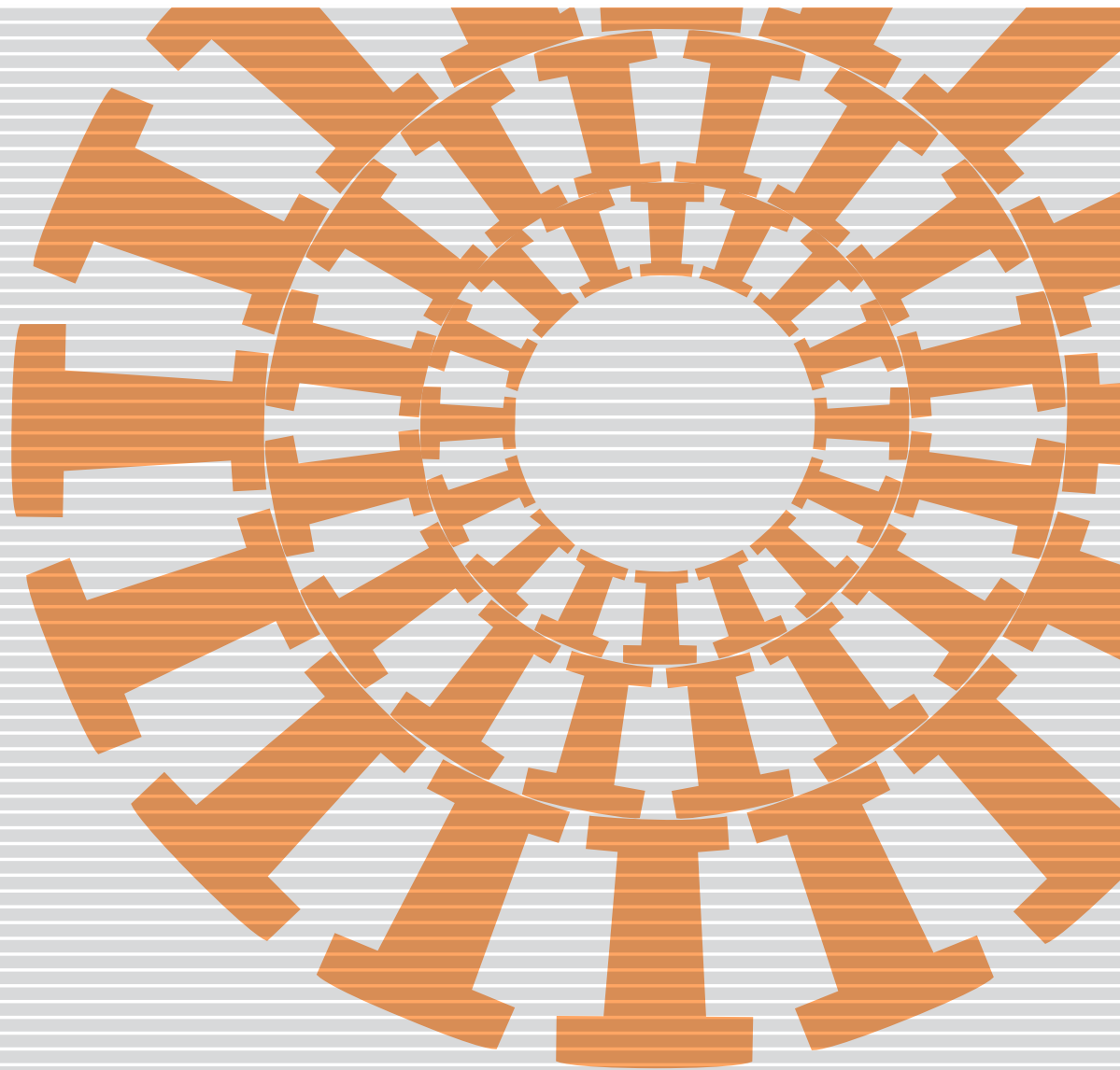


EG | Estudios Gerenciales

Journal of Management and Economics for Iberoamerica



Revista publicada por la Facultad de Ciencias Administrativas y Económicas
http://www.icesi.edu.co/estudios_gerenciales



Vol. 39
168
julio - septiembre 2023

UNIVERSIDAD ICESI
FACULTAD DE CIENCIAS ADMINISTRATIVAS Y ECONÓMICAS - FCAE

Misión

Contribuimos al desarrollo sostenible de la sociedad mediante la formación de líderes íntegros y competentes para un entorno global de negocios, el impacto de nuestras investigaciones y la generación de valor para las organizaciones, en el marco de una cultura de excelencia, innovación y aprendizaje continuo.

Valores centrales

- Reconocimiento de la dignidad de toda persona.
- Honestidad en las acciones personales y en las actuaciones institucionales.
- Pasión por el aprendizaje.
- Compromiso con el bienestar de la sociedad y el cuidado del medio ambiente.

Visión de futuro - 2022

En el año 2022, seremos reconocidos como la escuela líder en administración y economía en Colombia y una de las diez primeras en Latinoamérica.

Objetivos de la facultad

Posicionamiento

Asegurar la visibilidad y el posicionamiento de la FCAE entre sus diferentes stakeholders, como referente en educación, investigación y asesoría a organizaciones.

Investigación

Generar una producción intelectual relevante para las ciencias administrativas y económicas y la sociedad, y asegurar la visibilidad de los resultados de investigación.

Estudiantes y egresados

Propender por la excelencia académica y la formación integral de los estudiantes de la FCAE.

Impacto en las organizaciones y el entorno

Generar impacto en las organizaciones y el entorno a través de los profesores, egresados, y proyectos de la FCAE.

Uso de TIC

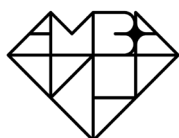
Incorporar TIC en los procesos de enseñanza/aprendizaje.

Profesores

Asegurar la calidad de los profesores para cumplir la Misión de la FCAE.

Sostenibilidad y gestión de recursos

Asegurar la sostenibilidad, el crecimiento y la gestión efectiva de los recursos de la FCAE.



ASSOCIATION
OF
AMBA
ACCREDITED



AACSB
ACCREDITED

ACREDITACIÓN INSTITUCIONAL
DE ALTA CALIDAD
PRIMERA UNIVERSIDAD PRIVADA
DEL SUROCCIDENTE COLOMBIANO
Resolución 4304 del 31 de mayo de 2010 del Ministerio de Educación Nacional



Revista publicada por la Facultad de Ciencias Administrativas y Económicas

Editor

Juan Felipe Henao
State University of New York Polytechnic Institute, Estados Unidos.
Universidad Icesi, Colombia.
henaof@sunypoly.edu

Comité Editorial/Editorial Committee

Isaac Dyer Rezonzew, Ph.D.

Universidad Jorge Tadeo Lozano, Colombia.

Eduardo Lora, M.Sc.

Center for International Development, Harvard University, Estados Unidos.

José Pla Barber, Ph.D.

Universidad de Valencia, España.

Jose Luis Hervás Oliver, Ph.D.

Universidad Politécnica de Valencia, España.

Julio César Alonso, Ph.D.

Cienfi -Universidad Icesi, Colombia.

Larry Crump, Ph.D.

Griffith University, Australia.

Lorenzo Revuelto Taboada, Ph.D.

Universidad de Valencia, España.

Juan Pablo Torres Cepeda, Ph.D.

Universidad de Chile, Chile.

Robert Grosse, Ph.D.

Thunderbird School of Global Management, Estados Unidos.

Roberto Santillán, Ph.D.

Tecnológico de Monterrey, México.

Sergio Olavarrieta, Ph.D.

Universidad de Chile, Chile.

Iván Darío Sánchez Manchola, Ph.D.

Universidad Icesi, Colombia.

Comité Científico/Scientific Committee

José Manuel Saiz Álvarez, Ph.D.

EGADE Business School - Tecnológico de Monterrey, México.

Christian A. Cancino del Castillo, Ph.D.

Universidad de Chile, Chile.

Florina Guadalupe Arredondo Traperero, Ph.D.

Tecnológico de Monterrey, México.

Francisco Puig, Ph.D.

Universidad de Valencia, España.

Francisco Venegas Martínez, Ph.D.

Instituto Politécnico Nacional, México.

Gastón Silverio Milanesi, Ph.D.

Universidad Nacional del Sur, Argentina.

Harish Suján, Ph.D.

Tulane University, Estados Unidos.

Jhon James Mora, Ph.D.

Universidad Icesi, Colombia.

José Roberto Concha, Ph.D.

Universidad Icesi, Colombia.

Juan Muro, Ph.D.

Universidad Alcalá de Henares, España.

Samuel Mongrut, Ph.D.

Universidad del Pacífico, Peru.

Reinaldo Guerreiro, Ph.D.

Universidad de Sao Paulo, Brasil.

Milagros Vivel Búa, Ph.D.

Universidad de Santiago de Compostela.

Director Editorial/Managing Editor

Libardo Rojas
Universidad Icesi, Colombia
trojas@icesi.edu.co

Indexaciones/Indexations

Scopus (Q3)

Scimago (Q4)

Emerging Sources Citation Index - Web of Science

PUBLINDEX - Colciencias

SciELO Citation Index

SciELO - Colombia

AEA's electronic indexes (JEL, e-JEL, CD-JEL, EconLit)

Redalyc

Dialnet

CLASE

Thomson Gale - Informe Académico

Catálogo de Latindex

EBSCO

RePEc

DoTEc

EconPapers

DOAJ

Años de publicación/Years publishing

39 años/years

Dónde consultar la revista/Where to find us

https://www.icesi.edu.co/estudios_gerenciales

Envío de manuscritos

https://www.icesi.edu.co/estudios_gerenciales

Suscripciones y Canje/Subscriptions and Exchange

Revista Estudios Gerenciales

Universidad Icesi

Calle 18 No. 122-135

Tel. (57) (2) 5552334 Ext. 8210

Cali, Colombia

estgerencial@icesi.edu.co

Diagramación y corrección de estilo/Layout and proofreading

Journals & Authors



La revista se adhiere a los principios y procedimientos dictados por el Committee on Publication Ethics (COPE)
www.publicationethics.org



Facultad de Ciencias Administrativas y Económicas

© Copyright 2018. Universidad Icesi.
Facultad de Ciencias Administrativas y Económicas
Calle 18 No. 122-135, AA. 25608
Tel. (57) (2) 5552334 Ext. 8210
Cali, Colombia
estgerencial@icesi.edu.co



Estudios Gerenciales de la Universidad Icesi está bajo una licencia de Creative Commons Attribution 4.0 Internacional
<https://creativecommons.org/licenses/by/4.0/>



Los autores de artículos serán responsables de los mismos, y por tal no comprometen los principios o políticas de la Universidad Icesi ni las del Comité Editorial de la revista Estudios Gerenciales. Los autores autorizan y aceptan la cesión de todos los derechos a la revista Estudios Gerenciales, tanto en su publicación impresa como electrónica. Luego de publicado el artículo, puede ser reproducido sin autorización del autor o la Revista, mencionando autor(es), año, título, volumen, número y rango de páginas de la publicación, y como fuente: Estudios Gerenciales [abstenerse de usar Revista Estudios Gerenciales].

TABLA DE CONTENIDO

Vol 39, N.º 168 | Julio - Septiembre de 2023 | ISSN 0123-5923 // 2665-6744 en línea | Cali, Colombia

PRESENTACIÓN	275
ARTÍCULOS	
Generic strategic positioning and organizational configurations in private micro-clinics <i>Guillermo Navarro-Sanfeliix, Francisco Puig & Lorenzo Revuelto-Taboada</i>	276
Day of the Week Effect and Adaptive Markets in Latin American Stock Indices <i>Dacio Villarreal-Samaniego & Roberto J. Santillán</i>	286
Environmental, social, governance e desempenho corporativo: uma análise na perspectiva da folga financeira <i>Yvelise Giacomello Piccinin, Larissa Degenhart, Micheli Aparecida Lunardi, Lucas Veiga Ávila & Jonas Adriel dos Santos Grodt</i>	297
Modelo de desempeño en la tarea: estudio empírico con PLS-SEM y mapa de importancia-rendimiento <i>Judith Cavazos-Arroyo y Aurora Irma Máynez-Guaderrama</i>	314
The more intra-firm equity, the higher employee retention: Evidence from the universe of urban firms in Colombia <i>Eduardo Lora</i>	327
Selecting corporate strategies using an Analytic Network Process Model: A case study <i>Oscar Rubiano-Ovalle & Jenny Fabiana Gaviria-Cuevas</i>	341
Behavioral Beliefs about Acts of Academic Dishonesty: A study with Brazilian accounting students <i>Jonatas Dutra Sallaberry, Edicreia Andrade dos Santos & Leonardo Flach</i>	357
Efeitos da Justiça Organizacional na relação entre Consistência na Gestão de Desempenho e Engajamento no Trabalho <i>Duanne Emanuel Leal Guimarães, Cristiano Sausen Soares, Vinícius Costa da Silva Zonatto, Edicreia Andrade dos Santos & Rosimeire Pimentel Gonzaga</i>	368
The effect of moral hazard on the SMEs credit portfolio guaranteed by Colombia's National Guarantee Fund <i>José A. Castillo & Andrés Mora-Valencia</i>	379
The influence of food values on snacks and beverage choices: an experimental study in Mexico <i>Pilar Arroyo</i>	387
AGRADECIMIENTO REVISORES	402

PRESENTACIÓN REVISTA ESTUDIOS GERENCIALES N° 168

Tenemos el gusto de presentar el número 168 de Estudios Gerenciales, correspondiente al tercer trimestre del 2023 (julio – septiembre), en el cual se incluyen 10 artículos de autores de España, México, Brasil y Colombia. A continuación, se realiza una breve descripción de los artículos incluidos en el presente número.

Inicialmente, el artículo de Guillermo Navarro-Sanfeliu, Francisco Puig, Lorenzo Revuelto-Taboada (Universidad de Valencia) analiza el concepto de posicionamiento estratégico en el marco genérico de Porter, para identificar el posicionamiento competitivo de las microclínicas en el sector de servicios de salud privado de España y encuentran que las configuraciones organizacionales están asociadas a la proactividad cuando se compite mediante la diferenciación.

Posteriormente, Dacio Villarreal-Samaniego (Tecnológico Nacional de México) y Roberto J. Santillán (Universidad Autónoma de Nuevo León) estudian el efecto Día-de-la-Semana desde la perspectiva de la Hipótesis de Mercados Adaptativos, para Argentina, Brasil, Chile, Colombia, México y Perú. Los autores proveen evidencia empírica que apoya la Hipótesis de Mercados Adaptativos.

En el artículo de Yvelise Giacomello Piccinin (Universidade Federal de Santa Maria), Larissa Degenhart (Universidade Federal de Santa Maria), Micheli Aparecida Lunardi (Universidade Regional de Blumenau), Lucas Veiga Ávila (Universidade Federal de Santa Maria) y Jonas Adriel dos Santos Grodt (Universidade Federal de Santa Maria), se aborda el efecto moderador de la holgura financiera en la relación entre las actividades ambientales, sociales y de gobernanza (ESG), y el desempeño contable y de mercado, de las empresas brasileñas.

Las autoras Judith Cavazos-Arroyo (Universidad Popular Autónoma del Estado de Puebla) y Aurora Irma Máynez-Guaderrama (Universidad Autónoma de Ciudad Juárez), evalúan empíricamente un modelo de desempeño en la tarea considerando como antecedentes la percepción del apoyo de la familia y de los amigos, el bienestar psicológico y el desempeño contextual, en empresas manufactureras de exportación de México.

Por su parte, Eduardo Lora (Fedesarrollo), estudia la relación entre la equidad intraempresa y la retención de personal, en las empresas colombianas. Los hallazgos muestran que el salario promedio de la empresa, la dispersión intraempresa de los ajustes salariales y la participación de las mujeres en la empresa están significativamente asociados con las tasas de retención.

Respecto al artículo de Oscar Rubiano-Ovalle y Jenny Fabiana Gaviria-Cuevas (Universidad del Valle), los autores presentan un marco de decisión organizacional que incorpora los elementos clave en un proceso de toma de decisiones para seleccionar la mejor opción estratégica, considerando la interdependencia entre todos ellos, en una gran empresa manufacturera de Colombia.

Referente al artículo de Jonatas Dutra Sallaberry (Universidade Federal do Paraná), Edicreia Andrade dos Santos (Universidade Federal do Paraná), Leonardo Flach (Universidade Federal de Santa Catarina), se analiza las creencias conductuales individuales que determinan las conductas de deshonestidad académica, entre estudiantes brasileños. Según los resultados, los estudiantes perciben que el fraude académico puede resultar en mejor rendimiento académico, menor esfuerzo y tiempo en las tareas académicas.



Adicionalmente, los autores Duanne Emanuel Leal Guimarães (Universidade Federal de Santa Maria), Cristiano Sausen Soares (Universidade Federal de Santa Maria), Vinícius Costa da Silva Zonatto (Universidade Federal de Santa Maria), Edicreia Andrade dos Santos (Universidade Federal do Paraná), Rosimeire Pimentel Gonzaga (Universidade Federal do Espírito Santo), estudian los efectos de la justicia organizacional en la relación entre la consistencia en la gestión del desempeño y el compromiso laboral en Brasil.

José A. Castillo (Pontificia Universidad Javeriana) y Andrés Mora-Valencia (Universidad de los Andes), en su artículo evalúan el efecto del riesgo moral en la probabilidad de incumplimiento de la cartera de crédito de las pequeñas y medianas empresas garantizadas por el Fondo Nacional de Garantías de Colombia. Los autores encuentran que las categorías de riesgo moral se convierten en una herramienta idónea no solo a nivel del cálculo de probabilidad de incumplimiento individual, sino también en una cartera.

Finalmente, Pilar Arroyo (Tecnológico de Monterrey) analiza si el valor asociado a los atributos de snacks manufacturados es considerado por los consumidores mexicanos en su proceso de decisión para elegir qué comer entre comidas. Los resultados indican que el control de peso, la nutrición y sustentabilidad, más el valor emocional de los snacks, determina principalmente su preferencia entre los consumidores conscientes de su salud.

Agradecemos a los autores y evaluadores que participaron en la presente edición y, adicionalmente, extendemos nuestra invitación a los autores, pares y lectores, para que sigan participando y colaborando con nuestra revista.

Generic strategic positioning and organizational configurations in private micro-clinics

Guillermo Navarro-Sanfeliu Ph.D. in Business Management, Department of Management, University of Valencia, Valencia, Spain.
guinasan@alumni.uv.esFrancisco Puig* Full Professor, Department of Management, University of Valencia, Valencia, Spain.
francisco.puig@uv.esLorenzo Revuelto-Taboada Associated Professor, Department of Management, University of Valencia, Valencia, Spain.
lorenzo.revuelto@uv.es

Abstract

By linking concepts and ideas from the private health services (PHS) and Knowledge-Intensive Business Services (KIBS) literature with Porter's generic framework, this paper aims to identify the competitive positioning at a micro-clinic level in the private health services industry and to examine the perceived role of the institutions and intellectual capital associated with each one. A Qualitative Comparative Analysis (QCA) was used.

The results show that organizational configurations are associated with proactivity when competing via differentiation. In contrast, cost leadership is linked to firms that compete with low tariffs and a defensive archetype. Our work can serve as a basis to recommend specific competitive strategies for the high number of firms still following a stuck-in-the-middle positioning strategy.

Keywords: KIBS; micro-clinics; private health services; porter's framework; qualitative comparative analysis.

Posicionamiento estratégico genérico y configuraciones organizacionales en microclínicas privadas

Resumen

Al vincular conceptos e ideas de la literatura sobre servicios sanitarios privados (PHS por sus siglas en inglés) y servicios empresariales intensivos en conocimiento (KIBS por sus siglas en inglés) con el marco genérico de Porter, este artículo pretende identificar el posicionamiento competitivo de las microclínicas en el sector de servicios de salud privados y examinar el papel de las instituciones y el capital intelectual asociado a cada una de ellas. Se utilizó una técnica estadística de Análisis Cualitativo Comparativo (QCA).

Los resultados muestran que las configuraciones organizacionales están asociadas a la proactividad cuando se compete mediante la diferenciación. Por el contrario, el liderazgo en costos está vinculado a empresas que compiten con tarifas bajas y un arquetipo defensivo. Nuestro trabajo puede servir de base para recomendar estrategias competitivas específicas al elevado número de empresas que aún siguen una estrategia de posicionamiento estancada en el medio.

Palabras clave: KIBS; microclínicas; servicios de salud privados; marco de Porter; análisis comparativo cualitativo..

Posicionamento estratégico genérico e configuração organizacional em microclínicas privadas

Resumo

Ao vincular conceitos e ideias da literatura de Serviços Privados de Saúde (PHS) e Knowledge Intensive Business Services (KIBS) à estrutura genérica de Porter, este artigo tem como objetivo identificar o posicionamento competitivo das microclínicas no setor de serviços privados de saúde e examinar o papel das instituições e o capital intelectual associado a cada um deles. Para isso, usou-se a técnica estatística de análise qualitativa comparativa (QCA).

Os resultados mostram que as configurações organizacionais estão associadas à proatividade ao competir por diferenciação. Em vez disso, a liderança de custo está ligada a empresas que competem com taxas baixas e um arquétipo defensivo. Nosso trabalho pode servir de base para recomendar estratégias competitivas específicas para o alto número de empresas que ainda seguem uma estratégia de posicionamento estagnada no meio.

Palavras-chave: KIBS; microclínicas; serviços privados de saúde; modelo de Porter; análise comparativa qualitativa.

* Corresponding author.

JEL classification: M1.

