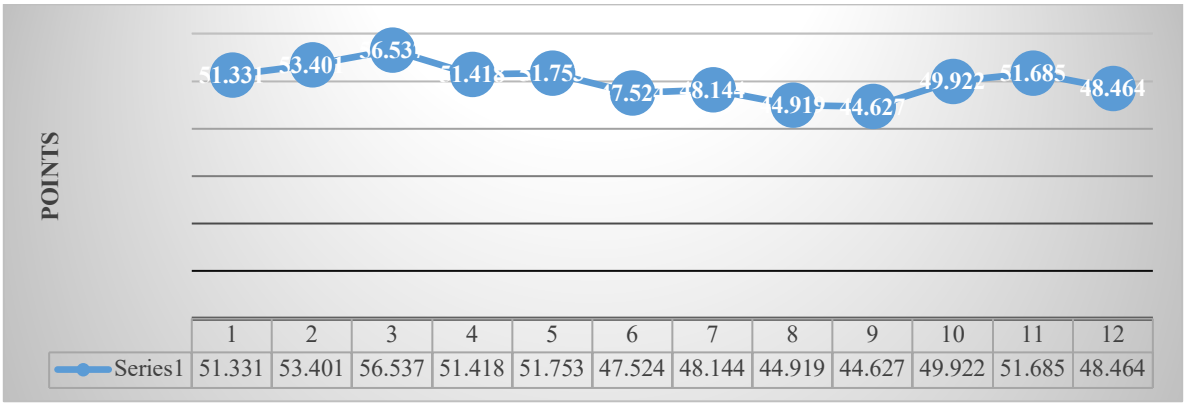
Source: Own elaboration (BANXICO, 2022).
https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?sector=7&accion=consultarCuadro&idCuadro=CF57&locale=es

Graph 3. The Price and Quotation Index of the Mexican Stock Exchange, 2010 - 2022 (Score at the end of each year)



Source: Own elaboration (BANXICO, 2022).
https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?sector=7&accion=consultarCuadro&idCuadro=CF57&locale=es

Graph 4. The Price and Quotation Index of the Mexican Stock Exchange, January-December 2022 (Score at the end of each month)



Source: Own elaboration (BANXICO, 2022).
https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?sector=7&accion=consultarCuadro&idCuadro=CF57&locale=es

3. EXCHANGE RATE

It is the value of the Mexican peso with respect to the dollar calculated with the daily average of the five most important banks in the country, which reflects the spot price (cash), negotiated between banks. It is highly related to Inflation, the interest rate, and the Mexican Stock Exchange.

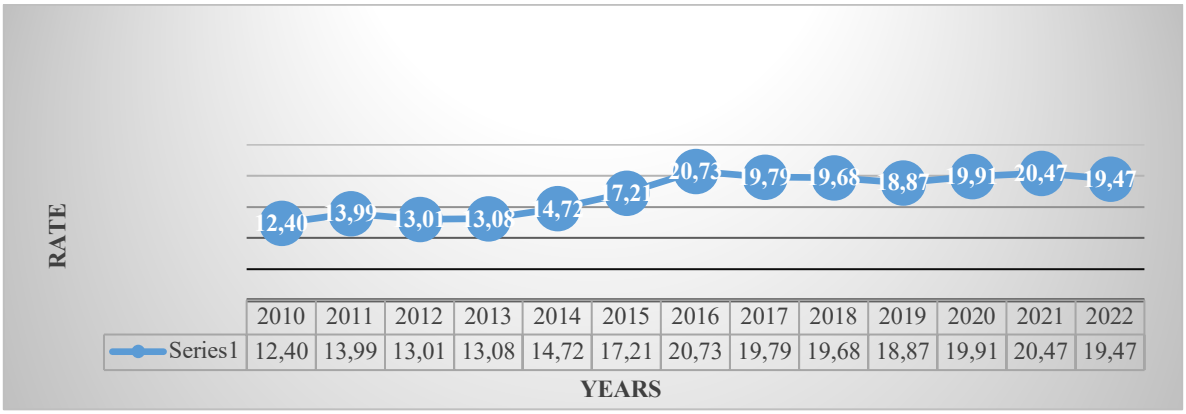
Table 3. Exchange rate (National currency per US dollar, parity at the end of each period)