How to cite: Navarro, G., Puig, F. & Revuelto, L. (2023). Generic strategic positioning and organizational configurations in private micro-clinics. *Estudios Gerenciales*, 39(168), 276-285. <https://doi.org/10.18046/j.estger.2023.168.5757>

DOI: <https://doi.org/10.18046/j.estger.2023.168.5757>

Received: 03-10-2022

Accepted: 24-03-2023

Available on line: 30-09-2023

1. Introduction

Knowledge-Intensive Business Services (KIBS) are “those activities based on knowledge and experience from professionals related to a specific technical field or function” (Windrum and Tomlinson, 1999, 392). Some examples are information and communication, education, or financial activities (Chung and Tseng, 2019). In general, researchers focused on KIBS have developed their works on technical services (e.g., Vaillant et al., 2021), thus neglecting the study of other non-technological activities like private health services (PHS), including dental, optometry, or physiotherapy services (Davis and McMaster, 2015).

In many countries, knowledge-intensive PHSs are provided in micro-clinics by professionals who own them. Traditionally, these firms have enjoyed a privileged competitive situation due to specific entry barriers that limited access to new competitors. Nevertheless, in recent years, this sector has undergone significant changes (Brandt and Znotka, 2021; Holopainen et al., 2020). From the supply side, many graduates with qualifications to work in these activities and conglomerates of companies have appeared. These primarily include international franchises (e.g., *Vitaldent*, *Alain Afflelou*, *FisiOn*) as well as large companies that have managed to lower prices and develop a brand image, thus attracting many customers (Llodrá-Calvo and Bourgeois, 2009). From the demand side, there is an increasing level of user request in terms of the quality and the variety of specialties offered, as well as other types of services such as financing and free revisions (Trathen and Gallagher, 2009); in some cases, these complements cannot be offered by micro-clinics.

As a result, micro-clinics in PHSs are currently in a scenario characterized by greater competitive rivalry and a very uncertain future (Brandt and Znotka, 2021; Bartik et al., 2020), with higher stress levels perceived by professionals (Kelliher and Parry, 2015). Faced with this situation, there are recent calls for more research to identify the generic strategic positioning followed by these firms and the organizational configurations linked to them.

In the literature on business management, different typologies and classifications have been used to describe the strategic positioning of companies and explain their performance. One of the most popular is Porter's generic analysis (1980), which identifies firms that compete based on cost leadership or differentiation in the service.

However, the extant literature on knowledge-intensive firms is based on medium and large firms and offers general recommendations, in many cases at corporate-level strategies (R+D, internationalization, alliances, acquisitions) (e.g., Tongur and Engwall, 2014; Abrahamsson, 2019). In terms of PHSs, authors such as Torgovicky et al. (2005), Helmig et al. (2014), or Marlin et al. (2002) have used this classification to explain

differences in performance by studying hospitals and primary care outpatient clinics.

Despite the efforts, only a few studies have focused on smaller firms (micro-clinics) that offer specialized health services in the private sector (e.g., Hampel, 2021). This is crucial because micro-clinics face critical strategic challenges that jeopardize their survival. Given this research gap, it is necessary to identify the strategic positioning followed by these firms and the organizational configurations or archetypes associated with these positions. Trying to cover that gap in the literature, this paper aims to analyze the competitive strategies deployed by micro-clinics and examine how differences in institutions and market attention and intellectual capital's emphasis can explain their positioning and relative performance.

The study of organizational configurations embraces a plethora of theories and perspectives (Ketchen et al., 1997), given that companies must align their resources to their environment to facilitate an effective organization-environment equilibrium (Miles et al., 1978: 547). For instance, in the case of PHSs, the institutional theory fits our study given the extensive legal development in the companies' environment. Besides being KIBS, the Intellectual Capital perspective also fits to analyze companies' resources. Based on these two perspectives, the main theoretical contribution of this study is the analysis of how a substantial cost or differentiation positioning can be achieved with different combinations of intellectual capital and a level of attention to the institutional context and the market.

The simultaneous study of these elements makes it possible to group companies with similar characteristics (or with similar business models) (Zott et al., 2011) and to predict the riskier positioning under certain competitive conditions (Miller, 1996). Moreover, this work can offer recommendations at a functional level strategy (Human resources, cooperation, marketing) to cope with this scenario.

To achieve the purpose of this study, 78 Spanish micro-clinics providing dental, optometry, and physiotherapy services (nine employees or less) were studied. Spain was selected because each country has its unique regulations governing PHSs. An online questionnaire was distributed from June-September 2017. The used statistical technique was qualitative comparative analysis (QCA) (Rihoux and Ragin, 2008; Fiss, 2011) because of the sample size. We assumed that the same strategic posture is a function of several different combinations of factors (equifinality).

This article is structured as follows: The next section presents the theoretical framework. Then, the methodological section presents the sample, variables, and analysis technique. The subsequent two sections are devoted to analyzing and discussing the results. Finally, conclusions, practical implications, and suggestions for future research are made.

2. Theoretical background

2.1 PHSs: definition and characteristics

In addition to medical practices, PHSs include other services such as dentistry, veterinary medicine, optometry, cosmetic surgery, and physiotherapy. PHSs are provided mainly by SMEs and micro-firms (Henry et al., 2016). These activities are essential in societies: their expenditures represent between one and three percent of European countries' GDPs. According to Chung and Tseng (2019), PHSs are among the most representative KIBS activities due to the high level of knowledge required to ensure their functioning and performance and the high investment required in a specific equipment-qualified workforce.

Beyond the small size of PHSs firms, there are two aspects that characterize them. First, they conduct their activities in a traditionally inflexible institutional and legal environment. These professions adapt to the needs detected by their members in the territory within their scope of application. Professional colleges and associations (PAs) are institutions legitimized to organize these professions (Greenwood et al., 2002). However, the deregulation policies in the last years have led to other institutions with greater bargaining power to enter the market. Examples include networks of clinics and insurance firms, which have incorporated a multitude of innovations into the sector (Brandt and Znotak, 2021). Consequently, these actors have also emerged as legitimized referents (DiMaggio and Powell, 1983), as they influence the organization and professional activities carried out by professional clinics and associations. Second, PHSs require a high and continuous investment in education and training to practice their profession with guarantees, "also requiring high qualified employees as the unique way to produce profitable results for clients" (Huggins and Weir, 2012: 93).

All these features represent clear entry barriers. Moreover, as a consequence of the fragmentation of the environment, in recent years, other types of knowledge that are more closely linked to business management—such as the implementation of market research and new strategies for the promotion and management of innovation—have become increasingly important (Trathen and Gallagher, 2009). These changes in leadership and management seek to improve clinics' competitiveness and efficiency. Despite their relevance, they have also introduced a certain level of conflict and stress among professionals, mainly due to the dilemma between focusing on the profession or improving the clinic's performance.

2.2 Institutions in the PHSs: PAs and the market

Following Meyer and Rowan (1977: 340-41), institutionalized organizations are defined as those "systems

that arise to coordinate and control specific activities that are based on technical actions in complex environments and where the limits of the activity are explored (...). The ultimate goal of these institutions is to maintain the ceremonial conformity of the profession in the face of environmental uncertainties." Zucker (1987) distinguishes two types: 1) the environment as an institution, which refers to the agents created by the governments to coordinate the actions of these professions (e.g., PAs); 2) organizations as institutions, which are those companies that, through the market, develop routines or incorporate innovations that are subsequently imitated by others (e.g., the market and leading firms).

In Spain, PAs are among the key institutions that regulate PHSs by establishing the necessary conditions to practice these professions. Some of the benefits of such interventions include the formulation of rules that favor more predictable behaviors, which may thereby increase the survival rate (DiMaggio and Powell, 1983), safeguard quality standards (Trathen and Gallagher, 2009), and/or encourage better performance within the profession (Perron et al., 2014). On the contrary, some researchers criticize the use of these agents because they standardize or homogenize the competitive strategy (e.g., Chadee and Roxas, 2013; Johnston, 2013; Thackeray et al., 2005).

Moreover, the market creates institutions when organizations engaged in the same activity are identified as inefficient (Davis and McMaster, 2015). The most influential institutional referents are the most prominent firms within a particular activity (Lieberman and Asaba, 2006). These firms include those considered when conducting a competitor analysis. PHSs have usually adopted a highly reluctant and critical attitude toward such organizations because they were often bigger and had implemented new business models based on the deregulation of activities regarded as "owned" by the qualified professionals engaged in them (Nash, 1994). Traditional professionals accept the actions of public agents aimed at maintaining control over the profession (centralization), and they reject disruptive strategic innovations that emerged from market failures and deregulation. However, despite the protectionism still in force, some large companies have penetrated powerfully into the PHSs. These companies have become a reference model for some entrepreneurs, while others believe their survival is threatened.

2.3 The Intellectual Capital in the PHSs

Intellectual Capital (IC) is defined as the intellectual assets that can create value, including knowledge, information, intellectual property, and experiences (Stewart, 1997). There is broad agreement in the literature on the close relationship between IC and PHSs (e.g., Cohen and Kaimenaki, 2007), mainly because high levels of investment in knowledge (e.g., training, experience, patient management) represent the most visible barrier to entry for those who wish to pursue this type

of business. Given the competitive environment and similarities in structural capital due to the small size of PHS micro-clinics, it is possible to identify two critical dimensions of the IC of these firms: 1) human capital (HC), and 2) relational capital (RC) (Allameh, 2018).

HC is constituted by the “skills, experiences, attitudes, ideas, values and competencies of the people who are integrated into a company” (Watson and Stanworth 2006: 339). Some indicators related to HC include educational attainment, experience, personal motivations, employee knowledge, innovative capacity, satisfaction, and employee turnover (Tai and Chen, 2009; Zarandi et al., 2012). RC is the knowledge acquired from markets, suppliers, and customers, as well as from governments, representatives of economic activities, and the most relevant associations (Bianchi-Martini et al., 2016). Therefore, this dimension is not merely evaluated from an internal point of view but also from the perspective of customers and suppliers. There are many indicators to measure the RC. For example, Hosseini and Owlia (2016) detected more than 50 variables, such as brand value, licensing agreements, or subsidiary firms, among others.

2.4 Strategic positioning and organizational configurations

Organization configurations are commonly occurring clusters of attributes related to structures, processes, and strategies (Miller, 1996). They are explained because groups of companies have similar organizational characteristics (Meyer et al., 1993). It can also be understood “by identifying distinct, internally consistent sets of firms and their relationships to their environments and performance outcomes over time rather than by seeking to uncover one universal set of relationships that hold across all organizations” (Ketchen et al., 1997: 224).

From an equifinality perspective, it is feasible to predict that different organizational factor (archetypes) combinations are associated with such strategic positioning (Fiss, 2007). Compared to other well-known options (e.g., Miller and Friesen, 1978; Mintzberg, 1979), in line with Helmig et al. (2014), and considering the critical dimensions under study, the typology of Miles and Snow (1978) may provide better guidance.

Summarizing, their four main archetypes can be defined as 1) the prospective posture, which aims to identify new market opportunities and invest intensively in individuals while relying, organizationally, on the decentralization of institutions and improving IC; 2) the defensive posture, which is concerned with maintaining a stable environment (centralization), even if some innovations have to be abandoned while paying moderated attention to RC; 3) the analytical posture, which seeks to identify new opportunities (moderated decentralization), though only by developing upon core skills (HC), while also providing high-quality services; and 4) the reactive posture, which demonstrates inconsistent and unstable behaviors (e.g., sometimes moderated decentralization

and sometimes moderated IC), and does not have a clear competitive strategy.

In short, given the current institutional deregulatory context of PHSs and the unequal IC endowment among these firms, different strategic positions can be envisaged. In line with Torgovicky et al. (2005) or Marlin et al. (2002) and opinions recorded in previous steps of our research, we suggest that, among companies providing PHSs, there would be three main positionings:

- Focused on providing excellent service (i.e., “the quality of the service we provide is much better than that of our competitors”).
- Focused on being a cost leader that offers competitive tariffs (i.e., “the fees of our clinic services are more affordable than that of our competitors,” and
- Revolve around or stuck-in-the-middle of both approaches (i.e., “we try to offer a good price-quality ratio to our clients”).

In summary, we propose that differences in organizational configurations (degree of attention to the institutional environment and the market, as well as the emphasis placed on the development of IC) will influence the strategic response of companies (positioning) and will impact their abilities and potentialities to detect and capture opportunities and threats. That combination of configuration-positioning is evidence of the business model implemented (Zott et al., 2011) and can predict the success or failure of a company under certain competitive conditions (Miller, 1996).

3. Research methodology

3.1 Fieldwork, questionnaire, and sample

A qualitative study was conducted on previous broader research to explore professionals' perceptions and refine the questionnaire to carry out the empirical analysis. It is based on data from companies providing PHSs in dentistry, optometry, and physiotherapy. The current study selected these professional activities because of their representativeness, research opportunity, and methodological reasons. Due to the normative and regulatory characteristics of the PHSs of each country, only companies located in Spain were selected. Given that most of the firms in these sectors are independent micro and small-sized companies, the population of firms analyzed had a maximum of nine employees.

PHS professionals were contacted through their respective business associations. The questionnaire was distributed and collected from June to September 2017 through the Limesurveycomputer platform. It was based on previous studies that examined the strategic positioning of companies (Robinson and Pearce, 1988), the role of institutions (Ang and Cummings, 1997), and the valuation of IC (Sveiby, 1997; Dewhurst and Cegarra-Navarro, 2004).

A total of 78 valid questionnaires were retrieved. The average sample size consisted of five employees. Regarding the distribution, 56% of the companies were engaged in dentistry, 26% in optometry, and 18% in physiotherapy. Given the sample size and the research purpose, the technique used was qualitative comparative analysis - QCA (Lee et al., 2019; Fainshmidt et al., 2019); a data analysis based on theory to examine the relationship of conditions to an outcome.

3.2 Analysis technique: QCA

In this work, we deployed the QCA analysis technique. Although it has been criticized (Fiss, 2007), it has some advantages. According to Miller (2018), QCA makes it possible to identify the configurations of causally relevant characteristics and antecedent conditions most associated with strategic positioning of each company. Following this author, we can assume that QCA has become one of the most used techniques in organizational configurations.

Compared to other techniques, it is advantageous as it is possible to determine the conditions separately or in combination with others to identify the best fit for a given outcome (Rihoux and Ragin, 2008). For example, for those micro-clinics most aligned with a differentiation position, this technique identifies combinations of dimensions of the institutional environment and the organizational context they create.

The fuzzy-set QCA (fsQCA) variant of this technique was employed in our study because it admits dichotomous values typical of Boolean algebra and continuous values typical of Likert scales. This variant is suitable for constructing better causal theories and working with small and medium-sized samples (Fiss, 2011). This QCA modality requires three steps: 1) data calibration, 2) necessity analysis, and 3) sufficiency analysis.

3.3 Operationalization of variables

Considering the objectives of this research, strategic positioning was taken as the dependent variable or outcome. In line with Robinson and Pearce (1988), three items were used to identify it, two of which were aligned with *differentiation*: 'reaction capability' (Murwatiningsihet et al., 2019) and 'quality service perceived' (Hampel, 2021). The service price item (Auzair, 2011; Hilman and Kaliappen, 2014) was related to *cost leadership*. These items were assessed using a seven-point Likert scale. Based on this scale, the respondent evaluated its position compared to its main competitors for each item. For example, for the price of services, respondents were requested to rate their company's performance with respect to its competitors as follows: 1 = "much worse than its competitors"; 4 = "the same"; and 7 = "much better than its competitors."

We specified four *independent variables or antecedent conditions* of our research, two of which are

based on the institutional context, while the other two relate to the organizational context. The institutional conditions include the PAs (professional colleges and associations) and the influence of the market (e.g., competitors, customers, and suppliers). The PA variable is made up of a single item which allowed us to assess how respondents perceived the help provided by these institutions to coordinate and achieve the objectives of their clinics. The market variable is a construct of three items based on Ang and Cummings (1997). They reflect the level of vigilance and attention to consumer trends and the strategies implemented by competitors. The higher values recorded are associated with more favorable perceptions in all cases.

The antecedent conditions based on the organizational context are derived from the relevant IC literature (Sveiby, 1997; Dewhurst and Cegarra-Navarro, 2004). In this article, they are formed by the HC and the RC dimensions. The HC construct captures respondents' perceptions of the professionals' skills and experience required to perform their professional activities. Regarding RC, it measures its loyalty and reputation among its customers.

4. Results

4.1 Results from descriptive data

Table 1 presents the means, standard deviations, and the calibration made. Out of the causal conditions, HC stands out with the highest mean value (5.5), while market attention is the condition with the lowest score (4.5), together with the role of PAs (4.4) and RC (4.8). The differentiation positioning outcome has a mean of 5.4, which indicates that, in general, most clinics have a high perception of following this competitive strategy. The cost positioning shows that the companies are less alienated with this competitive strategy or out of it (4.6).

Table 1. Descriptive data and calibration.

Conditions and outcomes	M	SD	Threshold of non-membership (% of cases)	Crossover point (median)	Threshold of membership (% of cases)
Differentiation	5,4	1,1	4,0 (17)	5,5	6,5 (21)
Cost Leadership	4,6	1,7	3,0 (13)	4,0	6,0 (35)
PA influence	4,4	2,0	2,0 (24)	5,0	7,0 (19)
Marketinfluence	4,5	1,4	2,0 (10)	4,7	6,0 (14)
Human capital	5,5	1,0	3,3 (5)	5,3	6,7 (17)
Relational capital	4,8	1,3	2,5 (9)	5,0	6,5 (11)

Note: **p<0.05.

Source: Own elaboration

In the QCA analysis, the calibration of the data involves the establishment of membership thresholds. In line with Ragin (2006), outcomes were set at 25%, while antecedent conditions were at 10%. For maximum ambiguity, we decided to use the median. We excluded

those combinations from the truth table represented by only a single case (Schneider and Wagemann, 2010). As a result, the membership threshold was established at 6.5 (21% of the cases included) for the differentiation outcome, while the non-membership was at 4.0 (17%). For cost leadership positioning, the thresholds were 6.0 (35%) and 3.0 (13%). The membership thresholds showed that 56% of companies follow a precise positioning strategy based on differentiation or cost leadership. Therefore, the remaining 44% of the cases were classified as companies with a stuck-in-the-middle strategic position, i.e., those without a clear strategic orientation (Torgovicky et al., 2005).

The analysis of necessary conditions is the second step of QCA. Causal conditions will be excluded from the analysis if they show a consistency higher than 0.90 (Glaesser, 2008). Table 2 shows all the results. Given that all causal conditions are not consistently necessary, all of them are included in the sufficiency analysis.

The U Mann-Whitney’s non-parametric test completes our descriptive results (Table 3). Here, we compare those cases included in the membership threshold with other cases not included. In terms of differentiation, it shows the significant and positive relationship between Human and Relational capital. According to the mean rank (48.63 vs. 37.15, and 48.94 vs. 37.06) and the Wilcoxon test (p value <

0.1 in both cases), this could be interpreted as firms with a strategic positioning in differentiation have high perception or are associated with a high value in their intellectual capital. Regarding the cost leadership positioning, no antecedent condition was remarkably different between cases included in the threshold and those excluded.

4.2 FsQCA Results

The analysis of sufficiency is the last of the QCA steps. It was conducted by the algorithm of Quine-McCluskey. This analysis shows those conditions or their combinations or factors associated with each outcome. Authors like Ragin (2006) or Fiss (2011) proposed that the model must have a consistency coefficient greater than 0.80 to be accepted.

Table 4 represents the relation of antecedent conditions with a strategic position in differentiation. Black circles indicate the presence of antecedent conditions, while white circles indicate their negation. The blank cells represent irrelevant conditions. Moreover, large circles indicate core conditions, and small circles refer to peripheral conditions (Fiss, 2011; Wang et al., 2019). The Goodness-of-fit is acceptable, with coverage of 0.58 and consistency of 0.82 (Glaesser, 2008; Rihoux and Ragin, 2008; Greckhamer et al., 2018).

Table 2. Analysis of necessity.

	Differentiation		~Differentiation		Cost Leadership		~CostLeadership	
	1	2	1	2	1	2	1	2
PA influences	0.59	0.67	0.52	0.54	0.52	0.70	0.61	0.50
~PA influences	0.59	0.58	0.68	0.61	0.63	0.73	0.63	0.44
Market influences	0.67	0.67	0.59	0.53	0.61	0.72	0.65	0.46
~Market influences	0.53	0.58	0.64	0.64	0.55	0.72	0.61	0.48
HC	0.76	0.68	0.66	0.53	0.64	0.69	0.80	0.51
~HC	0.48	0.60	0.61	0.70	0.55	0.82	0.51	0.46
RC	0.70	0.70	0.54	0.50	0.61	0.74	0.69	0.51
~RC	0.52	0.55	0.70	0.68	0.60	0.76	0.65	0.50

Note: (1) Consistency; (2) Coverage.

Source: Own elaboration.

Table 3. U Mann-Whitney test.

		Differentiation				Cost leadership			
		N	U	Mean Rank	Sig.	N	U	Mean Rank	Sig.
PA influence	Strong	16	483	40,31	0.87	27	638	41,37	0.59
	Not strong	62		39,29		51		38,51	
Market influences	Strong	16	407	45,06	0.27	27	650	38,09	0.69
	Not strong	62		38,06		51		40,25	
Human capital	Strong	16	350	48,63	0.07*	27	585	35,67	0.27
	Not strong	62		37,15		51		41,53	
Relational capital	Strong	16	345	48,94	0.06*	27	673	38,93	0.87
	Not strong	62		37,06		51		39,80	

Source: Own elaboration.

Paths 1 and 2 are associated with strategic positioning in differentiation. In both, the dimensions associated with IC are fundamental pieces (HC and RC). The divergence between the two paths lies in the attention paid to environmental institutions. The first path pays more attention to the recommendations of the Pas (Coverage = 0.07; Consistency = 0.82). The second path pays greater attention to the trends set by the market (0.13; 0.85).

Table 5 summarizes the antecedent conditions associated with strategic positioning in cost leadership strategy. It describes the existence of four paths. Remarkably, its goodness-of-fit is acceptable, coverage of 0.82, and consistency of 0.71 (Glaesser, 2008; Rihoux and Ragin, 2008; Greckhamer et al., 2018).

Table 4. Analysis of sufficient conditions for differentiation.