Periodo	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*
Enero	12.81	12.02	12.95	12.71	13.37	14.69	18.45	21.02	18.62	19.04	18.91	20.22	20.74
Febrero	12.96	12.17	12.87	12.87	13.30	14.92	18.17	19.83	18.65	19.26	19.78	20.94	20.65
Marzo	12.61	11.97	12.80	12.36	13.08	15.15	17.40	18.81	18.33	19.38	23.48	20.44	19.99
Abril	12.24	11.59	13.20	12.16	13.14	15.22	19.40	19.11	18.86	19.01	23.93	20.18	20.57
Mayo	12.68	11.63	13.91	12.63	12.87	15.36	18.45	18.51	19.75	19.64	22.18	19.92	19.69
Junio	12.72	11.84	13.66	13.19	13.03	15.57	18.91	17.90	20.06	19.21	23.09	19.91	20.13
Julio	12.83	11.65	13.28	12.73	13.06	16.21	18.86	17.69	18.55	19.99	22.20	19.85	20.34
Agosto	12.73	12.41	13.27	13.25	13.08	16.89	18.58	17.88	19.07	20.07	21.89	20.06	20.09
Septiembre	12.86	13.42	12.92	13.01	13.45	17.01	19.50	18.13	18.90	19.68	22.14	20.56	20.09
Octubre	12.45	13.20	13.09	12.89	13.42	16.45	18.84	19.15	19.80	19.16	21.25	20.53	19.82
Noviembre	12.33	14.03	13.04	13.09	13.72	16.55	20.55	18.58	20.41	19.61	20.14	21.45	19.40
Diciembre	12.40	13.99	13.01	13.08	14.72	17.21	20.73	19.79	19.68	18.87	19.91	20.47	19.47

NOTE: Exchange rate FIX by The Banco de México, used for settle obligations denominated in foreign currency. Quote at the end

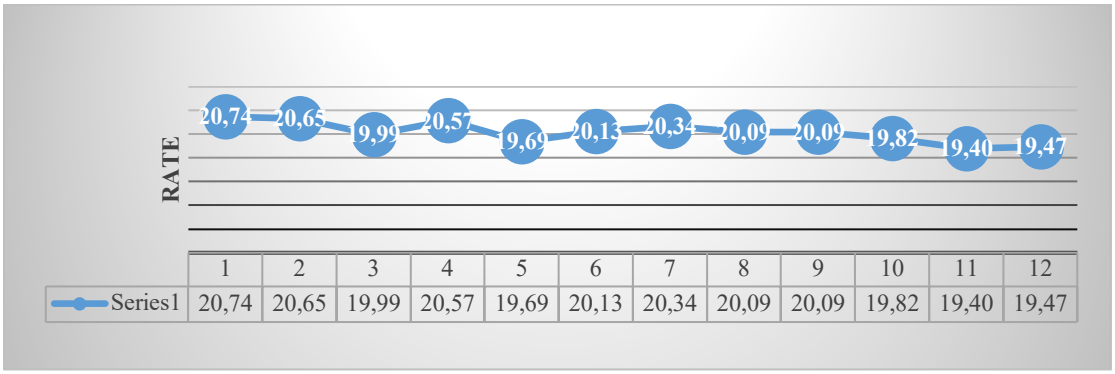
Source: Own elaboration (BANXICO, 2022).
https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?sector=6&accion=consultarCuadro&idCuadro=CF102&locale=es

Graph 5. Exchange rate (National currency per US dollar, 2010-2022, FIX parity at the end of each year)



Source: Own elaboration (BANXICO, 2022).
https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?sector=6&accion=consultarCuadro&idCuadro=CF102&locale=es

Graph 6. Exchange rate (National currency per US dollar, January-December 2022, FIX parity at the end of each month)



Source: Own elaboration (BANXICO, 2022).
https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?sector=6&accion=consultarCuadro&idCuadro=CF102&locale=es

4. EQUILIBRIUM INTERBANK INTEREST RATE (TIIE)

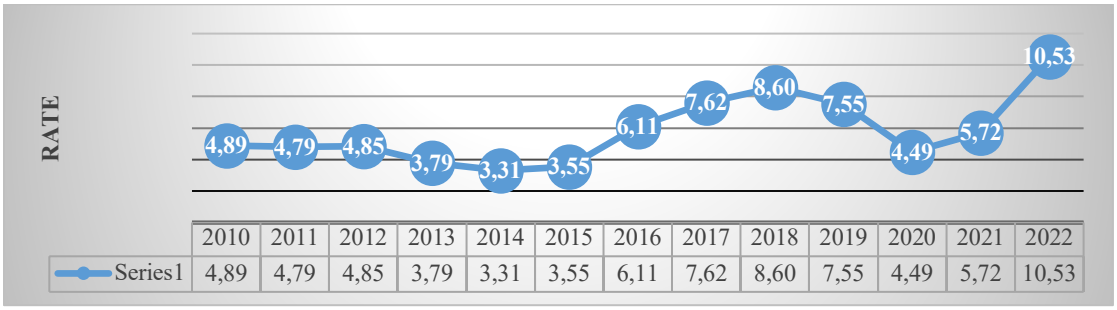
On March 23, 1995, the Bank of Mexico, to establish an interbank interest rate that better reflects market conditions, released the Interbank Equilibrium Interest Rate through the Official Gazette of the Federation.

Table 4. Equilibrium interbank interest rate (28-day quote)

Periodo	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Enero	4.91	4.86	4.79	4.84	3.78	3.29	3.56	6.15	7.66	8.59	7.50	4.47	5.72
Febrero	4.92	4.84	4.78	4.80	3.79	3.29	4.05	6.61	7.83	8.54	7.29	4.36	6.02
Marzo	4.92	4.84	4.77	4.35	3.81	3.30	4.07	6.68	7.85	8.51	6.74	4.28	6.33
Abril	4.94	4.85	4.75	4.33	3.80	3.30	4.07	6.89	7.85	8.50	6.25	4.28	6.73
Mayo	4.94	4.85	4.76	4.30	3.79	3.30	4.10	7.15	7.86	8.51	5.74	4.29	7.01
Junio	4.94	4.85	4.77	4.31	3.31	3.30	4.11	7.36	8.10	8.49	5.28	4.32	7.42
Julio	4.92	4.82	4.78	4.32	3.31	3.31	4.59	7.38	8.11	8.47	5.19	4.52	8.04
Agosto	4.90	4.81	4.79	4.30	3.30	3.33	4.60	7.38	8.10	8.26	4.76	4.65	8.50
Sep.	4.90	4.78	4.81	4.03	3.29	3.33	4.67	7.38	8.12	8.04	4.55	4.75	8.89
Octubre	4.87	4.79	4.83	3.78	3.28	3.30	5.11	7.38	8.15	7.97	4.51	4.98	9.56
Noviembre	4.87	4.80	4.85	3.80	3.31	3.32	5.57	7.39	8.34	7.78	4.48	5.13	10.00
Diciembre	4.89	4.79	4.85	3.79	3.31	3.55	6.11	7.62	8.60	7.55	4.49	5.72	10.53