Outcome: Strong strategy positioning in differentiation							
Path	PA	Market	HC	RC	Coverage		Consistency
					Raw	Unique	
1	●		●	●	0.45	0.07	0.82
2		●	●	●	0.51	0.13	0.85
Solution coverage: 0.58 Solution consistency: 0.82							
a) Algorithm: Quine-McCluskey							

Source: Own elaboration.

Table 5. Analysis of sufficient conditions for cost leadership strategy orientation.

Outcome: Strong strategy positioning in cost leadership							
Path	PA	Market	HC	RC	Coverage		Consist.
					Raw	Unique	
1		○		○	0.43	0.12	0.76
2	○		●		0.41	0.04	0.78
3			●	●	0.50	0.16	0.78
4	○	●		●	0.32	0.06	0.82
Solution coverage: 0.82 Solution consistency: 0.71							
a) Algorithm: Quine-McCluskey.							

Source: Own elaboration.

The first configuration is characterized by the low influence of market trends and RC (Coverage = 0.12; Consistency = 0.76). The second stands out as it is deeply concerned with improving its HC but shows low attention to PAs in the profession (0.04; 0.78). The third is intensive in its IC; however, it does not pay attention to the environment (0.16; 0.78). The last configuration stands out as it is highly geared towards improving its RC: It studies the market's trends and denies the PAs' active role (0.06; 0.82).

5. Discussion

The analysis allowed us to obtain representative organizational configurations in the PHSs companies studied here. Following Meyer et al. (1993), we can

assume that all companies included in each group share similarities in their strategy and differ from other companies. Therefore, we identified two strategic positionings and their outcomes. The first is associated with offering a service that customers perceive as superior to others (differentiation). In contrast, the second one has to do with competing with low tariffs (four paths).

In the first outcome, both paths share a common attribute in their configurations: the micro-clinics therein attach great importance to their IC (i.e., knowledge, skills, and experience) (Daud and Yusoff, 2010; Murwatiningsih et al., 2019). However, between the two paths, there are differences in the institutional referents (the PAs or the market, respectively).

From Miles and Snow's (1978) typology, both combinations are reminiscent of strategic configurations based on analytical profiles, although they differ in their environment evaluations. Specifically, an analytical profile with a defensive orientation (includes micro-clinics that are focused on improving the service that they offer (DeSarbo et al., 2005); however, a somewhat defensive orientation is adopted when they consider their PAs as an institutional reference (Kerska, 2016). Besides, there is also an analytical profile with a prospective orientation that is highly influenced by the needs and trends set by the market (Moore, 2005). Henry et al. also found examples of such strategy positioning in German hospitals following Miles and Snow's classification. They were also labeled "prospective" and "defensive analyzers" (2016:373). These cases can be considered "full-scope searchers" (Brunswick and Vanhaverbeke, 2015). Following these authors, they "show a strong interest in external ideas from various innovation sources (...) to get access to new ideas and knowledge. (They also) interact with universities and research organizations (and) use their network of trusted contacts and partners to find new ideas and have not become dependent upon them" (2015: 1251-1253).

The second outcome showed four paths following Miles and Snow's typology. The first comprises analytical companies; these clinics are dedicated mainly to improving their IC, although they do not adequately monitor the environment. Therefore, these companies perceive they offer good prices given the quality of the service provided. They are examples of successful KIBS firms that use their knowledge as a competitive advantage (Huggins and Weir, 2012). Following Brunswick and Vanhaverbeke (2015), these companies can also be included as full-scope searchers.

In the same line, the second path comprises reactive companies. It involves clinics that establish a conservative relationship with their patients. They tend to reject market trends and place little emphasis on loyalty or promoting their services. This behavior is reminiscent of reactive profiles because they do not analyze the environment, nor are they concerned about improving their capabilities with other agents. Although

this strategic archetype is not generally associated with superior performance (Zaefarian et al., 2013), some previous articles identified success cases (e.g., Snow and Hrebiniak, 1980; Brunswicker and Vanhaverbeke, 2015). In this case, firms manage to be competitive by offering a quality service, although it may be much more fundamental than other configurations.

The third path includes prospective firms. These clinics demonstrate highly innovative behavior, as they pay far greater attention to the trends set by the market (competitors) and adopt loyalty and follow-up policies for their patients (RC), which exemplify the latest organizational innovations adopted by PHSs (Trathen and Gallager, 2009). They also reject the regulatory role of PAs and tend to avoid control mechanisms by administrations as much as they can (centralization). Therefore, it is feasible to theorize that their strategic positioning concerning the price of their services is derived from the increased rivalry that PHSs are experiencing (Brandt and Znotka, 2021).

The fourth path in cost leadership is shaped by the leading companies in their market niche. They are keen to expand their professional knowledge but tend to reject the role of PAs (Jacobson et al., 2005). This configuration can respond to leaders in its niche micro-clinic market, who require particular knowledge and skills. Competitive prices can be applied and adjusted according to the specific service provided (Torgovicky et al., 2005).

Finally, although we have some paths, this paper has identified the strategic positions adopted by knowledge-intensive micro-clinics belonging to PHSs and their conditions. In addition, it shows in an original way which organizational archetypes are associated with each of these strategies and, cause-effect, the type of business model implemented and predicts their relative performance (Desouza and Awazu, 2006). These findings led to identify that these activities are in an intense period of change but that this transformation still needs to be completed in many cases.

On the one hand, among the micro-clinics that adopt a differentiation strategy, the same archetype (analytical) has been observed, highlighting the HC and RC as crucial elements, and the investment in knowledge sharing as a critical aspect (Leick and Gretzinger, 2020). Therefore, in that business model, the entrepreneurs and managers of these micro-clinics give great importance to developing knowledge relevant to their practice. They focus on refining their relationship with patients, suppliers, and other professionals, and pay close attention to the actions of leading firms and competitors. Given the close link observed in the PHSs between IC-based business models and performance, this business model will be the one that adapts more effectively to competitive changes.

On the other hand, four different archetypes were observed for those that pursue a cost leadership strategy, thus demonstrating the complexity of competing successfully under this orientation. In addition,

given the limited services offered (in terms of their variety and content) and their employees' lower level of IC, we can conclude that to survive, this business model will need to be redefined and adapted to the new environment they will face. The changes they should make are associated with the new institutional conditions they are immersed in.

6. Conclusions

The objective of this paper was to analyze the competitive strategies followed by PHS micro-clinics and examine how differences in regulations and an emphasis on intellectual capital can explain their uneven strategic positioning and relative performance. To do so, we analyzed 78 Spanish micro-clinics belonging to the PHSs. The main conclusion is that many micro-clinics still follow a stuck-in-the-middle positioning strategy (44%). Moreover, in cases where firms compete via differentiation (21%) or cost leadership (35%), various organizational configurations are identified based on attention to public institutions and intellectual capital development. In other words, these three types of positioning reveal different perceptions about the necessity of deregulation, the role of competitors, and heterogeneous capabilities in HC and RC. Given the dynamics of the environment in which they are involved, these findings contribute to forecasting an uneven performance (being the worst for the big group) and call for further management and marketing training.

This article contributes to KIBS, micro-clinics, and micro-establishments literature, studying other services traditionally neglected by researchers, such as optometry, dentistry, or physiotherapy, and opening a line of research to extend it to other activities also threatened by environmental changes as law, engineering, advertising, or other non-technological KIBS. For these reasons, we make two recommendations, the first is aimed at formal and public institutions, and the second focuses on micro-clinic managers and entrepreneurs.

Public institutions within these sectors (mainly PAs) should play a more active role in raising awareness of the need to implement a clear strategic position and provide and develop knowledge relevant to company management. This form of training should define the business model and improve the clinics' administration and relationship with their environment (e.g., marketing activities, scheduling, management innovation, or cooperation) (Lai et al., 2017). Micro-clinic managers should know the critical link between business models and performance. Although it is still being determined which configuration of strategic positioning has better economic performance (i.e., differentiation or cost leadership), the worst scenario is a lack of strategic definition. Therefore, for micro-clinics that compete based on differentiation and have a clear analytical archetype, it is crucial that they continuously strive to develop technical skills relevant to their profession. On the other hand, those who compete based on cost leadership should adopt a defensive archetype. This redefinition

implies adjusting their offer in those activities that can be performed more efficiently and ensuring a more flexible workforce (Harris and Sun, 2012).

Finally, our research has some limitations that may minimize the generalization of results. First, this study only examined Spanish micro-clinics, subject to a unique legal framework that could differ from other countries. Second, the information analyzed involved a cross-section (2017), and it does not reflect recent regulatory changes implemented due to the COVID-19 pandemic. However, this particular issue represents a direction for future research. It could be interesting to analyze how PHSs face it from the theoretical approach of dynamic capabilities (Teece, 2007). Third, the QCA technique allowed us to identify some conditions or configurations but not the mediating effects of other significant variables related to the performance of the companies, such as the family character of these businesses, the location of the establishment, or the managers' profiles. These factors allow promising new research on issues relevant to micro-clinics, business models, and performance.

Conflict of interest


The authors declare no conflict of interest.

References

- Abrahamsson, J., Mag, A., Nicol, C. (2019). The Effect of Business Model Innovation on Share Prices—A Study of US Listed Technology Firms. *Journal of Business Models*, 7(2), 37-52.
- Allameh, S.M. (2018). Antecedents and consequences of intellectual capital: The role of social capital, knowledge sharing and innovation. *Journal of Intellectual Capital*, 19(5), 858-874.
- Ang, S., Cummings, L.L. (1997). Strategic response to institutional influences on information systems outsourcing. *Organization Science*, 8(3), 235-256.
- Auzair, S. (2011). The effect of business strategy and external environment on management control systems: a study of Malaysian hotels. *International Journal of Business and Social Science*, 2(13), 236-244.
- Bartik, A.W., Bertrand, M., Cullen, Z., Glaeser, E.L., Luca, M., Stanton, C. (2020). The impact of COVID-19 on small business outcomes and expectations. *Proceedings of the National Academy of Sciences*, 117(30), 17656-17666.
- Bianchi-Martini, S., Corvino, A., Doni, F., Rigolini, A. (2016). Relational capital disclosure, corporate reporting and company performance: Evidence from Europe. *Journal of Intellectual Capital*, 17(2), 186-217.
- Brandt, F., Znotka, M. (2021). Influencing factors and outcomes of entrepreneurial activities in German healthcare organizations—a qualitative study. *International Journal of Healthcare Management*, 14(3), 805-812.
- Brunswick, S., Vanhaverbeke, W. (2015). Open innovation in small and medium-sized enterprises (SMEs): External knowledge sourcing strategies and internal organizational facilitators. *Journal of Small Business Management*, 53(4), 1241-1263.
- Chadee, D., Roxas, B. (2013). Institutional environment, innovation capacity and firm performance in Russia. *Critical Perspectives on International Business*, 9(1), 19-39.
- Chung, T.A., Tseng, C.Y. (2019). The knowledge intensity and the economic performance in Taiwan's knowledge intensity business services. *Economic research - Ekonomika istraživanja*, 32(1), 797-811.
- Cohen, S., Kaimenakis, N. (2007). Intellectual capital and corporate performance in knowledge-intensive SME's. *The Learning Organization*, 14(3), 241-262.
- Daud, S., Yusoff, W.F.W. (2010). Knowledge management and firm performance in SMEs: The role of social capital as a mediating variable. *Asian Academy of Management Journal*, 15(2), 135-155.
- Davis, J.B., McMaster, R. (2015). Situating care in mainstream health economics: an ethical dilemma? *Journal of Institutional Economics*, 11(4), 749-767.
- DeSarbo, W.S., Anthony Di Benedetto, C., Song, M., Sinha, I. (2005). Revisiting the Miles and Snow strategic framework: uncovering interrelationships between strategic types, capabilities, environmental uncertainty, and firm performance. *Strategic Management Journal*, 26(1), 47-74.
- Desouza, K.C., Awazu, Y. (2006). Knowledge management at SMEs: five peculiarities. *Journal of Knowledge Management*, 10(1), 32-43.
- Dewhurst, F.W., Cegarra-Navarro, J.G. (2004). External communities of practice and relational capital. *The Learning Organization*, 11(4-5), 322-331.
- DiMaggio, P.J., Powell, W.W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147-160.
- Fainshmidt, S., Wenger, L., Pezeshkan, A., Mallon, M.R. (2019). When do dynamic capabilities lead to competitive advantage? The importance of strategic fit. *Journal of Management Studies*, 56(4), 758-787.
- Fiss, P.C. (2007). A set-theoretic approach to organizational configurations. *Academy of Management Review*, 32(4), 1180-1198.
- Fiss, P.C. (2011). Building better causal theories: A fuzzy set approach to typologies in organization research. *Academy of Management Journal*, 54(2), 393-420.
- Glaeser, J. (2008). Just how flexible is the German selective secondary school system? A configurational analysis. *International Journal of Research & Method in Education*, 31(2), 193-209.
- Greckhamer, T., Furnari, S., Fiss, P. C., & Aguilera, R. V. (2018). Studying configurations with qualitative comparative analysis: Best practices in strategy and organization research. *Strategic Organization*, 16(4), 482-495.
- Greenwood, R., Suddaby, R., Hinings, C.R. (2002). Theorizing change: The role of professional associations in the transformation of institutionalized fields. *Academy of Management Journal*, 45(1), 58-80.
- Hampel, K.D. (2021). Patients' assessment of medical services quality—a determinant of changes in medical entity management on the example of Poland. *Journal of Organizational Change Management*, 34(7), 1270-1284.
- Harris, R.V., Sun, N. (2012). Dental practitioner concepts of efficiency related to the use of dental therapists. *Community Dentistry and Oral Epidemiology*, 40(3), 247-256.
- Henry, C., Rushton, J., Baillie, S. (2016). Exploring the sustainability of small rural veterinary enterprise. *Journal of Small Business and Enterprise Development*, 23(1), 259-273.
- Helmig, B., Hinz, V., Ingerfurth, S. (2014). Extending Miles & Snow's strategy choice typology to the German hospital sector. *Health policy*, 118(3), 363-376.
- Hilman, H., Kaliappen, N. (2014). Do cost leadership strategy and process innovation influence the performance of Malaysia hotel industry? *Asian Social Science*, 10(10), 134-141.
- Holopainen, R., Niskanen, M., Rissanen, S. (2020). The impact of internet and innovation on the profitability of private healthcare companies. *Journal of Small Business & Entrepreneurship*, 1-25.
- Hosseini, M., Owlia, M.S. (2016). Designing a model for measuring and analyzing the relational capital using factor analysis: Case study, Ansar bank. *Journal of Intellectual Capital*, 17(4), 734-757.
- Huggins, R., Weir, M. (2012). Intellectual assets and small knowledge-intensive business service firms. *Journal of Small Business and Enterprise Development*, 19(1), 92-113.
- Jacobson, P.D., Dalton, V.K., Berson-Grand, J., Weisman, C.S. (2005). Survival strategies for Michigan's health care safety net providers. *Health Services Research*, 40(3), 923-940.
- Johnston, M. (2013). *Mimetic, coercive and normative influences and the decision of national sport organizations to bid for world championship events*. (Doctoral dissertation). Auckland University of Technology.


- Kelliher, C., Parry, E. (2015). Change in healthcare: the impact on NHS managers. *Journal of Organizational Change Management*, 28(4), 591-602.
- Kerska, G.S. (2016). Economic Protectionism and Occupational Licensing Reform. *Minnesota Law Review*, 101, 1703-1747.
- Ketchen Jr, D. J., Combs, J. G., Russell, C. J., Shook, C., Dean, M. A., Runge, J., ... & Lamoureux, S. (1997). Organizational configurations and performance: A meta-analysis. *Academy of Management Journal*, 40(1), 223-240.
- Lai, Y., Saridakis, G., Johnstone, S. (2017). Human resource practices, employee attitudes and small firm performance. *International Small Business Journal*, 35(4), 470-494.
- Lee, J.N., Park, Y., Straub, D.W., Koo, Y. (2019). Holistic Archetypes of IT Outsourcing Strategy: A Contingency Fit and Configurational Approach. *Management Information Systems Quarterly*, 43(4), 1201-1225.
- Leick, B., Gretzinger, S. (2020). Business networking in organisationally thin regions: a case study on network brokers, SMEs and knowledge-sharing. *Journal of Small Business and Enterprise Development*, 27(5), 839-861.
- Lieberman, M.B., Asaba, S. (2006). Why do firms imitate each other? *Academy of Management Review*, 31(2), 366-385.
- Llodrá-Calvo, J.C., Bourgeois, D. (2009). *Estudio prospectivo Delphi. La salud bucodental en España 2020*. Tendencias y objetivos de salud oral. Madrid: Fundación Dental Española.
- Marlin, D., Huonker, J.W., Sun, M. (2002). An examination of the relationship between strategic group membership and hospital performance. *Health Care Management Review*, 27(84), 18-29.
- Meyer, A. D., Tsui, A. S., & Hinings, C. R. (1993). Configurational approaches to organizational analysis. *Academy of Management Journal*, 36(6), 1175-1195.
- Meyer, J.W., Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 340-363.
- Miles, R.E., Snow, C.C. (1978). *Organization strategy, structure and process*. New York: McGraw-Hill.
- Miller, D. (1996). Configurations revisited. *Strategic Management Journal*, 17(7), 505-512.
- Miller, D. (2018). Challenging trends in configuration research: Where are the configurations? *Strategic Organization*, 16(4), 453-469.
- Miller, D., & Friesen, P. H. (1978). Archetypes of strategy formulation. *Management Science*, 24(9), 921-933.
- Mintzberg, H. (1979). *The Structuring of Organizations: A Synthesis of the Research*. Englewood Cliffs, NJ: Prentice-Hall.
- Moore, M. (2005). Towards a confirmatory model of retail strategy types: an empirical test of Miles and Snow. *Journal of Business Research*, 58(5), 696-704.
- Murwatiningsih, M., EndahWahyuningsih, S., Murniawaty, I. (2019). Creating the entrepreneurial networking through the business superiority and adaptability of business environment to improve the marketing performance. *Malaysian E Commerce Journal*, 3(2), 36-40.
- Nash, D.A. (1994). A tension between two cultures... dentistry as a profession and dentistry as proprietary. *Journal of Dental Education*, 58(4), 301-306.
- Perron, L., Vander Plaetse, B., Taylor, D. (2014). United Nations Millennium Development Goals 4 and 5: Augmenting the role of health professional associations. *International Journal of Gynecology & Obstetrics*, 127, 6-9.
- Porter, M. (1980). *Competitive Strategy*. New York: The Free Press.
- Rihoux, B., Ragin, C.C. (2008). *Configurational comparative methods: Qualitative comparative analysis (QCA) and related techniques*. SAGE Publications.
- Ragin, C.C. (2006). Set relations in social research: Evaluating their consistency and coverage. *Political Analysis*, 14(3), 291-310.
- Robinson Jr, R.B., Pearce, J.A. (1988). Planned patterns of strategic behavior and their relationship to business-unit performance. *Strategic Management Journal*, 1, 43-60.
- Schneider, C.Q., Wagemann, C. (2010). Standards of good practice in qualitative comparative analysis (QCA) and fuzzy-sets. *Comparative Sociology*, 9(3), 397-418.
- Snow, C.C., Hrebiniak, L.G. (1980). Strategy, distinctive competence, and organizational performance. *Administrative Science Quarterly*, 25(2), 317-336.
- Stewart, T.A. (1997). *Intellectual Capital: The New Wealth of Organizations*, Doubleday/Currency. New York, NY.
- Sveiby, K.E. (1997). *The new organizational wealth: Managing & measuring knowledge-based assets*, San Francisco: Berrett-Koehler Publishers.
- Tai, W.S., Chen, C.T. (2009). A new evaluation model for intellectual capital based on computing with linguistic variable. *Expert Systems with Applications*, 36(2), 3483-3488.
- Teece, DJ. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319-1350.
- Thackeray, R., Neiger, B.L., Roe, K.M. (2005). Certified health education specialists' participation in professional associations: implications for marketing and membership. *Journal of Health Education*, 36(6), 337-360.
- Tongur, S., Engwall, M. (2014). The business model dilemma of technology shifts. *Technovation*, 34(9), 525-535.
- Torgovicky, R., Goldberg, A., Shvarts, S., Dayan, Y.B., Onn, E., Levi, Y., BarDayan, Y. (2005). Application of Porter's generic strategies in ambulatory health care: a comparison of managerial perceptions in two Israeli sick funds. *Health Care Management Review*, 30(1), 17-23.
- Trathen, A., Gallagher, J.E. (2009). Dental professionalism: definitions and debate. *British Dental Journal*, 206(5), 249-253.
- Vaillant, Y., Lafuente, E., Horváth, K., Vendrell-Herrero, F. (2021). Regions on course for the Fourth Industrial Revolution: the role of a strong indigenous T-KIBS sector. *Regional Studies*, 1-13.
- Wang, T., Qureshi, I., Deeds, D., Ren, Y. (2019). How do technology ventures signal IPO quality? A configurational approach. *Journal of Business Research*, 99, 105-114.
- Watson, A., Stanworth, J. (2006). Franchising and intellectual capital: A franchisee's perspective. *The International Entrepreneurship and Management Journal*, 2(3), 337-349.
- Windrum, P., Tomlinson, M. (1999). Knowledge-intensive services and international competitiveness: a four-country comparison. *Technology Analysis & Strategic Management*, 11(3), 391-408.
- Zaefarian, G., Henneberg, S.C., Naudé, P. (2013). Assessing the strategic fit between business strategies and business relationships in knowledge-intensive business services. *Industrial Marketing Management*, 42(2), 260-272.
- Zarandi, M.H.F., Mohammadhasan, N., Bastani, S. (2012). A fuzzy rule-based expert system for evaluating intellectual capital. *Advances in Fuzzy Systems*, 2012, 1-11.
- Zott, C., Amit, R., Massa, L. (2011). The business model: recent developments and future research. *Journal of Management*, 37(4), 1019-1042.
- Zucker, L.G. (1987). Institutional theories of organization. *Annual Review of Sociology*, 13, 443-464.