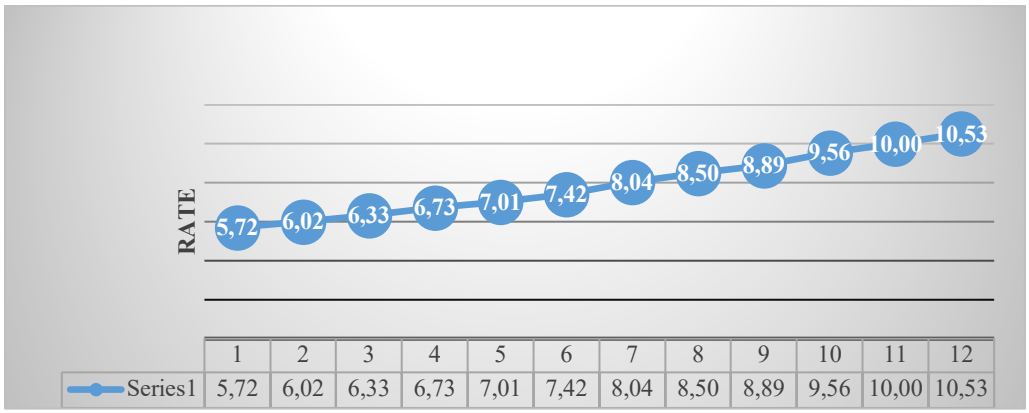
Source: Own elaboration (BANXICO, 2022).
https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?sector=18&accion=consultarCuadro&idCuadro=CF101&locale=es

Graph 7. Equilibrium interbank interest rate, 2010- 2022 (at the end of each year)



Source: Own elaboration (BANXICO, 2022).
https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?sector=18&accion=consultarCuadro&idCuadro=CF101&locale=es

Graph 8. Equilibrium interbank interest rate, January-December 2022 (28-day quote)



Source: Own elaboration (BANXICO, 2022).
https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?sector=18&accion=consultarCuadro&idCuadro=CF101&locale=es

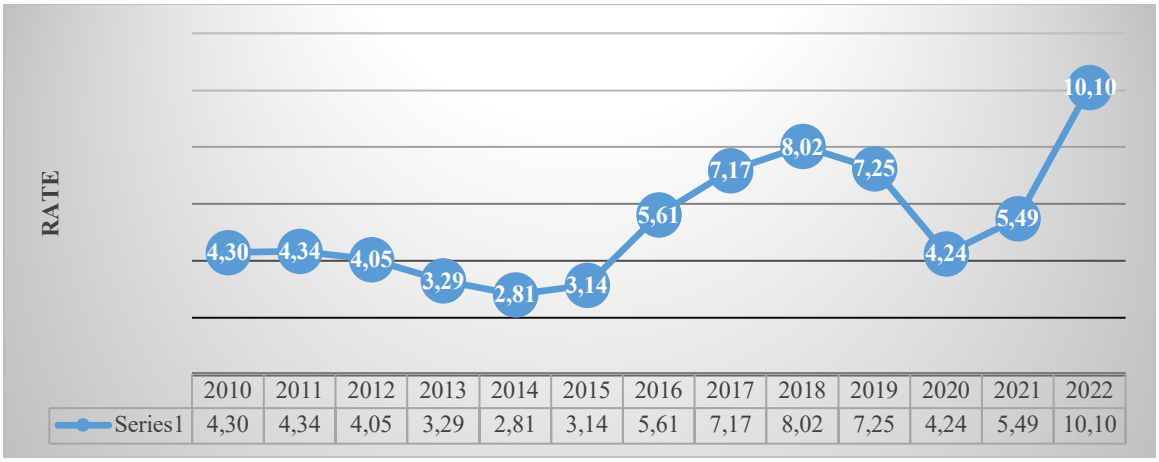
5. CETES RATE OF RETURN

Table 5. CETES rate of return (28-day)

Periodo	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Enero	4.49	4.14	4.27	4.15	3.14	2.67	3.08	5.83	7.25	7.95	7.04	4.22	5.50
Febrero	4.49	4.04	4.32	4.19	3.16	2.81	3.36	6.06	7.40	7.93	6.91	4.02	5.94
Marzo	4.45	4.27	4.24	3.98	3.17	3.04	3.80	6.32	7.47	8.02	6.59	4.08	6.52
Abril	4.44	4.28	4.29	3.82	3.23	2.97	3.74	6.50	7.46	7.78	5.84	4.06	6.68
Mayo	4.52	4.31	4.39	3.72	3.28	2.98	3.81	6.56	7.51	8.07	5.38	4.07	6.90
Junio	4.59	4.37	4.34	3.78	3.02	2.96	3.81	6.82	7.64	8.18	4.85	4.03	7.56
Julio	4.60	4.14	4.15	3.85	2.83	2.99	4.21	6.99	7.73	8.15	4.63	4.35	8.05
Agosto	4.52	4.05	4.13	3.84	2.77	3.04	4.24	6.94	7.73	7.87	4.50	4.49	8.35
Sep.	4.43	4.23	4.17	3.64	2.83	3.10	4.28	6.99	7.69	7.61	4.25	4.69	9.25
Oct.	4.03	4.36	4.21	3.39	2.90	3.02	4.69	7.03	7.69	7.62	4.22	4.93	9.00
Nov.	3.97	4.35	4.23	3.39	2.85	3.02	5.15	7.02	7.83	7.46	4.28	5.05	9.70
Dic.	4.30	4.34	4.05	3.29	2.81	3.14	5.61	7.17	8.02	7.25	4.24	5.49	10.01

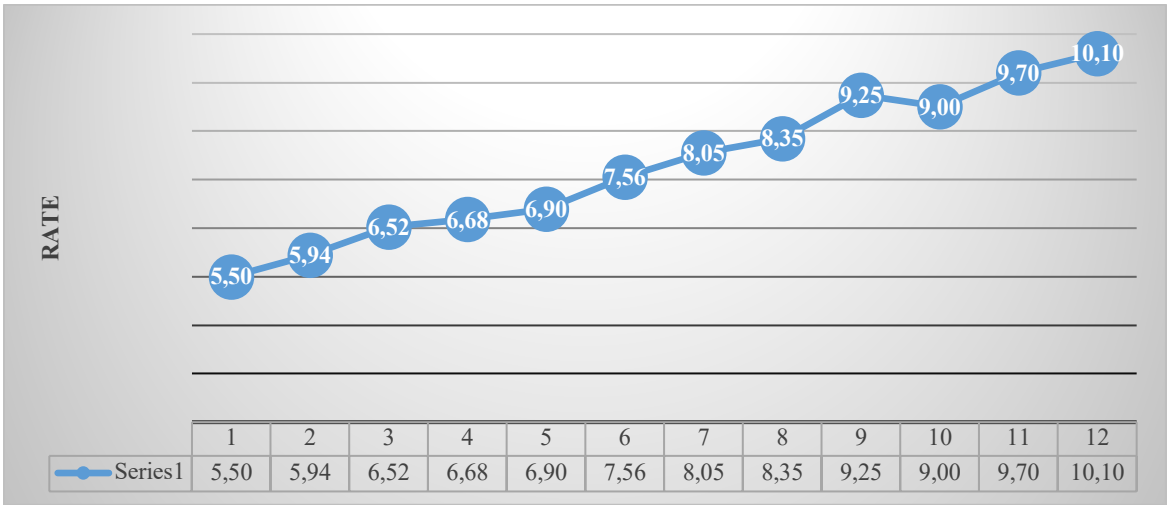
Source: Own elaboration (BANXICO, 2022).
https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?sector=22&accion=consultarCuadro&idCuadro=CF107&locale=es

Graph 9. CETES rate of return 2010- 2022 (at the end of each year)



Source: Own elaboration (BANXICO, 2022).
https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?sector=22&accion=consultarCuadro&idCuadro=CF107&locale=es

Graph 10. CETES rate of return, January-December del 2022 (at the end of each month)