Day of the Week Effect and Adaptive Markets in Latin American Stock Indices

Dacio Villarreal-Samaniego* 

Profesor titular de tiempo completo, Departamento de Ciencias Económico – Administrativas, Tecnológico Nacional de México – Campus Parral, Hidalgo del Parral, México.

jesusdacio@yahoo.com

Roberto J. Santillán 

Profesor e investigador, Facultad de Economía, Universidad Autónoma de Nuevo León, San Nicolás de los Garza, México.

roberto.santillan@me.com

Abstract

The objective of this work is to examine the Day-of-the-Week anomaly from the perspective of the Adaptive Markets Hypothesis for the stock market indices of Argentina, Brazil, Chile, Colombia, Mexico, and Peru in different subperiods and under different market conditions. The Autoregressive-Moving-Average, Generalized-Autoregressive-Conditional-Heteroskedasticity specifications, and the Kruskal-Wallis test used in the study reveal that the Day-of-the-Week effect appears and disappears in three of the indices and that its presence varies under different market conditions in all of them. This empirical evidence supports the Adaptive Markets Hypothesis.

Keywords: day-of-the-week effect; Latin American stock indices; adaptive markets hypothesis; efficient markets hypothesis.

El Efecto Día de la Semana y la Hipótesis del Mercado Adaptativo en las Bolsas de Valores de América Latina

Resumen

El objetivo de este trabajo es examinar la anomalía Día-de-la-Semana (DOW) desde la perspectiva de la Hipótesis de Mercados Adaptativos en los índices bursátiles de Argentina, Brasil, Chile, Colombia, México y Perú en diferentes subperíodos y bajo diferentes condiciones de mercado. Las especificaciones de Promedio-Móvil-Autorregresivo, Heteroscedasticidad-Condiciona-Autorregresiva-Generalizada, y las pruebas de Kruskal-Wallis utilizadas en el estudio revelan que el efecto Día-de-la-Semana aparece y desaparece en tres de los índices y que su presencia varía bajo diferentes condiciones del Mercado en todos ellos. Esta evidencia empírica apoya la Hipótesis de Mercados Adaptativos.

Palabras clave: efecto día de la semana; índices bursátiles latinoamericanos; hipótesis de los mercados adaptativos; hipótesis de los mercados eficientes.

O efeito do dia-da-semana e a hipótese de mercado adaptativo nas bolsas de valores latino-americanas

Resumo

O objetivo deste artigo é examinar o efeito dia-da-semana (DOW) sob a perspectiva da hipótese dos mercados adaptativos nos índices de ações da Argentina, Brasil, Chile, Colômbia, México e Peru em diferentes subperíodos e sob diferentes condições de mercado. As especificações dos testes média móvel autoregressiva, heterocedasticidade condicional autoregressiva generalizada e Kruskal-Wallis, utilizados no estudo, revelam que o efeito dia-da-semana aparece e desaparece em três dos índices e que sua presença varia de acordo com diferentes condições de mercado em todos eles. Esta evidência empírica apoia a hipótese dos mercados adaptativos.

Palavras-chave: efeito do dia-da-semana; índices de ações latino-americanas; hipótese de mercados adaptativos; hipótese de mercados eficientes.

* Corresponding author.

JEL classification: C58; G14; G15.

How to cite: Villarreal-Samaniego, D. & Santillán-Salgado, R. J. (2023). Day of the Week Effect and Adaptive Markets in Latin American Stock Indices. *Estudios Gerenciales*, 39(168), 286-296. <https://doi.org/10.18046/j.estger.2023.168.5796>

DOI: <https://doi.org/10.18046/j.estger.2023.168.5796>

Received: 23-10-2022

Accepted: 09-02-2023

Available on line: 30-09-2023

1. Introduction

According to the Efficient Markets Hypothesis (EMH), the random pattern with which new information reaches the market makes it improbable that any investor may consistently outperform the market index. This is because new information is incorporated into financial prices immediately and unbiasedly, and the magnitude and direction of price changes cannot be anticipated. That reasoning leads to the conclusion that financial prices reflect all relevant information to their valuation at all times (Fama, 1970). The EMH defines three forms of market efficiency. Weak-form efficiency implies that asset prices fully reflect all historical information on the assets' prices, semi-strong-form efficiency suggests that asset prices display all publicly available information, while strong-form efficiency indicates that asset prices reflect all available information, whether such information is publicly available or not.

Notwithstanding the solid arguments behind the EMH and the empirical evidence that supports it, the literature has reported several market anomalies that potentially represent opportunities for investors to anticipate price movements, an outcome that opposes the weak form efficiency. Additionally, in his chronological research note on the EMH, Sewell (2011) found that less than half of the papers he reviews on the extensive literature support market efficiency.

From a theoretical point of view, Behavioral Finance challenges the EMH by claiming that the main cause of market anomalies is the irrationality with which investors make decisions (Mandaci, Taşkin, & Ergün, 2019), and Lo's (2004) Adaptive Markets Hypothesis (AMH) attempts to reconcile the views of the EMH and Behavioral Finance (Lo, 2005) by suggesting that market anomalies may exist in the context of investors' rational decision-making process.

Although both alternative approaches recognize the existence of market anomalies, Behavioral Finance explains it as irrational behavior while the AMH does not contradict the principle of investors' rational behavior but proposes a logical explanation for the odd nature of market anomalies. For that reason, this work has chosen the AMH as the theoretical tenant under which to test the presence of the DOW effect in Latin American markets.

Gregoriou, Kontonikas, & Tsitsianis (2004) argue that the DOW effect is the most persistent calendar anomaly of all. Recently, Zhang, Lai, & Lin (2017) examined this anomaly in the stock indices of 25 developed and emerging countries and concluded that it was present in all the indices. Tadepalli & Jain (2018) studied the DOW effect in several indices of the Indian equity market and found a widespread existence of such an anomaly. Winkelried & Iberico (2018) found the DOW effect in five of the six Latin American stock markets they examined. Villarreal-Samaniego, Santillán-Salgado, & Lagunes-Pérez (2022)

concluded that the DOW effect was consistently present in the Mexican stock market's returns and volatility.

Although a few studies on this subject have focused on emerging capital markets, most of them have centered their attention and interest on more developed ones. Furthermore, studies regarding the DOW effect and other calendar anomalies in Latin America adopt the static perspective implied by the EMH (e.g., Winkelried & Iberico, 2018) and not the dynamic approach suggested by the AMH. So, the central motivation of this study is to examine the DOW effect from the perspective of the AMH in some representative Latin American stock indices.

This research work contributes to the literature studying the DOW anomaly in six Latin American capital markets from the viewpoint of the AMH. Seemingly, this is the first time the DOW anomaly has been studied from that perspective in Latin America. The study's empirical analysis is based on ARMA-GARCH specifications, while non-parametric Kruskal-Wallis tests account for the non-normality distribution in the time series returns.

The paper is organized as follows: section two reviews the relevant literature; section three describes the data and methodology; section four reports the empirical results; and section five concludes the paper.

2. Literature Review

Market anomalies reported in the literature challenge the EMH because they potentially create extraordinary profit opportunities for investors, in contradiction to the fundamental assumptions of weak-form market efficiency (Plastun, Sibande, Gupta, & Wohar, 2020). Although the literature has reported several calendar anomalies (e.g., Villarreal-Samaniego, Santillán-Salgado, & Lagunes-Pérez, 2022), and has studied them in Latin America (e.g., Rojas & Kristjanpoller, 2014) the present work focuses on the Day-of-the-Week effect (French, 1980) from the perspective of the AMH in a sample of six Latin American countries. While the DOW effect has been studied in the region before, this work represents an original contribution by introducing the interpretative standpoint of the AMH on the empirical evidence recovered from the analysis.

2.1 The Adaptive Markets Hypothesis

The AMH combines the theory of evolutionary psychology (Wilson, 1975) and the bounded rationality principle (Simon, 1982) to interpret financial markets activity. The AMH agrees with the EMH in that market participants act following their self-interest. However, the EMH does not consider it possible for investors to make mistakes, while the AMH considers that investors make them, but they learn and adapt. According to the AMH, the degree of market efficiency changes with the financial ecosystem, although markets remain

competitive and adaptive. Time-varying market conditions, as well as the number of market participants and their ability to succeed, determine whether specific investment strategies are profitable or not (Rosini & Shenai, 2020). In brief, the AMH asserts that individuals act in their self-interest, make mistakes, learn, and—driven by competition and innovation—adapt to different environments. Also, that theory considers that natural selection shapes market ecology, and evolution determines market dynamics (Lo, 2005).

Some representative studies on the AMH include Kim, Shamsuddin, & Lim (2011) who examined the predictability of returns of the Dow Jones Industrial Average (DJIA) from 1990 to 2009 with variance ratio and automatic portmanteau tests using rolling windows to study whether market conditions drive market predictability. They found confirmatory evidence. Urquhart & Hudson (2013) report that, over the long run, the AMH describes stock returns better than the EMH in the United States, the United Kingdom, and Japan. Boya (2019) concluded that the French stock market exhibits sequential periods of both inefficiency and efficiency, an outcome that may be explained by the AMH.

2.2 The Day-of-the-Week Effect in Latin American Capital Markets and the AMH

The DOW anomaly implies that asset returns and volatility on a particular day of the week are significantly different from the average of the rest of the days. Zhang, Lai, & Lin (2017) used GARCH specifications to study the DOW anomaly in 28 stock markets from 25 countries and reported significant DOW effects in several of them. Plastun, Sibande, Gupta, & Wohar (2019) examined the Dow Jones Industrial Average (DJIA) index between 1900 and 2018 and concluded that the peak of the DOW anomalies for the DJIA took place during the mid- 20th century, and any significant evidence disappeared from the year 2000 onwards.

Rojas & Kristjanpoller (2014) studied the impact of the 1997 and 2008 financial crises on the DOW anomaly for the stock markets of Argentina, Brazil, Chile, Colombia, Mexico, and Peru and found it disappeared between June 2008 and August 2013, the last subperiod of the three they considered, arguably due to increased market efficiency.

Winkelried & Iberico (2018) studied the DOW effect for the same Latin American stock markets with extreme bounds analysis and reported that between 1995 and 2014 Monday average returns were significantly negative, while Friday average returns were the highest and statistically significant in five of the six markets.

The most frequently used theoretical framework in DOW anomaly studies is the EMH. However, several recent studies have opted for the AMH (e.g., Akhter & Yong, 2021). Similarly, the present study uses the theoretical framework of the AMH to study the DOW anomaly in Latin America.

3. Data and Methodology

3.1 Data

This paper examines six Latin American stock market indices: Merval (Argentina), BOVESPA (Brazil), IPSA (Chile), COLCAP (Colombia), IPC (Mexico), and ISBVL (Peru). The series span from July 1995 to June 2020, except for Colombia's stock market index¹, as in November 2013 the COLCAP replaced the IGBC as the main stock market index (Sierra, Duarte, & Rueda, 2015). The total period of observation was divided into five 5-year subsamples to obtain equal-length periods. However, since the IGBC and the COLCAP had differences in components, methodology, and data collection techniques that made these two indices dissimilar, the study does not extrapolate the behavior of the latter based on the former. So, the observations for the Colombian market were divided into one subsample of 2 years and ten months (from September 2007 to June 2010) and two 5-year subsamples (from July 2010 to June 2015 and from July 2015 to June 2020).

3.2 Methodological Issues

According to Yuan & Gupta (2014), ARMA-GARCH models are the most popular to test for seasonality. The study uses ARMA (p,q)-GARCH (1,1) specifications. The general form of the models is:

$$r_t = \alpha + \sum_{j=1}^p \omega_j r_{t-j} + \varepsilon_t + \sum_{l=1}^q \eta_l \varepsilon_{t-l} \quad (1)$$

$$\sigma_t^2 = \gamma + \delta_1 \varepsilon_{t-1}^2 + \lambda_1 \sigma_{t-1}^2 \quad (2)$$

Equation (1) is the mean equation of the ARMA-GARCH model, where r_t represents the daily returns at time t , computed as the difference between the natural logarithm of the index price at day t and that of day $t-1$. Daily returns are dependent on their past values (r_{t-j}), a constant (α), an error term (ε_t), and past shocks (ε_{t-l}). In equation (2), the error term is considered to be a GARCH process where σ_t^2 is a linear function of the last period's squared error (ε_{t-1}^2) and its own lagged value (σ_{t-1}^2). The intercept is γ , while δ_1 and λ_1 describe the presence of heteroskedasticity in the series.

The study follows the approach of Borges (2009) to model seasonal anomalies, estimating five sets of mean and variance equations to identify specific DOW anomalies. Accordingly, Equation (1) was modified as follows:

$$r_t = \alpha + \beta_i D_{i,t} \sum_{j=1}^p \omega_j r_{t-j} + \varepsilon_t + \sum_{l=1}^q \eta_l \varepsilon_{t-l} \quad (3)$$

¹ Excluding the COLCAP with 3,126 data points, the minimum number of observations was 6,145 for the Merval, and the maximum was 6,283 for the IPC.

In Equation (3), i represents the day of the week, $D_{i,t}$ is a dummy variable that takes a value of 1 if the observation corresponds to the i -th day of the week, and a value of zero otherwise. For example, if the model includes a dummy variable for Monday, α represents the mean daily returns of the remaining days, while β_1 represents the average excess return on Monday. The same logic holds for the coefficients β_2 , β_3 , β_4 , and β_5 , which identify other DOW effects. A t-test for β_i is used to establish whether a particular DOW anomaly is significantly different from zero.

Despite its favorable attributes, the ARMA-GARCH model cannot capture the non-normality of the data. Thus, the study uses a non-parametric Kruskal-Wallis (K-W) test to examine the differences between the returns on a specific day of the week and other days. Equation (4) represents the K-W model:

$$H = \left(\frac{12}{N(N+1)} \sum_{j=1}^k \frac{R_j^2}{n_j} \right) - 3(N+1) \quad (3)$$

where N is the total number of observations, R_j^2 is the average rank of observations in the j -th group, k is the number of groups, and n_j is the total number of observations in the j -th group.

3.3 Subsamples and Market Condition Classifications

Following Xiong, Meng, Li, & Shen (2019) this study examines the behavior of the Day-of-the-Week effect dividing the data into five 5-year subsamples, except for the COLCAP, as mentioned previously. These equal-length subsamples provide enough observations to obtain reliable results.

Although the AMH postulates that the predictability of returns changes with market conditions (Lo, 2004), it is not explicit about which are the indicators of such conditions (Kim et al., 2011). Following Fabozzi & Francis (1977), the study splits the data into Up and Down months. Months in which the average return was non-negative were classified as Up periods, and months with a negative average return were defined as Down periods. The ARMA-GARCH model is then used to determine the presence of the DOW effect under such market conditions.

This research work also used the definition of bull, bear, and normal markets proposed by Klein & Rosenfeld (1987) to examine the DOW effect: a month is categorized as a substantial market mover when the absolute value of the monthly return of a particular index is greater than one-half of that index monthly returns' standard deviation over the observation period. Thus, the study classifies the sample into bear, bull, and normal categories considering the trend, or the lack thereof, implied in this classification. For example, if a market index's return increases or is normal in a particular month while it presents a bearish pattern in the previous and following months, this month

is said to be bearish. Accordingly, to re-classify a market there must be at least two successive considerable movements in the same direction, as defined by Klein & Rosenfeld (1987).

4. Results

4.1 Graphical Analysis and Descriptive Statistics

Figure 1 depicts the full-sample daily returns of the six indices, where the presence of volatility clusters is evident in different periods. This behavior strongly suggests the existence of heteroskedasticity and justifies the use of GARCH-type models². Table 1 shows descriptive statistics and confirms that returns do not adjust to a normal distribution. The Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests confirm all series are stationary³.

Table 2 presents the mean, median, and standard deviation of the returns for each day of the week and the rest of the days. The mean significance levels refer to Welch's F-test, which assumes normality but is robust when the homogeneity of variance assumption does not hold. The median significance levels refer to the Kruskal-Wallis test. Although the K-W test does not assume normality, it requires the assumption of equal variance (Vargha & Delaney, 1998). Thus, following Khan, Aqil, Alam Kazmi, & Zaman (2021), Table 2 considers both tests to account for non-normality and heteroskedasticity in the series. The results reveal a significant Weekend effect, defined as the combination of the Monday and Friday anomalies, in the IPSA and ISBVL and a significant and robust Monday anomaly in the BOVESPA and COLCAP. The latter also shows a significant Wednesday effect. Although the study found evidence of a Weekend effect in the Merval and the IPC, average return differences with other days of the week were not significant according to the K-W test.

4.2 Time-Varying Pattern of the DOW Effect

Table 3 reports the coefficients (β) of the conditional mean equations of the ARMA-GARCH models corresponding to the dummy variables of each day of the week, and the results of the K-W test for each index. Only the stock market indices of Argentina and Mexico did not present any significant DOW effect during the 1995-2020 sample period. Furthermore, the Argentine index did not show any evidence of the DOW anomaly in the 5-year subsamples either, in line with the EMH's weak form propositions. These outcomes generally agree with those reported by Kristjanpoller (2012) and Winkelried & Iberico (2018).

² We developed OLS models to test for the presence of heteroskedasticity in the residuals of the return's series. All the models showed significant heteroskedasticity. The results are not shown here for the sake of brevity but are available upon request.

³ These results are available upon request.

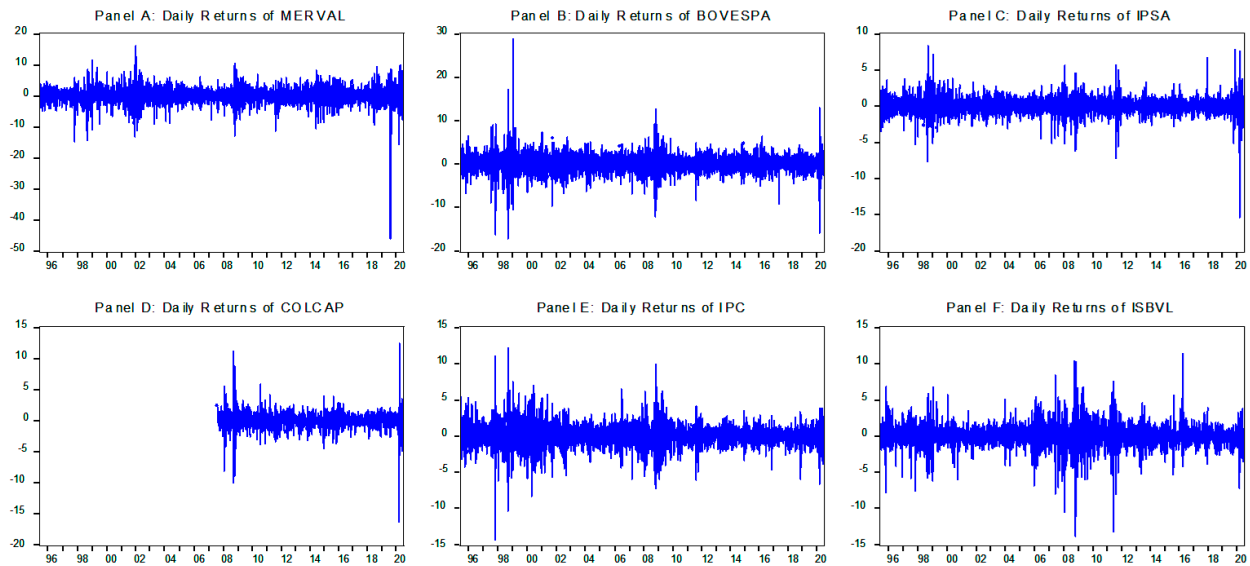


Figure 1. Daily returns of the six indices.

Source: own elaboration.

Table 1. Descriptive statistics of the indices' daily returns.

	Argentina	Brazil	Chile	Colombia	Mexico	Peru
Index	MERVAL	BOVESPA	IPSA	COLCAP	IPC	ISBVL
Full period	07/01/1995 - 06/30/2020	07/01/1995 - 06/30/2020	07/01/1995 - 06/30/2020	09/01/2007 - 06/30/2020	07/01/1995 - 06/30/2020	07/01/1995 - 06/30/2020
Mean	0,07417	0,05291	0,02093	0,00217	0,04526	0,03960
Median	0,12795	0,10426	0,02023	0,02122	0,05255	0,03819
Maximum	16,11651	28,81763	11,78472	12,46974	12,15364	14,73889
Minimum	-46,06238	-17,22924	-15,39114	-16,29032	-14,31388	-13,85580
Std. Dev.	2,30901	2,03079	1,10502	1,20635	1,39820	1,46574
Skewness	-1,63378	0,07880	-0,48952	-1,05318	0,02251	-0,33048
Kurtosis	32,96799	16,47019	19,51980	32,59327	10,49375	14,39112
Jarque-Bera	232679,70 ***	46766,55 ***	71044,41 ***	114645,80 ***	14701,79 ***	33899,40 ***

Note: ***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

Source: own elaboration.

Table 2. Descriptive statistics of the DOW effect.

	MERVAL			BOVESPA			IPSA		
	Mean	Std. Dev.	K-W	Mean	Std. Dev.	K-W	Mean	Std. Dev.	K-W
Monday	-0,1034 ***	2,8177	2,504	-0,0723 **	2,1576	5,633 **	-0,1327 ***	1,2705	38,225 ***
Rest of the days	0,1153	2,1725		0,0842	1,9969		0,0582	1,0577	
Tuesday	0,0551	2,1864	0,365	0,1395 *	1,9350	0,706	-0,0038	1,0426	3,515 *
Rest of the days	0,0791	2,3396		0,0313	2,0536		0,0272	1,1203	
Wednesday	0,1295	2,1828	1,317	0,1057	1,9391	1,054	0,0429	1,1241	1,477
Rest of the days	0,0599	2,3405		0,0394	2,0535		0,0153	1,1002	
Thursday	0,0920	2,2657	0,024	-0,0441 *	2,1268	0,295	0,0551	1,0738	3,208 *
Rest of the days	0,0697	2,3201		0,0769	2,0058		0,0123	1,1127	
Friday	0,1858 *	2,0485	0,703	0,1346	1,9791	1,089	0,1406 ***	0,9796	25,158 ***
Rest of the days	0,0462	2,3691		0,0326	2,0431		-0,0086	1,1320	
	COLCAP			IPC			ISBVL		
	Mean	Std. Dev.	K-W	Mean	Std. Dev.	K-W	Mean	Std. Dev.	K-W
Monday	-0,1659 ***	1,4273	10,274 ***	-0,0314 **	1,4997	2,449	-0,0514 **	1,6473	11,301 ***
Rest of the days	0,0367	1,1530		0,0640	1,3718		0,0625	1,4158	
Tuesday	0,0542	1,1844	0,358	0,0704	1,4208	0,038	-0,0177	1,3361	4,910 **
Rest of the days	-0,0116	1,2120		0,0388	1,3924		0,0541	1,4966	
Wednesday	0,0870 **	1,2510	7,550 ***	0,1040 *	1,3842	2,994	0,0378	1,4484	0,498
Rest of the days	-0,0203	1,1935		0,0303	1,4015		0,0400	1,4702	
Thursday	0,0021	1,1719	0,003	0,0324	1,4292	0,106	0,0338	1,4737	0,427
Rest of the days	0,0022	1,2154		0,0484	1,3905		0,0410	1,4639	
Friday	0,0020	0,9845	0,115	0,0482	1,2439	0,114	0,1992 ***	1,3940	18,145 ***
Rest of the days	0,0022	1,2572		0,0445	1,4340		0,0006	1,4803	

Note: ***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

Source: own elaboration.

Table 3. Subsample analysis of the DOW effect.

	Monday		Tuesday		Wednesday		Thursday		Friday	
	B	K-W	B	K-W	B	K-W	B	K-W	B	K-W
MERVAL										
1995 - 2020	-0,09449	2,504	-0,08565	0,365	0,11078 *	1,317	0,05242	0,024	0,01758	0,703
1995 - 2000	-0,15131	0,575	-0,02495	1,117	0,02973	0,068	0,03749	0,593	0,10515	0,507
2000 - 2005	-0,09767	0,051	-0,09132	0,119	-0,01924	0,022	0,14144	0,000	0,06252	0,173
2005 - 2010	-0,02232	0,017	-0,16106	0,638	0,18374	1,711	-0,03297	0,031	0,03605	0,047
2010 - 2015	-0,15873	0,861	-0,01733	0,029	0,11204	0,007	-0,02446	0,000	0,09189	0,944
2015 - 2020	-0,12881	2,041	-0,06819	1,197	0,10435	1,964	0,17470	1,454	-0,06254	0,026
BOVESPA										
1995 - 2020	-0,10848 **	5,633 **	-0,00568	0,706	0,09266 **	1,054	-0,02837	0,295	0,04602	1,089
1995 - 2000	-0,21035 *	0,928	-0,00544	0,639	0,10223	0,060	-0,10452	1,077	0,21147 *	2,059
2000 - 2005	-0,24404 *	4,642 **	-0,02585	0,062	0,09982	0,000	-0,00456	0,108	0,17225	4,348 **
2005 - 2010	-0,05051	0,558	-0,10504	0,019	0,25752 **	4,428 **	-0,16023	0,755	0,04492	0,141
2010 - 2015	-0,04358	0,130	-0,02987	0,000	0,00901	0,052	0,08135	0,747	-0,01879	0,072
2015 - 2020	-0,11024	0,901	0,12626	2,557	0,05132	0,908	0,00454	0,233	-0,07007	1,287
IPSA										
1995 - 2020	-0,16322 ***	5,418 ***	-0,00246	0,891	0,02976	-0,791	0,00821	-1,227	0,12758 ***	-4,251 ***
1995 - 2000	-0,33948 ***	15,992 ***	-0,02135	0,124	0,02939	0,976	0,03095	0,050	0,30282 ***	12,994 ***
2000 - 2005	-0,22954 ***	11,921 ***	-0,01882	1,675	-0,00106	0,013	0,06986	3,359 *	0,17191 ***	7,611 ***
2005 - 2010	-0,04914	2,386	-0,06364	2,214	0,09662	1,623	-0,02598	1,029	0,04188	0,521
2010 - 2015	-0,16533 ***	7,573 ***	0,01850	0,025	0,05140	0,525	-0,03666	0,046	0,13844 ***	3,853 **
2015 - 2020	-0,09016 *	3,428 *	0,02792	0,809	0,00971	0,102	0,00246	1,377	0,04686	3,512 *
COLCAP										
2007 - 2020	-0,09590 **	10,274 ***	0,01371	0,358	0,11599 ***	7,550 ***	-0,05107	0,003	-0,00432	0,115
2007 - 2010	-0,15700	2,511	-0,05168	0,048	0,19881 ***	0,281	-0,06738	0,224	0,07375	2,665
2010 - 2015	-0,13002 **	5,867 **	0,08573	2,365	0,08182	1,531	-0,13002 **	0,235	-0,00628	1,019
2015 - 2020	-0,04206	2,156	-0,02511	0,128	0,10833 **	7,315 ***	-0,03502	0,028	-0,01767	0,741
IPC										
1995 - 2020	0,00529	2,449	-0,01844	0,038	0,03811	2,994 *	-0,02420	0,106	-0,00239	0,114
1995 - 2000	-0,21186 *	4,224 **	-0,05455	0,461	0,19629 **	2,708 *	0,05134	0,217	0,02809 *	0,400
2000 - 2005	-0,06992	2,409	0,07451	0,396	0,08245	0,005	0,06716	1,195	-0,05281	0,008
2005 - 2010	0,10201	0,013	-0,05256	0,162	0,10619	1,454	-0,07080	0,281	-0,08528	0,158
2010 - 2015	0,01893	0,083	-0,05324	0,058	0,03556	0,006	-0,02204	0,040	0,01991	0,422
2015 - 2020	0,03312	0,083	0,01896	0,510	-0,00901	0,705	-0,06432	3,456 *	0,02229	0,278
ISBVL										
1995 - 2020	-0,08937 ***	11,301 ***	-0,07312 **	4,910 **	0,03067	0,498	0,00828	0,427	0,12236 ***	18,145 ***
1995 - 2000	-0,21695 ***	5,933 **	-0,00941	0,506	-0,05476	0,247	0,02865	0,015	0,26571 ***	14,450 ***
2000 - 2005	-0,09348	2,210	-0,09809 *	3,302 *	-0,01683	0,220	0,03606	0,907	0,17141 ***	8,066 ***
2005 - 2010	0,09583	0,035	-0,12743	1,115	0,17742 **	1,344	-0,21190 **	0,958	0,09466	0,455
2010 - 2015	-0,06711	6,154 **	-0,09477	0,044	-0,00226	0,500	0,05442	2,626	0,11090 *	3,240 *
2015 - 2020	-0,13093 ***	3,264 *	-0,04280	1,532	0,11442 **	3,006 *	0,03684	0,301	0,02025	0,602

Note: ***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

Source: own elaboration.

In the subperiod analysis, the study found evidence that supports the presence of a Monday effect in five of the indices, along with a Friday anomaly in three of them.

The results also revealed a Wednesday regularity in four indices and a Thursday effect in one. The Weekend effect disappeared and reappeared in the IPSA, and the

same was true for the Monday anomaly in the ISBVL. Similarly, The DOW anomaly also emerged, declined, and reappeared in different subperiods in the case of the COLCAP. Thus, the analysis found significant evidence for the AMH in the stock market indices of Chile, Peru, and Colombia. The absence of the DOW during the last two subperiods in the Brazilian and Mexican stock indices suggests an increase in their weak form efficiency, as previously reported by [Kristjanpoller & Arenas \(2015\)](#) and [Rojas & Kristjanpoller \(2014\)](#).

4.3 The DOW Effect Under Different Market Conditions

After filtering the indices returns according to the Up-Down market classification approach, the study examined the behavior of the DOW effect using ARMA-GARCH models and Kruskal-Wallis tests. [Table 4](#) reports the results of the analysis.

The Monday effect was significant in all stock market indices during Down periods, except for the Mexican stock index. Interestingly, while the subsample analysis did not find any evidence of the DOW effect in the Merval, the results of the Up-Down analysis reveal a highly significant Monday effect in that index. The Wednesday effect is significant during Down months in the COLCAP. The results evidence a Friday effect in the ISBVL during

Up months and a very significant Weekend effect during Down months. The IPSA presented a significant Weekend effect for both Up and Down periods. The Monday effect is more pronounced during Down periods, while the Friday effect is more prominent during Up periods. The K-W test indicates a significant Tuesday anomaly in the Chilean stock index during Up months.

[Table 5](#) reports the results of the ARMA-GARCH model and the K-W test according to the bull, bear, and normal conditions proposed by [Klein & Rosenfeld \(1987\)](#).

The Monday effect was statistically significant for all stock indices under bear market conditions, but particularly so for the IPSA and ISBVL. There is a significant Weekend effect in normal conditions in the Chilean and Peruvian stock indices, and a Wednesday effect was present in the Colombian market index.

In summary, the six stock indices show the Monday effect in at least one of the declining market definitions (i.e., Down or bear), although the IPC is the one that shows less clear evidence in this regard. The IPSA and the ISBVL show a strong presence of the Weekend effect. In the former, under any orientation of the market and, in the latter, the anomaly tends to be stronger during declining market conditions. The BOVESPA, IPC, and Merval indices show the fewest anomalies under different market conditions.

Table 4. Results of the Day-of-the-Week effect under Up and Down conditions.

	Monday		Tuesday		Wednesday		Thursday		Friday	
	B	K-W	B	K-W	B	K-W	B	K-W	B	K-W
Merval										
Up	0,06669	0,626	-0,10446	3,260 *	0,05057	1,027	-0,00475	0,039	-0,00566	0,031
Down	-0,42462***	11,217 ***	0,04727	1,018	0,16603 *	0,324	0,10745	0,008	0,09952	2,448
BOVESPA										
Up	-0,06842	1,576	-0,00791	0,000	0,07374	1,006	-0,02122	0,257	0,02004	0,531
Down	-0,18500 **	4,196 **	0,02385	1,395	0,11434	0,156	-0,02374	0,184	0,06916	0,820
IPSA										
Up	-0,07807 **	8,946 ***	-0,04640	7,723 ***	0,05342 *	1,548	-0,01494	0,726	0,08408 ***	13,677 ***
Down	-0,27331 ***	37,076 ***	0,06460	0,045	-0,00269	0,244	0,00795	2,580	0,19967 ***	13,798 ***
COLCAP										
Up	-0,07735	4,402 **	0,04880	1,529	0,07364	2,476	-0,03174	0,034	-0,03302	0,498
Down	-0,15867 **	6,887 ***	-0,04075	0,095	0,14340 **	5,008 **	0,00564	0,019	0,03444	0,130
IPC										
Up	0,02271	1,623	-0,01246	0,517	0,07085 *	4,188 **	-0,05201	0,030	-0,03053	0,010
Down	-0,07036	0,997	-0,00580	0,059	-0,01458	0,067	0,04359	0,041	0,04772	0,475
ISBVL										
Up	-0,01377	2,556	-0,10430 ***	6,705 ***	0,05403	1,578	0,01256	0,039	0,05213	10,043 ***
Down	-0,17889 ***	10,446 ***	-0,03520	0,409	0,00832	0,088	-0,02225	1,270	0,21579 ***	9,395 ***

Note: ***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

Source: own elaboration.

Table 5. Results of the Day-of-the-Week effect under bull, normal, and bear market conditions.

	Monday		Tuesday		Wednesday		Thursday		Friday	
	B	K-W	B	K-W	B	K-W	B	K-W	B	K-W
MERVAL										
Bull	0,05000	0,057	-0,08727	1,388	0,02904	0,594	-0,01476	0,249	0,02742	0,105
Bear	-0,65171 ***	9,802 ***	0,14441	2,558	0,11387	0,105	0,12814	0,000	0,27503	3,118 *
Normal	-0,02544	0,210	-0,11946	1,095	0,11833 *	1,484	-0,00880	0,035	0,03563	0,212
BOVESPA										
Bull	0,03146	0,216	-0,03630	1,369	0,08591	0,395	-0,16353 *	1,189	0,07732	1,364
Bear	-0,32596 *	5,556 **	0,21974	3,537 *	0,16691	1,089	-0,04909	0,012	-0,00893	0,207
Normal	-0,12472 *	6,176 **	-0,00582	1,425	0,07965	0,120	0,02124	0,037	0,02604	0,563
IPSA										
Bull	-0,11001 **	5,010 **	-0,03451	2,615	0,03071	0,016	0,01037	0,624	0,10355 **	10,376 ***
Bear	-0,21728 ***	11,881 ***	0,01497	0,813	0,02014	0,124	-0,02053	2,948 *	0,19706 ***	5,138 **
Normal	-0,16627 ***	26,298 ***	0,00590	0,534	0,01959	2,685	0,01762	0,396	0,12176 ***	12,491 ***
COLCAP										
Bull	-0,03901	2,043	0,07243	0,626	-0,00221	0,038	-0,03664	0,188	-0,00232	0,010
Bear	-0,16673 *	7,060 ***	-0,02530	0,297	0,17411 *	4,607 **	-0,01674	0,576	0,01196	0,948
Normal	-0,08592	2,609	-0,02160	0,069	0,13970 ***	4,755 **	-0,06913	0,604	0,02153	0,121
IPC										
Bull	-0,02981	1,052	-0,00651	0,224	0,09573 *	3,974 **	-0,00750	0,000	-0,05475	0,266
Bear	-0,16073	4,039 **	0,18946 *	1,783	-0,02986	0,000	-0,08909	0,027	0,07988	0,662
Normal	0,01631	0,051	-0,02937	0,469	0,01828	0,514	-0,00662	0,079	0,00197	0,227
ISBVL										
Bull	0,06986	0,011	-0,08311	1,822	-0,02313	0,000	-0,04756	0,028	0,07995	1,750
Bear	-0,25966 ***	7,005 ***	0,08405	0,230	0,09047	0,361	0,01341	0,153	0,07874	1,426
Normal	-0,11201 ***	8,090 ***	-0,09243 ***	6,731 ***	0,02583	0,330	0,01744	0,376	0,15822	18,373 ***

Note: ***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

Source: own elaboration.

5. Discussion and Conclusions

This paper examines whether the Day-of-the-Week effect conforms to the Adaptive Markets Hypothesis in six Latin American stock market indices. Specifically, the study investigates the time-varying behavior of the DOW effect in such indices and examines which market conditions are most influential for that anomaly. The results suggest that the behavior of the DOW effect varies over time and that certain market conditions are more suitable to its existence, all of which are evidence for the AMH.

The study found the presence of the DOW effect in Latin American stock market indices. More specifically, in the subsample analysis, the Monday anomaly was statistically significant in five markets and the Weekend anomaly in three of them, while the Wednesday anomaly existed in four. In contrast, no DOW anomalies were identified in the Argentine stock index, while the presence of such effects in the Mexican market index was not strong. In general, the study's results agree with those described by [Kristjanpoller \(2012\)](#), who reported the presence of the DOW effect in Latin American stock

markets, except for the Mexican stock exchange. The findings also generally agree with the results obtained by [Winkelried & Iberico \(2018\)](#), who concluded that Monday returns are significantly the lowest and negative in the same six Latin American markets, while Friday average returns are statistically positive and the highest, except for the Mexican stock market.

The foundation of all previous studies on the DOW effect in Latin American stock markets is the EMH, while the innovation proposed in the present research consists in examining that anomaly from the perspective of the AMH. Thus, to study whether the presence of the DOW effect corresponds to the ideas proposed by the AMH, we use ARMA-GARCH specifications and the Kruskal-Wallis test on five 5-year subperiods for all stock indices, except in the case of the Colombian index due to the data availability limitations described before. All indices show negative Monday average returns and positive Friday average returns throughout the subperiod analysis. However, their statistical significance varies over time.

The DOW anomaly disappears and reappears in the Chilean, Colombian, and Peruvian market indices for different subperiods. These results agree with the

findings reported by [Arbeláez García & Rosso \(2016\)](#), who found the anomaly in these three markets. However, the same outcomes diverge from the findings reported by [Rojas & Kristjanpoller \(2014\)](#), who reported that the DOW effect disappeared from Latin American stock markets between 2008 and 2013, the last period of their analysis.

The time-changing behavior of the DOW effect found in this study has been previously reported for the stock markets in countries such as the United States ([Urquhart & McGroarty, 2014](#)), the United Kingdom ([Rosini & Shenai, 2020](#)), China ([Xiong et al., 2019](#)), and Nigeria ([Adaramola & Adekanmbi, 2020](#)), and tends to support the AMH. Interestingly, however, the Argentine stock market index exhibits no evidence of the DOW effect for any of the subperiods. This finding agrees with the results reported by [Winkelried & Iberico \(2018\)](#), for the period between 2002 and 2007, and with those described by [Marques \(2014\)](#) from 2002 to 2012.

The Mexican stock index shows the presence of the DOW anomaly only during the first subperiod, 1995-2000, while it is present in the Brazilian market index only until 2005-2010, the antepenultimate subperiod. These outcomes tend to support the argument of increasing weak-form market efficiency in those countries' stock indices and are consistent with those reported by [Kristjanpoller & Arenas \(2015\)](#) and [Rojas & Kristjanpoller \(2014\)](#). So, this study's findings suggest that the larger the market capitalization, the smaller the presence of the DOW anomalies. However, while the Argentine market capitalization is considerably smaller than that of the Chilean market ([The World Bank Group, 2022](#)), the latter consistently presents the DOW effect.

It is also worth mentioning that the 2015-2020 subperiod of this study comprises the first months of the COVID-19 pandemic⁴, an event that considerably disturbed Global financial markets. Nevertheless, it is unsound trying to draw any conclusions about the adaptability of Latin American stock indices' returns during the COVID-19 pandemic because, in the last subperiod and according to the study's research design, observations corresponding to the pre-pandemic and pandemic intervals are mixed. So, this is an issue beyond the scope of this paper, and it remains open for further research. Additionally, the use of market indices implies certain limitations. For instance, the six market indices are value-weighted, which is considered a more representative approach than other calculation alternatives. Frequently, though, a few large-capitalization companies' returns greatly influence the performance of this type of indices⁵.

The AMH asserts that the predictability of asset returns changes with the state of the market; therefore, we investigate the behavior of the DOW effect in different market conditions. We group each index return time

series into Up and Down categories ([Fabozzi & Francis, 1977](#)) and bull, normal, and bear market orientations ([Klein & Rosenfeld, 1987](#)). After classifying the different periods under each approach, we ran the ARMA-GARCH model and the K-W test. The statistical evidence suggests that all the indices, except for the IPC, present a Monday effect, which seems to be the predominant DOW anomaly, as previously reported by [Gregoriou et al. \(2004\)](#).

The Monday effect is present in the six stock indices under bear market conditions, although only the K-W test shows its presence in the Mexican stock index. This finding coincides with the outcomes obtained for other countries' stock markets, such as the United States ([Urquhart & McGroarty, 2014](#)), China ([Zhang et al., 2017](#)), Bangladesh ([Akhter & Yong, 2021](#)), Mauritius, Morocco, and Nigeria ([Obalade & Muzindutsi, 2019](#)). A possible explanation for the Monday anomaly is that investors are more perceptive to government policy announcements at weekends in declining market conditions ([Zhang et al., 2017](#)). Another possibility is the "parking-the-proceeds hypothesis" ([Ritter, 1988](#), p. 701) which asserts that, after realizing losses, investors keep hold of their funds temporarily before reinvesting, a strategy that could be considered particularly sound during declining market conditions.

The Weekend effect is significant in the IPSA in both Up and Down months, whereas this anomaly is present in the ISBVL only under a Down condition of the market. The Weekend effect is also statistically relevant in the IPSA and ISBVL in normal conditions. These results agree with those presented by [Kristjanpoller & Muñoz \(2012\)](#) for the Chilean and Peruvian stock markets but differ in the case of the remaining Latin American stock indices.

In summary, the results suggest a time-varying behavior of the DOW effect through subsample analysis in four of the six Latin American stock indices, which supports the AMH. The exceptions are the Argentine and Mexican stock indices since the results on the absence of the DOW anomaly are more in line with the weak form of market efficiency and agree with [Marques' \(2014\)](#) findings. The analysis also shows that such an anomaly exists in the six market indices and changes with the orientation of the market. This finding is also evidence for the AMH.

In general, the time-changing DOW effect pattern of the larger-capitalization Latin American stock markets' indices is consistent with the weak form of the EMH. However, that is not the case for the smaller-capitalization markets' indices, nor under different market conditions in all cases, where the AMH seems a more realistic theory to explain the DOW effect. Thus, investors should consider a possible adaptive behavior of those stock indices. For example, an investor trading in the IPSA could benefit from following the classical variant of the Day-of-the-Week anomaly ([Plastun et al., 2019](#)) if they sell at Friday's close price and closes their position at Monday's close price in any market orientation. Another trader could benefit from following

⁴ The World Health Organization officially declared COVID-19 as a pandemic on March 11, 2020 (World Health Organization, 2020).

⁵ For example, only two companies (Wal-Mart de México, S.A.B. and América Móvil, S.A.B.) comprise over 30% of the IPC's capitalization, while four companies (Vale, S.A., Itaú Unibanco Holdings, S.A., Petrobras, and Banco Bradesco, S.A.) account for a similar proportion of the BOVESPA.

the same strategy in Merval, Bovespa, Colcap, and ISBVL but only during Down market conditions and, in the latter, also under bear market conditions. The economic significance of such strategies, however, goes beyond the scope of this paper and is subject to additional research. Further investigation is needed to validate the AMH in Latin American stock markets by employing other methodologies and approaches. Moreover, since this study focused exclusively on the DOW effect, more research is necessary to examine other calendar anomalies, such as the Holiday and Turn-of-the-Month effects in those markets.

Conflict of interest

The authors declare no conflict of interest.