Source: Own elaboration (BANXICO, 2022).
https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?sector=22&accion=consultarCuadro&idCuadro=CF107&locale=es

6. INVESTMENT UNITS (UDIS)

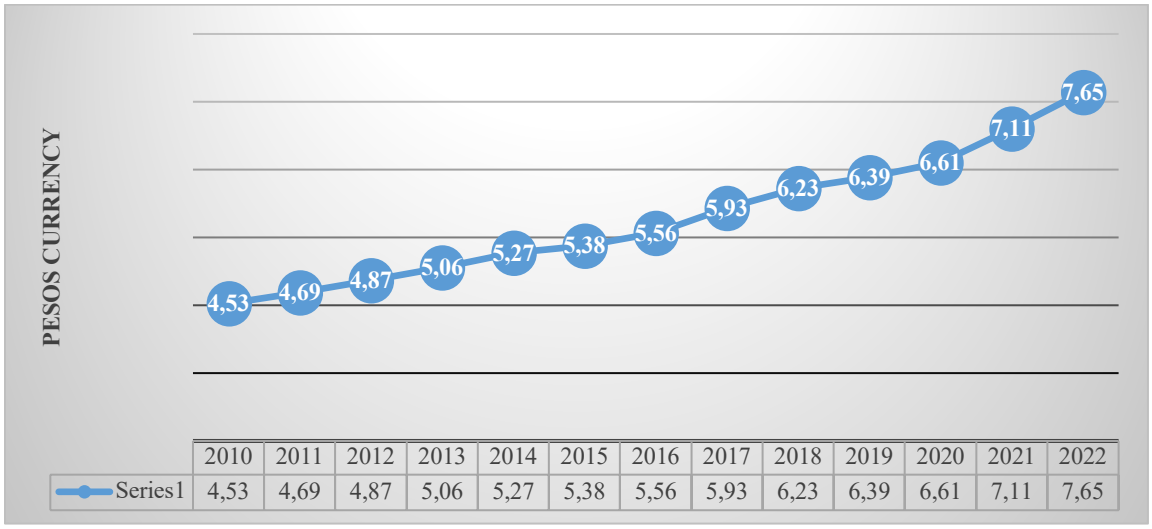
The UDI is a unit of account of constant real value to denominate credit titles. It does not apply to checks, commercial contracts, or other acts of commerce.

Table 6. Investment units (value concerning pesos)

Periodo	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Enero	4.37	4.56	4.73	4.89	5.10	5.29	5.41	5.62	5.97	6.25	6.44	6.64	7.12
Febrero	4.41	4.57	4.75	4.92	5.13	5.29	5.43	5.69	6.00	6.25	6.46	6.70	7.18
Marzo	4.44	4.59	4.75	4.94	5.15	5.30	5.44	5.71	6.02	6.26	6.49	6.75	7.24
Abril	4.46	4.59	4.75	4.97	5.15	5.32	5.45	5.75	6.03	6.28	6.43	6.79	7.31
Mayo	4.43	4.58	4.71	4.96	5.13	5.29	5.42	5.75	6.01	6.27	6.42	6.81	7.33
Junio	4.41	4.55	4.74	4.95	5.13	5.28	5.42	5.75	6.01	6.26	6.44	6.83	7.36
Julio	4.42	4.57	4.77	4.95	5.14	5.28	5.42	5.76	6.04	6.27	6.49	6.87	7.43
Agosto	4.43	4.58	4.78	4.95	5.16	5.29	5.44	5.79	6.07	6.29	6.52	6.90	7.47
Sep.	4.44	4.59	4.80	4.97	5.18	5.31	5.45	5.82	6.11	6.29	6.55	6.92	7.53
Oct.	4.47	4.61	4.83	4.99	5.20	5.33	5.49	5.84	6.13	6.31	6.57	6.97	7.57
Nov.	4.50	4.64	4.85	5.02	5.23	5.36	5.53	5.89	6.17	6.35	6.60	7.04	7.62
Dic.	4.53	4.69	4.87	5.06	5.27	5.38	5.56	5.93	6.23	6.39	6.61	7.11	7.65