References

- Adaramola, A. O., & Adekanmbi, K. O. (2020). Day-of-the-Week Effect in Nigerian Stock Exchange: Adaptive Market Hypothesis Approach. *Investment Management and Financial Innovations*, 17(1), 97–108. [https://doi.org/10.21511/imfi.17\(1\).2020.09](https://doi.org/10.21511/imfi.17(1).2020.09)
- Akhter, T., & Yong, O. (2021). Can Adaptive Market Hypothesis Explain the Existence of Seasonal Anomalies? Evidence From Dhaka Stock Exchange, Bangladesh. *Contemporary Economics*, 15(2), 198–223. <https://doi.org/10.5709/ce.1897-9254.444>
- Arbeláez García, D., & Rosso, J. C. (2016). Efectos Estacionales en los Mercados de Capitales de la Alianza del Pacífico. *Estudios Gerenciales*, 32(141), 358–368. <https://doi.org/10.1016/j.estger.2016.10.002>
- Borges, M. R. (2009). *Calendar Effects in Stock Markets: Critique of Previous Methodologies and Recent Evidence in European Countries* (No. WP 37/2009/DE/UECE). Retrieved from <http://pascal.iseg.utl.pt/~depeco/wp/wp372009.pdf>
- Boya, C. M. (2019). From Efficient Markets to Adaptive Markets: Evidence From the French Stock Exchange. *Research in International Business and Finance*, 49(October), 156–165. <https://doi.org/10.1016/j.ribaf.2019.03.005>
- Fabozzi, F. J., & Francis, J. C. (1977). Stability Tests for Alphas and Betas Over Bull and Bear Market Conditions. *The Journal of Finance*, 32(4), 1093–1099. <https://doi.org/10.1111/j.1540-6261.1977.tb03312.x>
- Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance*, 25(2), 383–417. <https://doi.org/10.2307/2325486>
- French, K. R. (1980). Stock Returns and the Weekend Effect. *Journal of Financial Economics*, 8(1), 55–69. [https://doi.org/10.1016/0304-405X\(80\)90021-5](https://doi.org/10.1016/0304-405X(80)90021-5)
- Gregoriou, A., Kontonikas, A., & Tsitsianis, N. (2004). Does the Day of the Week Effect Exist Once Transaction Costs Have Been Accounted for? Evidence From the UK. *Applied Financial Economics*, 14(3), 215–220. <https://doi.org/10.1080/0960310042000187388>
- Khan, B., Aqil, M., Alam Kazmi, S. H., & Zaman, S. I. (2021). Day-of-the-Week Effect and Market Liquidity: A Comparative Study From Emerging Stock Markets of Asia. *International Journal of Finance & Economics*, 1–18. <https://doi.org/10.1002/ijfe.2435>
- Kim, J. H., Shamsuddin, A., & Lim, K. P. (2011). Stock Return Predictability and the Adaptive Markets Hypothesis: Evidence from Century-Long U.S. Data. *Journal of Empirical Finance*, 18(5), 868–879. <https://doi.org/10.1016/j.jempfin.2011.08.002>
- Klein, A., & Rosenfeld, J. (1987). The Influence of Market Conditions on Event-Study Residuals. *The Journal of Financial and Quantitative Analysis*, 22(3), 345–351. <https://doi.org/10.2307/2330968>
- Kristjanpoller, W. (2012). Day of the Week Effect in Latin American Stock Markets. *Revista de Análisis Económico*, 27(1), 71–89. <https://doi.org/10.4067/S0718-88702012000100004>
- Kristjanpoller, W., & Arenas, T. (2015). El Efecto Fin de Mes en los Principales Mercados Accionarios Latinoamericanos. *Contaduría y Administración*, 60(1), 53–86. [https://doi.org/10.1016/S0186-1042\(15\)72147-9](https://doi.org/10.1016/S0186-1042(15)72147-9)
- Kristjanpoller, W., & Muñoz, R. E. (2012). Análisis del Efecto Día de la Semana en los Principales Mercados Accionarios Latinoamericanos: Una Aproximación Mediante el Criterio de Dominancia Estocástica. *Estudios de Economía*, 39(1), 5–26. <https://doi.org/10.4067/S0718-52862012000100001>
- Lo, A. W. (2004). The Adaptive Markets Hypothesis: Market Efficiency from an Evolutionary Perspective. *The Journal of Portfolio Management*, 30(5), 15–29. <https://doi.org/10.3905/jpm.2004.442611>
- Lo, A. W. (2005). Reconciling Efficient Markets with Behavioral Finance: The Adaptive Markets Hypothesis. *Journal of Investment Consulting*, 7(2), 21–44.
- Mandaci, P. E., Taşkin, F. D., & Ergün, Z. C. (2019). Adaptive Market Hypothesis. *International Journal of Economics and Business Administration*, 7(4), 84–101. <https://doi.org/10.35808/ijeba/333>
- Marques, A. L. M. (2014). Public Holiday and Weekend Anomalies in the Main Latin American Stock Markets. *Latin American Business Review*, 15(2), 123–139. <https://doi.org/10.1080/10978526.2014.905155>
- Obalade, A. A., & Muzindutsi, P. F. (2019). The Adaptive Market Hypothesis and the Day-of-the-Week Effect in African Stock Markets: the Markov Switching Model. *Comparative Economic Research. Central and Eastern Europe*, 22(3), 145–162. <https://doi.org/10.2478/ceer-2019-0028>
- Plastun, A., Sibande, X., Gupta, R., & Wohar, M. E. (2019). Rise and Fall of Calendar Anomalies Over a Century. *The North American Journal of Economics and Finance*, 49(July), 181–205. <https://doi.org/10.1016/j.najef.2019.04.011>
- Plastun, A., Sibande, X., Gupta, R., & Wohar, M. E. (2020). Historical Evolution of Monthly Anomalies in International Stock Markets. *Research in International Business and Finance*, 52(April), 1–13. <https://doi.org/10.1016/j.ribaf.2019.101127>
- Ritter, J. R. (1988). The Buying and Selling Behavior of Individual Investors at the Turn of the Year. *The Journal of Finance*, 43(3), 701–717. <https://doi.org/10.1111/j.1540-6261.1988.tb04601.x>
- Rojas, E., & Kristjanpoller, W. (2014). Anomalías de Calendario en los Mercados Accionarios Latinoamericanos: Una Revisión Mediante el Procedimiento de Bonferroni. *Lecturas de Economía*, 81(Julio-Diciembre), 91–113. <http://dx.doi.org/10.17533/udea.le.n81a4>
- Rosini, L., & Shenai, V. (2020). Stock Returns and Calendar Anomalies on the London Stock Exchange in the Dynamic Perspective of the Adaptive Market Hypothesis: A Study of FTSE100 & FTSE250 Indices Over a Ten Year Period. *Quantitative Finance and Economics*, 4(1), 121–147. <https://doi.org/10.3934/QFE.2020006>
- Sewell, M. (2011). *History of the Efficient Market Hypothesis* (No. RN/11/04). Retrieved from University College London website: http://www.cs.ucl.ac.uk/fileadmin/UCL-CS/images/Research_Student_Information/RN_11_04.pdf
- Sierra, K. J., Duarte, J. B., & Rueda, V. A. (2015). Predictibilidad de los Retornos en el Mercado de Colombia e Hipótesis de Mercado Adaptativo. *Estudios Gerenciales*, 31(137), 411–418. <https://doi.org/10.1016/j.estger.2015.05.004>
- Simon, H. A. (1982). *Models of Bounded Rationality*. Cambridge, MA: MIT Press.
- Tadepalli, M. S., & Jain, R. K. (2018). The Day-of-the-Week (DOW) Effect on Stock Markets in India: Insights and Perspectives on a Seasonal Anomaly. *New Zealand Journal of Applied Business Research*, 16(2), 41–70.
- The World Bank Group. (2022). Market Capitalization of Listed Domestic Companies (Current US\$). Retrieved September 24, 2022, from Data website: https://data.worldbank.org/indicator/CM.MKT.LCAP.CD?end=2020&most_recent_value_desc=true&start=1975

- Urquhart, A., & Hudson, R. (2013). Efficient or Adaptive Markets? Evidence From Major Stock Markets Using Very Long Run Historic Data. *International Review of Financial Analysis*, 28, 130–142. <https://doi.org/10.1016/j.irfa.2013.03.005>
- Urquhart, A., & McGroarty, F. (2014). Calendar Effects, Market Conditions and the Adaptive Market Hypothesis: Evidence from Long-Run U.S. Data. *International Review of Financial Analysis*, 35(October), 154–166. <https://doi.org/10.1016/j.irfa.2014.08.003>
- Vargha, A., & Delaney, H. D. (1998). The Kruskal-Wallis Test and Stochastic Homogeneity. *Journal of Educational and Behavioral Statistics*, 23(2), 170–192. <https://doi.org/10.3102/10769986023002170>
- Villarreal-Samaniego, J. D., Santillán-Salgado, R. J., & Lagunes-Pérez, M. A. (2022). Are There “Day-of-the-Week” and “Holiday” Anomalies in the Mexican Stock Market? *Contaduría y Administración*, 67(3), 107–130. <http://dx.doi.org/10.22201/fca.24488410e.2022.2920>
- Wilson, E. O. (1975). *Sociobiology: The New Synthesis*. Cambridge, MA: Belknap Press of Harvard University Press.
- Winkelried, D., & Iberico, L. A. (2018). Calendar Effects in Latin American Stock Markets. *Empirical Economics*, 54(3), 1215–1235. <https://doi.org/10.1007/s00181-017-1257-y>
- World Health Organization. (2020). Archived: WHO Timeline - COVID-19. Retrieved December 26, 2022, from WHO News website: <https://www.who.int/news/item/27-04-2020-who-timeline---covid-19>
- Xiong, X., Meng, Y., Li, X., & Shen, D. (2019). An Empirical Analysis of the Adaptive Market Hypothesis with Calendar Effects: Evidence from China. *Finance Research Letters*, 31, 321–333. <https://doi.org/10.1016/j.frl.2018.11.020>
- Yuan, T., & Gupta, R. (2014). Chinese Lunar New Year Effect in Asian Stock Markets, 1999-2012. *Quarterly Review of Economics and Finance*, 54(4), 529–537. <https://doi.org/10.1016/j.qref.2014.06.001>
- Zhang, J., Lai, Y., & Lin, J. (2017). The Day-of-the-Week Effects of Stock Markets in Different Countries. *Finance Research Letters*, 20(February), 47–62. <https://doi.org/10.1016/j.frl.2016.09.006>

Artigo de pesquisa

Environmental, social, governance e desempenho corporativo: uma análise na perspectiva da folga financeira

Yvelise Giacomello Piccinin Mestre em Ciências Contábeis (UFSM), Técnica Administrativa em Educação (UFSM), Universidade Federal de Santa Maria (UFSM), Santa Maria, Brasil.
yvelisepiccinin@hotmail.comLarissa Degenhart* Doutora em Ciências Contábeis e Administração (FURB). Professora do Programa de Pós-Graduação em Ciências Contábeis (PPGCC/UFSM), Departamento de Ciências Contábeis, Universidade Federal de Santa Maria (UFSM), Santa Maria, Brasil.
larissa.degenhart@ufsm.brMicheli Aparecida Lunardi Doutora em Ciências Contábeis e Administração (FURB). Professora do Programa de Pós-Graduação em Ciências Contábeis (PPGCC/FURB), Departamento de Ciências Contábeis, Universidade Regional de Blumenau (FURB), Blumenau, Brasil.
malunardi@furb.brLucas Veiga Ávila Doutor em Administração (UFSM). Professor do Programa de Pós-Graduação em Ciências Contábeis (PPGCC/UFSM), Departamento de Ciências Contábeis, Universidade Federal de Santa Maria (UFSM), Santa Maria, Brasil.
lucas.avila@ufsm.brJonas Adriel dos Santos Grodt Mestre em Ciências Contábeis (UFSM), Técnico Administrativo em Educação, Instituto Federal Sul-rio-grandense (IFSul), Universidade Federal de Santa Maria (UFSM), Santa Maria, Brasil.
grodtjonas@gmail.com

Resumo

Este trabalho objetivou analisar o efeito moderador da folga financeira na relação entre divulgação ambiental, social e de governança (ESG) e desempenho contábil e de mercado, em empresas brasileiras. A amostra desbalanceada constituiu-se de empresas listadas na Brasil, Bolsa, Balcão (B3), no período de 2016 a 2021. A pesquisa descritiva, documental e quantitativa, operacionalizou-se pela regressão linear por Mínimos Quadrados Ordinários (OLS). Os resultados indicam que as atividades ESG impactam positivamente o desempenho contábil e de mercado em empresas brasileiras. Ademais, organizações com recursos excedentes, impulsionam ações ESG e o desempenho corporativo. Os achados contribuem cientificamente ao indicar que investidores e demais partes interessadas devem analisar com maior cautela, contextos de escassez de recursos e menores índices ESG.

Palavras-chave: Environmental; Social and Governance; Desempenho corporativo; Folga financeira.

Environmental, social, governance and corporate performance: an analysis from the perspective of financial slack

Abstract

This work aimed to analyze the moderating effect of financial slack on the relationship between ESG and accounting and market performance in Brazilian companies. The unbalanced sample consisted companies listed on Brasil, Bolsa, Balcão (B3), from 2016 to 2021. The descriptive, documentary and quantitative research was operationalized by linear regression by Ordinary Least Squares (OLS). The results indicate that environmental, social and governance (ESG) activities positively impact the accounting and market performance of Brazilian companies. Furthermore, organizations with surplus resources drive ESG actions and corporate performance. The findings contribute by indicating that investors and other stakeholders should analyze with greater caution, contexts of scarcity of resources and lower ESG indices.

Keywords: Environmental; Social and Governance; Corporate performance; Financial slack.

Rendimiento medioambiental, social y de gobernanza de las empresas: un análisis desde la perspectiva de la holgura financiera

Resumen

Este trabajo tuvo como objetivo analizar el efecto moderador de la holgura financiera en la relación entre ESG y el desempeño contable y de mercado en las empresas brasileñas. La muestra desequilibrada consistió en empresas que cotizan en Brasil, Bolsa, Balcão (B3), de 2016 a 2021. La investigación descriptiva, documental y cuantitativa fue operacionalizada por regresión lineal por mínimos cuadrados ordinarios (MCO). Los resultados indican que las actividades ambientales, sociales y de gobernanza (ASG) impactan positivamente en el desempeño contable y de mercado de las empresas brasileñas. Además, las organizaciones con excedentes de recursos impulsan las acciones ESG y el desempeño corporativo. Los resultados contribuyen al indicar que los inversores y otras partes interesadas deben analizar con mayor cautela, contextos de escasez de recursos y menores índices de ESG.

Palabras clave: Ambiental; Social y Gobernanza; Desempeño corporativo; Holgura financiera.

* Autor para dirigir correspondência.

Classificações JEL: M41; M14; Q56.

Como citar: Piccinin, Y. G., Degenhart, L., Lunardi, M. A., Ávila, L. V. y Grodt, J. A. dos S. (2023). Environmental, social, governance e desempenho corporativo: uma análise na perspectiva da folga financeira. *Estudios Gerenciales*, 39(168), 297-313. <https://doi.org/10.18046/j.estger.2023.167.5800>

DOI: <https://doi.org/10.18046/j.estger.2023.167.5800>

Recebido: 27-10-2022

Aceito: 24-03-2023

Publicado: 30-09-2023

1. Introdução

Nas últimas décadas, a atenção dada às questões de sustentabilidade ocasionou uma expansão do disclosure de informações ambientais, sociais e de governança das empresas (Li, Gong, Zhang & Koh, 2018). Diversos são os benefícios que divulgações maiores geram às empresas, dentre estas, podemos citar organizações mais sustentáveis - com maior legitimidade e satisfação do consumidor- melhorias no bem-estar, ética, e atendimento de anseios de partes interessadas e acionistas (Duque-Grisales & Aguilera-Caracuel, 2021).

Pesquisas que analisaram a relação entre ESG e desempenho têm sido amplamente realizadas (Mohammad & Wasiuzzaman, 2021). Os resultados dos efeitos do nível de divulgação ESG no desempenho corporativo variam entre positivos (Buallay, 2019; Javeed & Lefen, 2019; Jost, Kroenke & Hein, 2021; Liang & Renneboog, 2017; Li et al., 2018; Nollet, Filis & Mitrokostas, 2016), negativos (Atan, Alam, Said & Zamri, 2018; Bian, Gan, Li & Hu, 2016; Duque-Grisales & Aguilera-Caracuel, 2021; Taufik & William, 2021) e sem significância estatística (Buallay, Fadel, Alajmi & Saudagaran, 2020; Hsu, Liang & Matos, 2021; Nekhli, Nagati, Chtioui & Rebolledo, 2017).

Estes resultados, inconclusivos e discrepantes, podem atrelar-se ao contexto do país onde as empresas estão inseridas, às políticas de governança, além da priorização, por parte da organização, de investimentos ambientais e sociais que não contribuam com o desempenho empresarial (Nollet et al., 2016). Como a pontuação ESG é uma combinação de três dimensões (ambiental (E), social (S) e governança (G)), os investimentos e ações ESG podem ocorrer de maneira diferenciada, ora priorizando um pilar em detrimento de outro (Mohammad & Wasiuzzaman, 2021). Deste modo, analisar as dimensões individuais (E, S e G) possibilita perceber de que forma cada pilar contribui para a geração de valor ou para a diminuição do desempenho corporativo (Duque-Grisales & Aguilera-Caracuel, 2021).

O desempenho corporativo possui dois enfoques principais: um embasado na contabilidade, e outro no mercado, ou seja, um avalia a eficiência interna enquanto o outro enfoca nas reações externas de investidores (Alareeni & Hamdan, 2020). Neste estudo, foram avaliadas as duas perspectivas: o desempenho contábil por meio das variáveis Retorno Sobre os Ativos (ROA), e Retorno Sobre o Patrimônio Líquido (ROE). Na perspectiva de mercado, considerou-se as medidas Q de Tobin (QT) e Market to Book (MTB).

Empresas que apresentam folga financeira (FF), provavelmente, possuem maior flexibilidade com a aplicação de recursos não comprometidos, podendo mobilizá-los para atividades discricionárias, como o ESG (Li, Cao, Zhang, Chen, Ren & Zhao, 2017). Duque-Grisales e Aguilera-Caracuel (2021) analisaram os efeitos moderadores da folga financeira na relação entre ESG e seus pilares, no desempenho corporativo (ROA

e teste de robustez com QT) de empresas do Brasil, Chile, Colômbia, México e Peru. Lin, Ho, Ng & Lee (2020) avaliaram empresas americanas na relação entre ESG (geral) e desempenho ROA e ROE, moderado pela FF.

Li et al. (2017) exploraram o efeito da responsabilidade ambiental sobre o ROA e o papel moderador da folga financeira em empresas chinesas. Esta pesquisa se diferencia do estudo de Duque-Grisales e Aguilera-Caracuel (2021), Lin et al. (2020) e Li et al. (2017) ao propor a análise do ROA e do ROE para mensurar o desempenho contábil, e por adicionar o desempenho de mercado, mensurado pelo QT e MTB. Além disso, buscou-se avaliar os pilares ESG e não apenas o score ESG geral. Destaca-se que os efeitos da folga financeira na relação entre ESG e desempenho corporativo foram analisados considerando as seguintes variáveis de desempenho: ROA (Duque-Grisales & Aguilera-Caracuel, 2021; Lin et al., 2020; Li et al., 2017), ROE (Lin et al., 2020) e Q de Tobin (Duque-Grisales & Aguilera-Caracuel, 2021). Portanto, justifica-se a inclusão da análise do ROA, ROE, QT e MTB, para verificar os efeitos moderadores da folga financeira na relação entre ESG e desempenho corporativo, visto que tais indicadores foram pouco explorados nas relações moderadoras propostas, principalmente o indicador MTB.

Portanto, tais relacionamentos constituem a lacuna teórica explorada e este estudo visa responder à seguinte pergunta: Qual o efeito moderador da folga financeira na relação entre ESG e desempenho contábil e de mercado em empresas brasileiras? Objetiva-se analisar o efeito moderador da folga financeira na relação entre ESG e desempenho contábil e de mercado em empresas brasileiras.

Para tanto, utilizou-se uma amostra desbalanceada de empresas listadas na B3, no período de 2016 a 2021, totalizando 483 observações anuais e, para a análise dos dados, aplicou-se a regressão linear por Mínimos Quadrados Ordinários (OLS), com erros padrões robustos. Os resultados, no geral, indicam que as atividades ESG (e pilares ambiental, social e governança) impactam positivamente o desempenho corporativo (contábil e de mercado) em empresas brasileiras, além da folga financeira atuar como propulsora da relação entre ESG e desempenho corporativo. Esses resultados indicam que organizações com recursos excedentes tendem a realizar ações ambientais, sociais e de governança e, conseqüentemente, gerar retornos positivos no desempenho corporativo.

A relevância das temáticas abordadas (ESG e desempenho corporativo) encontra respaldo nos argumentos de Gillan, Koch e Starks (2021), pois abordam a partir do desenvolvimento de uma revisão de literatura sobre ESG com ênfase em finanças corporativas. Uma das temáticas mais debatidas na literatura ESG é se as escolhas gerenciais voltadas às questões ambientais, sociais e de governança impactam o desempenho contábil e o valor da empresa (desempenho de mercado), e se este desempenho também orienta os investimentos ESG efetuados pelas empresas. Além disso, a importância de

se analisar os efeitos moderadores da folga financeira na relação entre ESG e desempenho, pauta-se nos argumentos de Lin et al. (2020), pois discutem que deve ser levado em consideração um ponto de vista contingencial, para evidenciar o contexto e as condições que catalisam a relação entre ESG e desempenho; sendo a folga financeira, um aspecto relevante para potencializar a relação proposta nesta pesquisa (Duque-Grisales & Aguilera-Caracuel, 2021; Lin et al., 2020; Li et al., 2017).