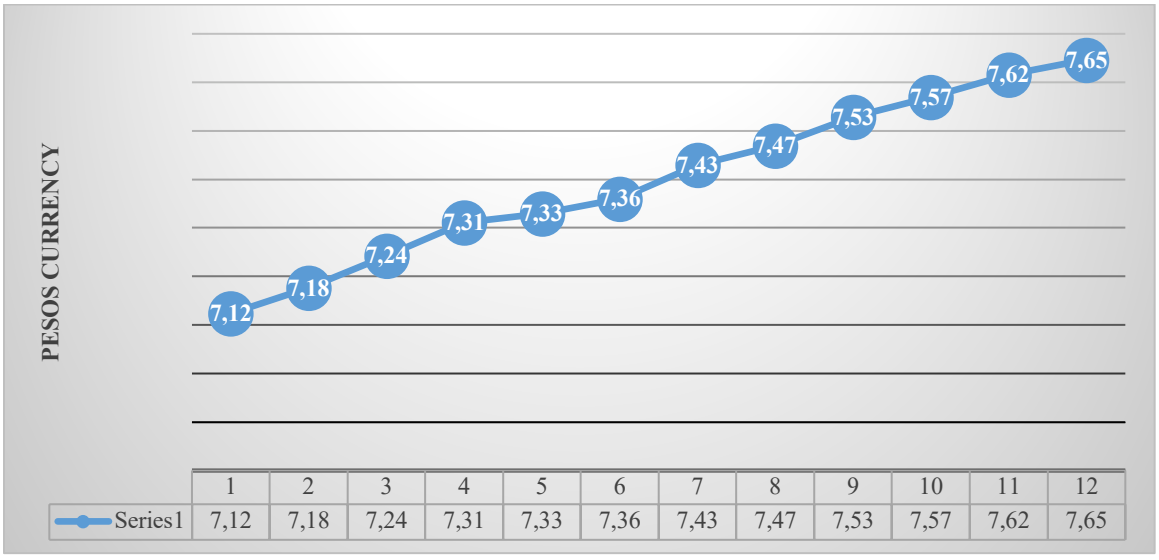
Source: Own elaboration (BANXICO, 2022).
https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?accion=consultarCuadro&idCuadro=CP150&locale=es

Graph 11. Investment units 2010-2021 (At the end of the year)



Source: Own elaboration (BANXICO, 2022).
https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?accion=consultarCuadro&idCuadro=CP150&locale=es

Graph 12. Investment units, January-December 2022



Source: Own elaboration (BANXICO, 2022).
https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?accion=consultarCuadro&idCuadro=CP150&locale=es

Finally, we will mention that the analysis tool known as the break-even point can be calculated under two scenarios 1) a project or an organization with a single product or service and 2) for an organization or project with multiple products or services. taking as reference the mix of products or services.

REFERENCES

BANXICO. (2022). *Sistema de Información Económica*. Mexico: Banco de México. Link: http://www.inegi.org.mx/sistemas/bie/

Fordon, J. (1951). Profit Variations. *The Accounting Review*, *26*(4), 574–576. http://www.jstor.org/stable/242222

Hess, H. (1903). Manufacturing: Capital, Cost, Profit and Dividends. *Engineering Magazine,* 1, 892-898.

INEGI. (2022). *Banco de Información Económica*. Mexico: Instituto Nacional de Geografía y Estadística. Link: http://www.inegi.org.mx/sistemas/bie/

Knoeppel, C., & Seybold, E. (1937). *Managing for profit: working methods for profit planning and control.* McGraw-Hill

Rautenstrauch, W. (1930). *The successful control of profits*. New York: Forbes

Satya P., & Deshpande, J. (1982). Break-Even Point. *Economic and Political Weekly*, *17*(48), 123–128.