O estudo contribui com a literatura ao analisar um modelo teórico que avalia o efeito conjunto da variável moderadora (folga financeira), sobre a relação ESG (geral e pilares) e desempenho contábil (ROA e ROE) e de mercado (QT e MTB). Outra contribuição teórica, diz respeito ao avanço na verificação de elementos fundamentais para assegurar a continuidade dos negócios, comunicação de informações à sociedade e o crescimento do desempenho empresarial, tendo a folga financeira como elemento que avança a relação, sob a lente da Teoria da Visão Baseada em Recursos (VBR) (Penrose, 1959; Wernerfelt, 1984). Almeja-se, também, promover uma base teórica para instigar discussões na academia sobre a relevância de práticas ESG em um país emergente.

Deste modo, o Brasil é considerado um contexto importante e bastante particular para avaliar teorias e suscitar novos insights sobre ESG, analisando os efeitos destas ações no desempenho corporativo de companhias brasileiras, sendo esta mais uma contribuição teórica do estudo. Como contribuições práticas, espera-se que as conclusões e resultados obtidos por este estudo, possibilitem que empresas melhorem o estabelecimento das ações ESG; além de gerar um maior entendimento das peculiaridades internas para que, deste modo, seja possível um alinhamento maior das atividades da companhia com os interesses das partes interessadas, e que, conseqüentemente, acarrete em um maior desempenho empresarial.

Por fim, empresas atuantes na B3 podem utilizar os resultados deste estudo para melhorar as suas estratégias ESG, de folga financeira e desempenho corporativo. A contribuição social desta pesquisa se relaciona ao benefício que o estudo de atividades ESG podem gerar a sociedade, a gestores e a empresas, visto que são temáticas presentes e permitem contribuir para o desenvolvimento sustentável do país, avançar o crescimento de empresas e oferecer bases para uma melhor conduta sobre os recursos.

2. Marco teórico e hipóteses

2.1 Efeitos do nível de divulgação ESG no Desempenho Corporativo

Indicadores de pontuação ambiental, social e de governança exercem importante papel nas empresas e

nas partes interessadas (Alareeni & Hamdan, 2020). Ações ambientais e socialmente responsáveis, que melhoram a riqueza e o comportamento empresarial, atrelando-se a preceitos mais éticos, receberam atenção de organizações que buscam melhorias nas relações com os *stakeholders* (Lin et al., 2020). Diversos são os estudos contemporâneos (Alareeni & Hamdan, 2020; Albuquerque, Koskinen & Zhang, 2019; Atan et al., 2018; Azmi, Hassan, Houston & Karim, 2021; Buallay, 2019; Buallay et al., 2020; Bian et al., 2016; Duque Grisales & Aguilera-Caracuel, 2021; Han, Kim & Yu, 2016; Hsu et al., 2021; Javeed & Lefen, 2019; Jost et al., 2021; Liang & Renneboog, 2017; Li et al., 2018; Lee, Cin & Lee, 2016; Nekhli et al., 2017; Nollet et al., 2016; Taufik & William, 2021; Velte, 2020) que postulam os efeitos do ESG no desempenho corporativo, não existindo evidências definitivas sobre os reais impactos desta relação (Alareeni & Hamdan, 2020).

Ao analisar estudos anteriores sobre os efeitos do ESG no ROA, percebem-se resultados diversos, variando entre positivos (Alareeni & Hamdan, 2020; Albuquerque et al., 2019; Azmi et al., 2021; Buallay, 2019; Javeed & Lefen, 2019; Liang & Renneboog, 2017; Li et al., 2018; Nollet et al., 2016; Velte, 2020), negativos (Duque Grisales & Aguilera-Caracuel, 2021; Taufik & William, 2021), e insignificantes (Buallay et al., 2020; Hsu et al., 2021). A incongruência permanece ao se analisar o efeito do ESG sobre o ROE, denotando-se efeitos positivos (Alareeni & Hamdan, 2020; Buallay, 2019; Javeed & Lefen, 2019; Lee et al., 2016), negativos (Atan et al., 2018; Han et al., 2016; Taufik & William, 2021), e sem significância (Buallay et al., 2020).

Pode ocorrer, também, a maximização da utilidade do acionista, tendo reflexos no desempenho de mercado, ou seja, afetar métricas como, por exemplo, o Q de Tobin e o *Market to Book* (Buallay et al., 2020). Albuquerque, Koskinen, Yang & Zhang (2020) expressam que os números contábeis, em oposição aos retornos das ações, levarão algum tempo para refletir totalmente a situação da empresa, enquanto que o mercado de capitais responderá de maneira imediata.

Diante das implicações das divulgações ESG no desempenho de mercado, percebe-se que estas divergem quanto aos efeitos sobre o Q de Tobin tendo a maioria dos estudos revelado impactos positivos (Alareeni & Hamdan, 2020; Albuquerque et al., 2019; Buallay, 2019; Jost et al., 2021; Liang & Renneboog, 2017; Li et al., 2018). Estudos também encontraram na relação (ESG-Q de Tobin), influências negativas (Atan et al., 2018; Bian et al., 2016; Buallay et al., 2020; Duque-Grisales & Aguilera-Caracuel, 2021) e resultados insignificantes (Hsu et al., 2021; Nekhli et al., 2017; Taufik & William, 2021). Os efeitos do ESG no *Market to Book* também seguem inconclusivos. Jost et al. (2021) obtiveram efeitos positivos e Han et al. (2016) encontraram uma influência negativa.

Na Tabela 1, apresenta-se um resumo dos achados encontrados na literatura sobre os efeitos do nível de divulgação ESG no desempenho corporativo.

Tabela 1. Síntese das evidências encontradas nos estudos que analisaram a relação ESG e Desempenho Corporativo (ROA, ROE, Q de Tobin e Market to Book)

Relação entre:	Positiva	Negativa	Sem significância
ESG e Desempenho Contábil (ROA)	Alareeni e Hamdan (2020); Albuquerque et al. (2019); Azmi et al. (2021); Buallay (2019); Javeed e Lefen (2019); Liang e Renneboog (2017); Li et al. (2018); Nolllet et al. (2016); Vette (2020).	Duque Grisales e Aguilera-Caracuel (2021); Taufik e William (2021).	Buallay et al. (2020); Hsu et al. (2021).
ESG e Desempenho Contábil (ROE)	Alareeni e Hamdan (2020); Buallay (2019); Javeed e Lefen (2019); Lee et al. (2016).	Atan et al. (2018); Han et al. (2016); Taufik e William (2021).	Buallay et al. (2020).
ESG e Desempenho de Mercado (QT)	Alareeni e Hamdan (2020); Albuquerque et al. (2019); Buallay (2019); Jost et al. (2021); Liang e Renneboog (2017); Li et al. (2018).	Atan et al. (2018); Bian et al. (2016); Buallay et al. (2020); Duque-Grisales e Aguilera-Caracuel (2021).	Hsu et al. (2021); Nekhli et al. (2017); Taufik e William (2021).
ESG e Desempenho de Mercado (MTB)	Jost et al. (2021).	Han et al. (2016).	-

Fonte: Elaboração própria (2022).

Neste sentido, os efeitos positivos podem ser justificados por alguns motivos. De acordo com Qiu, Shaukat e Tharyan (2016) o melhor desempenho em atividades ESG pode acabar atraindo consumidores que estão propensos a pagar mais por um produto sustentável; além disso, funcionários tendem a ser mais engajados nestas empresas, o que aumenta a produtividade, devido a uma sinergia positiva no ambiente empresarial.

Empresas que investem em ESG, conforme Albuquerque et al. (2019), se destacam como uma estratégia de diferenciação de produtos, onde a empresa se beneficia ao gerar uma base de fidelização de clientes que buscam produtos sustentáveis. Ademais, clientes tendem a ser atraídos por empresas que possuem maior *disclosure* ESG, já que, em muitos casos, acabam delegando a própria responsabilidade social às organizações, melhorando, assim, o desempenho financeiro da empresa no futuro (Li et al., 2018).

Outra justificativa consiste no fato de que corporações maiores e que operam em setores mais sensíveis ao meio ambiente e a sociedade, tenderão a fazer divulgações superiores de ESG, pois visam reduzir as pressões públicas e se legitimar no contexto em que operam (Qiu et al., 2016). As habilidades gerenciais ao se ter um bom desempenho ESG são sinérgicas e transferíveis ao mercado corporativo. Portanto, investidores, consumidores e funcionários, recompensarão a gestão mais sustentável por meio de investimento, consumo e maior produtividade (Li et al., 2018).

Ao mesmo tempo, Alareeni e Hamdan (2020) expressam que a análise de uma única perspectiva do ESG pode gerar problemas e distorções, pois acaba por não enfatizar os reais impactos de cada dimensão no desempenho corporativo. Os resultados, de acordo com Duque-Grisales e Aguilera-Caracuel (2021), continuam inconclusivos para todos os pilares (ambiental, social e governança). Diante deste contexto controverso, entre ESG e pilares, bem como das variações em cada desempenho corporativo, o estudo presume que:

H1: Existe relação entre o nível de divulgação ESG e o desempenho contábil de empresas brasileiras; e, H2: Existe relação entre o nível de divulgação ESG e o desempenho de mercado de empresas brasileiras.

2.2 Efeito moderador da Folga Financeira na relação entre ESG e Desempenho

A Teoria da Visão Baseada em Recursos (VBR) analisa o contexto empresarial interno visto que cada organização possui recursos valiosos, raros, inimitáveis pelo alto custo e explorados pela organização como uma vantagem competitiva (Penrose, 1959; Wernerfelt, 1984). A diferenciação pela sustentabilidade, ao se desenvolver e melhorar o uso das capacidades internas, acaba beneficiando o desempenho corporativo da companhia (Frynas & Yamahaki, 2016). Portanto, investimentos em questões ESG demandam recursos dispendiosos (Duque Grisales & Aguilera-Caracuel, 2021; Lin et al., 2020).

Hasan e Habib (2017) afirmam que organizações com recursos excedentes, seriam mais capazes de absorver adequações de custos de investimentos vinculado à ESG. Realizar divulgações ESG mais proeminentes e objetivas, requerem custos significativos para quantificar informações, medindo-as, identificando-as e relatando-as (Qiu et al., 2016). Neste sentido, empresas com mais recursos disponíveis, conforme os preceitos da VBR, se tornam mais aptas a realizar investimentos sustentáveis, tendo em vista que o capital disponível é um recurso valioso (Qiu et al., 2016).

A existência de recursos disponíveis tende a potencializar o desempenho corporativo, permitindo que empresas mitiguem adversidades ao ambiente, envolvam-se em questões sociais responsáveis, e melhorem a governança, seja por meio de maior diversidade do conselho – gênero, ideologia, cultura e conselheiros externos –, seja por formas mais robustas de monitoramento – auditorias externas, internas e mudanças nos estatutos (Lin et al., 2020).

Ainda de acordo com a VBR, as empresas, ao utilizarem de maneira eficaz os recursos, podem reduzir custos de operação, o que gera vantagens competitivas, ganhos de escala, de margem líquida e, conseqüentemente, melhora no desempenho corporativo (Li et al., 2017). Além disso, empresas que apresentam ESG como vantagem competitiva, acabam por atender expectativas de acionistas com maior congruência (Li et al., 2017), pois a incorporação à cadeia de valor da companhia do ESG requer maiores incentivos, investimentos e aceitação (Mohammad & Wasiuzzaman, 2021).

Li et al. (2017) concluíram que, no contexto chinês, empresas com abundância de recursos têm menor probabilidade de obter um maior desempenho contábil se assumirem questões ambientais nas suas atividades. Lin et al. (2020) e Duque Grisales e Aguilera-Caracuel (2021) constataram que atividades ESG só beneficiaram o desempenho de empresas que tiverem excesso de recursos financeiros.

Neste sentido, dada à múltipla formação do ESG, analisar apenas a variável agrupada pode impedir que sejam captadas as peculiaridades de cada uma destas atividades, pois, em um contexto de folga financeira, podem influenciar no desempenho da empresa. Assim, presumimos que: H3: A folga financeira em empresas brasileiras tem um efeito moderador na relação entre o nível de divulgação ESG e o desempenho contábil; e, H4: A folga financeira em empresas brasileiras tem um efeito moderador na relação entre o nível de divulgação ESG e o desempenho de mercado. A Figura 1 apresenta o modelo teórico de análise com as relações propostas.

A partir da lacuna de pesquisa explorada nesta pesquisa, conforme a Figura 1, buscou-se entender as interações existentes entre ESG (geral, ambiental, social e governança) e o desempenho contábil (ROA e ROE), e o desempenho de mercado (Q de Tobin e Market to Book), por meio das hipóteses H1 e H2. Ademais, nas hipóteses H3 e H4 buscou-se avaliar os efeitos moderadores da folga financeira na relação entre ESG e desempenho corporativo.

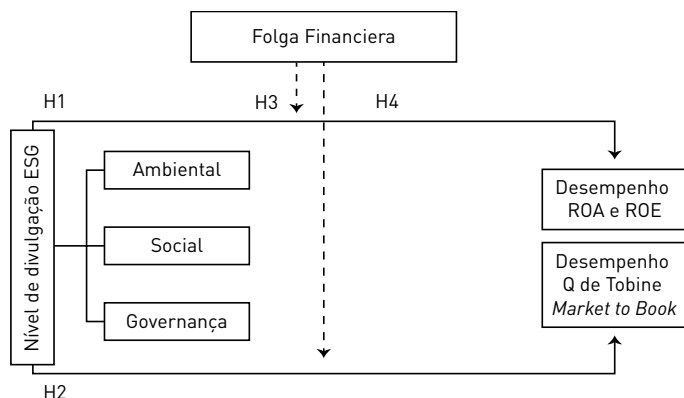


Figura 1. Modelo teórico de análise e hipóteses.
Fonte: Elaboração própria (2022).

3. Procedimentos metodológicos

Nesta pesquisa, buscou analisar o efeito moderador da folga financeira na relação entre ESG e desempenho contábil e de mercado, em empresas brasileiras. Para tanto, a coleta dos dados foi realizada nos Formulários de Referência dispostos no sítio da B3, além da base de dados *Refinitiv Eikon*®. O período de análise compreendeu 2016 a 2021, tendo em vista um recorte temporal semelhante em estudos anteriores (Atan et al., 2018; Duque-Grisales & Aguilera-Caracuel, 2021; Nollet et al., 2016; Shakil, Mahmood, Tasnia & Munim, 2019).

A população desta pesquisa consiste em todas as empresas ativas e em situação de canceladas, listadas na B3. Realizaram-se algumas delimitações e exclusões para se chegar à amostra. A primeira determinação foi delimitar quais empresas possuíam informações ESG e seus pilares. Percebe-se, a partir de estudos anteriores, um envolvimento, ainda que relativamente baixo, entretanto, crescente, das companhias, com a divulgação ESG (Velte, 2020). Neste sentido, para aumentar a amostra de empresas estudadas, optou-se por uma amostra desbalanceada, como realizado por Li et al. (2018) e Lin et al. (2020).

A quantidade de empresas listadas na B3 é de 398 empresas. Destas, excluíram-se 77 por serem empresas do setor financeiro, totalizando 321 companhias. Deste total, excluíram-se todas as empresas que não possuíam a divulgação ESG (em cada ano, valor variável), além de empresas com Patrimônio Líquido (PL) negativo e sem as informações necessárias, totalizando a amostra por ano delimitada na Tabela 2.

Por meio da revisão de literatura, constatou-se quais seriam as variáveis adequadas para responder à problemática, ao objetivo e às hipóteses do estudo. Neste sentido, a Tabela 3 apresenta as variáveis utilizadas para operacionalizar a pesquisa, sendo estas dispostas no constructo do estudo, no qual se evidenciam as variáveis analisadas, sua descrição, forma de cálculo, autores e a fonte de coleta de dados utilizada.

Tabela 2. Amostra da pesquisa

Ano	2016	2017	2018	2019	2020	2021
População	398					
(-) Empresas setor Financeiro	77	77	77	77	77	77
(-) Empresas sem divulgação ESG	250	249	242	239	218	206
(-) Empresas com PL negativo	2	3	4	5	4	5
(-) Empresas sem informações	3	3	2	2	3	3
Total (Amostra)	66	66	73	75	96	107

PL: Patrimônio Líquido.

Fonte: Elaboração própria (2022).

Tabela 3. Constructo da pesquisa

Construto/Variável		Operacionalização	Base	Autores
Variáveis dependentes				
Desempenho Contábil	Retorno sobre o Ativo (ROA)	Lucro Líquido Ativo Total	<i>RefinitivEikon</i> ®	Alareeni e Hamdan (2020); Buallay et al. (2020); Duque-Grisales e Aguilera-Caracuel (2021).
	Retorno sobre o Patrimônio Líquido (ROE)	Lucro Líquido Patrimônio Líquido		Alareeni e Hamdan (2020); Buallay et al. (2020); Javeed e Lefen (2019); Taufik e William (2021).
Desempenho de Mercado	Q de Tobin(QT)	Valor de Mercado Ativo Total		Alareeni e Hamdan (2020); Mohammad e Wasiuzzmann (2021).
	Market to Book (MTB)	(VA x QA)ij PLij		Chen, Ngniatedema e Li (2018); Han, Kim e Yu (2016).
Variável Independente Moderadora				
Folga Financeira (FF)		Ativo Circulante Passivo Circulante	<i>RefinitivEikon</i> ®	Duque-Grisales e Aguilera-Caracuel (2021); Li et al. (2017); Lin et al. (2020).
Variáveis Independentes				
<i>Environmental, Social and Governance</i>	ESG	Pontuação geral com base nas informações autorrelatadas nos pilares ambiental, social e de governança.	<i>RefinitivEikon</i> ®	Buallay (2019); Duque-Grisales e Aguilera-Caracuel (2021); Nekhili et al. (2017) e Li et al. (2018).
	Ambiental (AMB)	Refere-se ao desempenho ambiental quanto ao uso de recursos, emissões e inovação para questões ambientais.		Alareeni e Hamdan (2020); Duque-Grisales e Aguilera-Caracuel (2021); Li et al. (2018) e Velte (2020).
	Social (SOC)	Refere-se ao desempenho social da empresa quanto aos direitos humanos, força de trabalho, comunidade e responsabilidade pelo produto.		Duque-Grisales e Aguilera-Caracuel (2021); Li et al. (2018) e Shakil et al. (2019).
	Governança (GOV)	Refere-se ao desempenho de governança quanto à gestão, acionistas e pela estratégia de RSC adotada.		Duque-Grisales e Aguilera-Caracuel (2021); Li et al. (2018); Nekhili et al. (2017) e Shakil et al. (2019).
Variáveis Independentes de Controle				
Governança Corporativa	Tamanho do CA (TAMCA)	Logaritmo natural do número de membros do Conselho de Administração (CA)	Item 13.2 do FR	Duque-Grisales e Aguilera-Caracuel (2021); Nekhili et al. (2017).
	Independência do CA (INDCA)	Proporção de membros do CA considerados independentes.	Item 12.6/8 do FR	Nekhili et al. (2017); Mohammad e Wasiuzzmann (2021) e Velte (2020).
Específicas da Empresa	Tamanho da empresa (TAM)	Logaritmo natural do ativo total da empresa em t-1	<i>RefinitivEikon</i> ®	Javeed e Lefen (2019); Li et al. (2018); Mohammad e Wasiuzzmann (2021).
	Alavancagem Financeira (AF)	Passivo Total Ativo Total		Duque-Grisales e Aguilera-Caracuel (2021) e Li et al. (2018).
Efeitos Fixos	Setor	Setor de atividade segundo a classificação da <i>RefinitivEikon</i> ®.		Hasan e Habib (2017); Mohammad e Wasiuzzmann (2021).
	Ano	Ano da observação de 2016 a 2021 (variável dicotômica)	-	-

FR: Formulário de Referência.
Fonte: Elaboração própria (2022).

Após a coleta dos dados, foram desenvolvidos procedimentos preliminares: i) *Winsorização* das variáveis (1%); ii) estatística descritiva; e, iii) matriz de correlação. Após realizados estes procedimentos, foram operacionalizados os modelos de regressão, através

do modelo de Mínimos Quadrados Ordinários (OLS) com erros padrões robustos e controle de setor e ano, conforme as seguintes equações:

$$\text{Desempenho Corporativo} = \beta_0 + \beta_1 \text{ESG} + \beta_2 \text{TAMCA} + \beta_3 \text{INDCA} + \beta_4 \text{AF} + \beta_5 \text{TA} + \text{Efeitos Fixos Setor} + \text{Efeitos Fixos Ano} + \varepsilon \quad [\text{Equação 1}]$$

$$\text{Desempenho Corporativo} = \beta_0 + \beta_1 \text{ESG} + \beta_2 \text{ESG} * \text{FF} + \beta_3 \text{TAMCA} + \beta_4 \text{AF} + \beta_5 \text{INDCA} + \beta_6 \text{TAM} + \text{Efeitos Fixos Setor} + \text{Efeitos Fixos Ano} + \varepsilon \quad (\text{Equação 2})$$

Ressalta-se que cada equação se subdividiu em quatro tipos de desempenho corporativo testado (ROA, ROE, QT e MTB) e o β_1 e β_2 (Equação 2) foram substituídos pelos aspectos individuais do ESG (geral, ambiental, social e governança).

4. Apresentação e análise dos resultados

Na [Tabela 4](#), evidencia-se a estatística descritiva das variáveis.

Tabela 4. Estatística descritiva das variáveis

Variáveis	Observações	Média	Desvio Padrão	Mínimo	Máximo
ROA	483	0.0457	0.04525	-0.031	0.150
ROE	483	0.1386	0.14779	-0.105	0.519
QT	483	0.8841	0.70382	0.173	2.63
MTB	483	2.0547	1.31564	0.633	5.255
ESG	483	0.4948	0.20567	10.46	80.48
AMB	483	0.4539	0.26836	0.0107	85.18
SOC	483	0.5199	0.23366	5.76	86.48
GOV	483	0.5040	0.21357	13.04	83.70
FF	483	1.75	0.73281	0.880	3.520
TAMCA	483	8.96	2.585	5	15
INDCA	483	0.386	0.207	0	76.921
TAM	483	7.263	0.452	6.45	8.06
AF	483	0.618	0.16681	0.313	0.902

Fonte: Elaboração própria (2022).

Na [Tabela 4](#), dentre as variáveis dependentes de desempenho corporativo avaliadas, o ROA é a que apresenta a menor dispersão da amostra (desvio padrão de 0.04525). Tal fato expressa que, no contexto brasileiro, as empresas estão apresentando retornos semelhantes sobre os ativos totais. Quanto à variável de desempenho de mercado QT, esta apresenta uma média de 0.8841 e o Market to Book encontra-se 2.0547 vezes maior que o patrimônio líquido das companhias, reforçando os indicativos de crescimento empresarial manifestados na variável QT. Deste modo, denota-se que o mercado brasileiro percebe uma atribuição de riqueza às companhias, e a existência de oportunidades de crescimento, visto que o mercado acaba por reconhecer que o valor registrado pela contabilidade é inferior ao da companhia.

Em relação às variáveis ESG (score geral e pilares), o score social tem a maior média (51.99), expressando maior engajamento das companhias com este pilar, o que se ratifica pela presença do maior máximo das quatro variáveis (86.48). A menor média e mínima encontra-se no pilar ambiental (45.39 e 0.0107, respectivamente). Quanto ao desvio padrão, o ESG é a variável que apresenta mais heterogeneidade e o AMB a maior discrepante. A FF das

empresas em média é de 1.75. Esta evidência indica que, para cada unidade de passivo circulante que a empresa possui, apresenta 1.75 unidade de ativos circulantes para fazer frente a estas obrigações de curto prazo. Tal fato reforça a existência de recursos que possam ser investidos, e indica menores restrições orçamentárias nas empresas analisadas.

Procedeu-se, na sequência, à análise de correlação, a fim de se verificar problemas de Multicolinearidade nas variáveis analisadas. A matriz de correlação das variáveis analisadas demonstra que não foram identificados problemas de Multicolinearidade entre as variáveis da pesquisa, uma vez que, salvo exceção, os resultados das correlações apresentados não foram iguais ou maiores que 0.70, como abordado por [Hair, Black, Babin, Anderson e Tatham \(2009\)](#). Com relação às exceções, as variáveis ESG, AMB, SOC e GOV apresentaram correlação acima de 0.70, visto que as mesmas compõem o score geral (ESG). Portanto, essas quatro variáveis independentes foram operacionalizadas em regressões diferentes, conforme realizado por [Duque-Grisales e Aguilera-Caracuel \(2021\)](#).

Quanto à análise de regressão, os resultados do teste VIF apresentaram-se dentro dos parâmetros propostos na literatura ([Fávero, Belfiore, Silva & Chan, 2009](#)), visto que todas as variáveis independentes têm baixa Multicolinearidade, pois o fator de inflação da variância (VIF - *Variance Inflation Factor*) é inferior a 10 ([Fávero et al., 2009](#)); além dos quatro modelos serem significantes (ANOVA) e os testes de *Durbin-Watson* estarem dentro dos parâmetros esperados. Os efeitos do ESG e seus pilares no ROA são apresentados na [Tabela 5](#).

Os resultados revelaram uma relação positiva e significativa a 1% das variáveis ESG e AMB no ROA, além de uma relação positiva e significativa a 5% das variáveis SOC e GOV no ROA. Tais achados confirmam a presunção inicial (H1) de que empresas que se envolvem em questões sustentáveis, aumentam o seu desempenho contábil medido pelo ROA. Os resultados da relação positiva entre ESG e ROA vão ao encontro dos achados de [Alareeni e Hamdan \(2020\)](#), [Albuquerque et al. \(2019\)](#), [Azmi et al. \(2021\)](#), [Buallay \(2019\)](#), [Javeed e Lefen \(2019\)](#), [Liang e Renneboog \(2017\)](#), [Li et al. \(2018\)](#), [Nollet et al. \(2016\)](#), [Velte \(2020\)](#), e contrariam os achados obtidos por [Buallay et al. \(2020\)](#), [Duque-Grisales e Aguilera-Caracuel \(2021\)](#), [Hsu et al. \(2021\)](#) e [Taufik e William \(2021\)](#).

Em relação ao pilar ambiental e seus efeitos no ROA, os resultados positivos apoiam a literatura anterior ([Buallay et al., 2020](#); [Li et al., 2018](#); [Nollet et al., 2016](#); [Shakil et al., 2019](#); [Velte, 2020](#)) e contradizem outras pesquisas ([Alareeni & Hamdan, 2020](#); [Duque-Grisales & Aguilera-Caracuel, 2021](#)). Os resultados positivos do pilar social também reforçam as evidências de pesquisas anteriores ([Li et al., 2018](#); [Nollet et al., 2016](#); [Shakil et al., 2019](#); [Velte, 2020](#)) e divergem dos achados negativos de [Alareeni e Hamdan \(2020\)](#), [Buallay et al. \(2020\)](#) e [Duque-Grisales e Aguilera-Caracuel \(2021\)](#).

O resultado positivo da governança no ROA, atrela-se aos obtidos por Alareeni e Hamdan (2020), Li et al. (2018) e Velte (2020), e se contrapõem aos resultados de Buallay et al. (2020), Duque-Grisales e Aguilera-Caracuel (2021), Nollet et al. (2016) e Shakil et al. (2019). A Tabela 6 delimita os resultados da relação entre ESG e seus pilares (AMB, SOC e GOV) no desempenho mensurado pelo ROE.

Na Tabela 6, percebe-se que as variáveis ESG (a 1%), AMB (a 1%) e SOC (a 5%), impactam positivamente o ROE, enquanto a variável GOV não exerce influência significativa. A partir deste resultado, confirma-se o esperado conforme a literatura (Alareeni & Hamdan, 2020; Buallay, 2019; Javeed & Lefen, 2019; Lee et al., 2016), de que atividades ESG contribuem para o aumento do ROE. Assim, ao mesmo tempo em que empresas são levadas a uma maior divulgação ESG, percebe-se um aumento dos incentivos financeiros ocasionados por maior ROE. Tais achados vão ao encontro de Alareeni e Hamdan (2020), Buallay (2019), Javeed e Lefen (2019) e Lee et al. (2016), que obtiveram efeitos positivos do ESG no ROE. Por outro lado, se opõe aos efeitos negativos e insignificantes de Atan et al. (2018), Buallay et al. (2020), Han et al. (2016) e Taufik e William (2021).

Quanto aos pilares do ESG, os efeitos positivos do score ambiental no ROE amparam os achados encontrados pelos autores Lee et al. (2016) e Shakil et al. (2019) e, contradizem os negativos de Atan et al. (2018), Buallay (2019) e Alareeni e Hamdan (2020), além dos resultados insignificantes de Han et al. (2016). A influência positiva do score social no ROE corrobora aos resultados auferidos por Li et al. (2018) e Shakil et al. (2019), enquanto, contestam as evidências negativas de

Alareeni e Hamdan (2020), Atan et al. (2018) e de Buallay (2019) e insignificantes de Han et al. (2016).

A insignificância de resultados do pilar de governança no ROE, contraria os efeitos positivos e negativos de Alareeni e Hamdan (2020), Atan et al. (2018), Buallay (2019), Han et al. (2016) e Shakil et al. (2019). A insignificância da variável GOV deve estar relacionada ao fato de que este pilar não está trazendo retornos financeiros (Lin et al., 2020) para as empresas analisadas. A Tabela 7 agrupa os resultados do ESG e seus pilares no Q de Tobin.

Analisando-se a Tabela 7, denota-se que as variáveis ESG e SOC (a 10%) e AMB (a 5%) afetam positivamente o desempenho medido pelo Q de Tobin. Por outro lado, a variável GOV não exerceu influência. Estas evidências sugerem que empresas que possuem desempenho ESG com ênfase nas atividades ambientais e sociais, promovem aumento no valor das ações, e, por consequência, aumentam o seu desempenho de mercado (QT). Portanto, quanto maior a transparência das políticas ESG - ambientais e sociais - maior a percepção de acionistas a potenciais sinérgicos que acabam por aumentar o desempenho de mercado.

Estes resultados convergem com a maior parte dos estudos que analisou a relação (ESG-QT), tendo efeitos positivos (Alareeni & Hamdan, 2020; Albuquerque et al., 2019; Buallay, 2019; Jost et al., 2021; Liang & Renneboog, 2017; Li et al., 2018). Mas, ao contrário destes, alguns autores obtiveram resultados negativos e insignificantes (Atan et al., 2018; Bian et al., 2016; Buallay et al., 2020; Duque Grisales & Aguilera-Caracuel, 2021; Hsu et al., 2021; Nekhli et al., 2017; Taufik & William, 2021).

Tabela 5. Resultados da relação entre ESG e Desempenho ROA

Variáveis	ROA							
	Painel A (ESG)		Painel B (AMB)		Painel C (SOC)		Painel D (GOV)	
	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.
ESG	0.037	0.001*						
AMB			0.035	0.000*				
SOC					0.023	0.028**		
GOV							0.023	0.050**
TAMCA	0.000	0.71	0,000	0.788	0.001	0.541	0.001	0.374
INDCA	0.018	0.12	0,023	0.042**	0.021	0.073***	0.014	0.238
TAM	-0.013	0.04**	-0,015	0.024**	-0.011	0.09***	-0.009	0.163
AF	-0.105	0.000*	-0,106	0.000*	-0.105	0.000*	-0.104	0.000*
Constante	0.165	0.000*	0,175	0.000*	0.150	0.001*	0.135	0.002*
R ²	21.20%		21.75%		20.52%		20.50%	
ANOVA	0.0000*		0.0000*		0.0000*		0.0000*	
VIF médio	≤ 1.66		≤ 1.66		≤ 1.65		≤ 1.64	
Durbin-Watson	1.3722		1.3747		1.3621		1.3611	
EF Setor e Ano	Sim							
N. obs.	483		483		483		483	

Nota: *significância a nível de 1%; ** 5%; ***10%.

Fonte: Elaboração própria (2022).

Tabela 6. Resultados da relação entre ESG e Desempenho ROE

Variáveis	ROE							
	Painel A (ESG)		Painel B (AMB)		Painel C (SOC)		Painel D (GOV)	
	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.
ESG	0.137	0.009*						
AMB			0.147	0.001*				
SOC					0.1054	0.018**		
GOV							0.000	0.995
TAMCA	-0.001	0.845	-0.001	0.691	0.000	0.926	0.002	0.654
INDCA	0.057	0.225	0.076	0.098***	0.065	0.166	0.076	0.113
TAM	-0.040	0.111	-0.048	0.049**	-0.035	0.152	-0.016	0.481
AF	0.266	0.003*	0.264	0.003*	0.267	0.004*	0.276	0.003*
Constante	0.126	0.506	0.192	0.307	0.095	0.609	-0.016	0.925
R ²	11.56%		12.41%		11.37%		10.59%	
ANOVA	0.0000*		0.0000*		0.0000*		0.0000*	
VIF médio	≤ 1.66		≤ 1.66		≤ 1.65		≤ 1.64	
<i>Durbin-Watson</i>	1.6699		1.6814		1.6670		1.6687	
EF Setor e Ano	Sim							
N. obs.	483		483		483		483	

Nota: *significância a nível de 1%; ** 5%; ***10%.

Fonte: Elaboração própria (2022).

Tabela 7. Resultados da relação entre ESG e Desempenho Q de Tobin

Variáveis	QT							
	Painel A (ESG)		Painel B (AMB)		Painel C (SOC)		Painel D (GOV)	
	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.
ESG	0.345	0.071***						
AMB			0.344	0.025**				
SOC					0.289	0.062***		
GOV							0.030	0.862
TAMCA	0.034	0.009*	0.033	0.012**	0.034	0.008*	0.040	0.002*
INDCA	0.126	0.391	0.173	0.256	0.144	0.335	0.163	0.307
TAM	-0.249	0.006*	-0.264	0.003*	-0.242	0.006*	-0.192	0.030**
AF	-0.938	0.000*	-0.941	0.000*	-0.937	0.000*	-0.915	0.000*
Constante	2.517	0.000*	2.647	0.000*	2.466	0.000*	2.171	0.000*
R ²	33.67%		34.00%		33.65%		33.15%	
ANOVA	0.0000*		0.0000*		0.0000*		0.0000*	
VIF médio	≤ 1.66		≤ 1.66		≤ 1.65		≤ 1.64	
<i>Durbin-Watson</i>	0.8923		0.8942		0.8969		0.8920	
EF Setor e Ano	Sim							
N. obs.	483		483		483		483	

Nota: *significância a nível de 1%; ** 5%; ***10%.

Fonte: Elaboração própria (2022).

Os efeitos positivos do *score* ambiental no QT também foram percebidos por Alareeni e Hamdan (2020), Albuquerque et al. (2019), Atan et al. (2018), Buallay (2019), Duque Grisales e Aguilera-Caracuel (2021), Hsu et al. (2021), Liang e Renneboog (2017) e Li et al. (2018). Contudo, há resultados anteriores que são opostos aos obtidos no contexto brasileiro analisado. Quanto ao pilar social, os achados corroboram Li et al. (2018) e se opõem

aos de Duque Grisales e Aguilera-Caracuel (2021) que obtiveram efeitos negativos em países latinos, dentre estes o Brasil. Os achados para a variável GOV, neste estudo sem influência sobre o QT, se opõem aos resultados evidenciados por Alareeni e Hamdan (2020), Atan et al. (2018), Buallay (2019), Duque Grisales e Aguilera-Caracuel (2021) e Li et al. (2018). A Tabela 8 apresenta os achados dos efeitos do ESG (geral e pilares) no Market to Book.

Novamente obtêm-se significância positiva nos três primeiros painéis, ou seja, a relação entre ESG (a 5%), AMB e SOC (a 1%) sobre o MTB, o que demonstra que as atividades ambientais, sociais e ESG são propulsoras de recursos advindos do mercado, melhorando o índice Market to Book. Os efeitos positivos do ESG corroboram os achados de [Jost et al. \(2021\)](#) e contrariam as evidências negativas obtidas por [Han et al. \(2016\)](#).

Além disso, os efeitos positivos do *score* AMB vão ao encontro dos achados de [Chen et al. \(2018\)](#) e se opõem aos resultados insignificantes de [Han et al. \(2016\)](#), tanto para o pilar ambiental quanto para o social. A insignificância da variável GOV no MTB diverge dos achados positivos de [Han et al. \(2016\)](#). Os resultados do efeito moderador da folga financeira na relação entre ESG e seus pilares e o desempenho ROA, são evidenciados na [Tabela 9](#).

Conforme os resultados da [Tabela 9](#) percebe-se que possuir excesso de recursos ociosos (FF) é prejudicial aos retornos sobre os ativos, em todos os painéis, visto que foram obtidos efeitos negativos e significativos da folga financeira no ROA. Por outro lado, ter valores disponíveis permite que gestores possam aloca-los em outras atividades. Assim, quando se analisa o efeito moderador da folga financeira, os efeitos negativos passam a ser positivos e significativos a 5% na relação entre ESG e ROA e AMB e ROA e a 10% de significância estatística na relação entre GOV e ROA. Estes achados revelam que ter recursos ociosos permite investimentos em questões ambientais, sustentáveis, bem como a possibilidade de se investir em melhores práticas de governança, conforme apropriado para alcançar um desempenho contábil (ROA) mais robusto no decorrer dos anos.

Os resultados vão ao encontro de [Duque-Grisales e Aguilera-Caracuel \(2021\)](#) que obtiveram efeitos positivos da moderação da folga financeira na relação entre ESG e os pilares ambiental e de governança no ROA; e nos efeitos positivos encontrados por [Lin et al. \(2020\)](#), pois constataram que as atividades ESG só beneficiarão o desempenho de empresas que tiverem excesso de recursos financeiros (FF), o que corrobora com os resultados desta pesquisa. No entanto, os achados contrariam as evidências de [Duque-Grisales e Aguilera-Caracuel \(2021\)](#) em relação ao painel C (SOC e ROA, com moderação da FF) e os resultados negativos de [Li et al. \(2017\)](#), que constataram que, no contexto chinês, empresas com abundância de recursos têm uma probabilidade menor de obter um maior retorno sobre ativos se assumirem questões ambientais. A [Tabela 10](#) se refere aos efeitos moderadores da folga financeira na relação entre o ESG e seus pilares e o ROE.

Na [Tabela 10](#) constata-se que recursos em folga (FF) ocasionam diminuições no retorno sobre o patrimônio líquido nos três primeiros modelos (A, B e C), pois, obteve-se uma relação negativa e significativa a 1% e a 5%. Contudo, os efeitos negativos da folga financeira no ROE se invertem quando o excedente financeiro (FF) passa a moderar a relação entre ESG e ROE, AMB e ROE e SOC e ROE, visto que foram encontrados resultados positivos e significantes a 10% da FF na relação entre ESG e ROE e SOC e ROE e a 5% na relação entre AMB e ROE. Esses resultados sugerem que altos níveis de folga financeira nas empresas analisadas permitem que estas adotem práticas ESG avançadas - em especial as ambientais e sociais - melhorando, por consequência, o retorno para os acionistas (ROE).

Tabela 8. Resultados da relação entre ESG e Desempenho Market to Book

Variáveis	MTB							
	Painel A (ESG)		Painel B (AMB)		Painel C (SOC)		Painel D (GOV)	
	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.
ESG	0.776	0.015**						
AMB			0.736	0.005*				
SOC					0.730	0.007*		
GOV							0.078	0.801
TAMCA	0.002	0.911	0.000	0.997	0.002	0.919	0.015	0.462
INDCA	-0.152	0.591	-0.046	0.871	-0.120	0.674	-0.073	0.813
TAM	-0.026	0.861	-0.053	0.722	-0.025	0.865	0.102	0.496
AF	1.087	0.001*	1.083	0.001*	1.084	0.001*	1.138	0.001*
Constante	0.965	0.317	1.202	0.215	0.933	0.325	0.189	0.843
R ²	20.52%		20.93%		20.70%		19.63%	
ANOVA	0.0000*		0.0000*		0.0000*		0.0000*	
VIF médio	≤ 1.66		≤ 1.66		≤ 1.65		≤ 1.64	
<i>Durbin-Watson</i>	1.1000		1.1036		1.1023		1.0910	
EF Setor e Ano	Sim							
N. obs.	483		483		483		483	

Nota: *significância a nível de 1%; ** 5%; ***10%.

Fonte: Elaboração própria (2022).

Tabela 9. Efeito moderador da folga financeira na relação entre ESG e ROA

Variáveis	ROA							
	Painel A (ESG)		Painel B (AMB)		Painel C (SOC)		Painel D (GOV)	
	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.
FF	-0.009	0.032**	-0.008	0.038**	-0.006	0.096***	-0.008	0.043**
ESGFF	0.010	0.050**						
AMBFF			0.009	0.023**				
SOCFF					0.005	0.265		
GOVFF							0.009	0.069***
TAMCA	0.001	0.337	0.001	0.367	0.001	0.232	0.001	0.207
INDCA	0.019	0.059***	0.021	0.033**	0.021	0.040**	0.016	0.120
TAM	-0.007	0.231	-0.008	0.191	-0.006	0.339	-0.005	0.360
AF	-0.105	0.000*	-0.105	0.000*	-0.106	0.000*	-0.103	0.000*
Constante	0.140	0.002*	0.145	0.001*	0.126	0.004*	0.123	0.004*
R ²	22.34%		22.56%		21.95%		22.33%	
ANOVA	0.0000*		0.0000*		0.0000*		0.0000*	
VIF médio	≤ 1.77		≤ 1.71		≤ 1.74		≤ 1.75	
<i>Durbin-Watson</i>	1.7978		1.7963		1.7990		1.7979	
EF Setor e Ano	Sim							
N. obs.	483		483		483		483	

Nota: *significância a nível de 1%; ** 5%; ***10%.

Fonte: Elaboração própria (2022).

Tabela 10. Efeito moderador da folga financeira na relação entre ESG e ROE

Variáveis	ROE							
	Painel A (ESG)		Painel B (AMB)		Painel C (SOC)		Painel D (GOV)	
	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.
FF	-0.030	0.010*	-0.028	0.006*	-0.029	0.013**	-0.012	0.303
ESGFF	0.035	0.059***						
AMBFF			0.034	0.015**				
SOCFF					0.027	0.058***		
GOVFF							-0.003	0.863
TAMCA	0.002	0.508	0.002	0.563	0.002	0.467	0.004	0.284
INDCA	0.039	0.267	0.046	0.181	0.044	0.216	0.049	0.181
TAM	-0.021	0.303	-0.024	0.237	-0.019	0.337	-0.011	0.568
AF	0.124	0.018**	0.123	0.018**	0.120	0.022**	0.126	0.018**
Constante	0.136	0.370	0.159	0.287	0.123	0.411	0.044	0.758
R ²	13.47%		13.85%		13.47%		12.90%	
ANOVA	0.0000*		0.0000*		0.0000*		0.0000*	
VIF médio	≤ 1.77		≤ 1.71		≤ 1.74		≤ 1.75	
<i>Durbin-Watson</i>	1.7792		1.7780		1.7796		1.7796	
EF Setor e Ano	Sim							
N. obs.	483		483		483		483	

Nota: *significância a nível de 1%; ** 5%; ***10%.

Fonte: Elaboração própria (2022).

Deste modo, recursos extras impulsionam a adoção de práticas ecoeficientes, tecnologias mais limpas, inovações, e uso de energias sustentáveis; além de possibilitar investimentos em iniciativas sociais eficientes e visíveis à comunidade. Os resultados da mo-

deração da folga financeira na relação entre o nível de divulgação ESG e ROE corrobora os achados de [Lin et al. \(2020\)](#). A [Tabela 11](#) evidencia os resultados dos efeitos moderadores da folga financeira na relação entre ESG e seus pilares (AMB, SOC e GOV) no Q de Tobin.

Os efeitos negativos da folga financeira no desempenho de mercado (QT) também são revertidos ao se utilizar o excedente de recursos (FF) em atividades ESG, ambientais e sociais. Logo, na [Tabela 9](#), constata-se que recursos em folga moderam positivamente e a um nível de 10% a relação entre ESG e SOC com QT e a 5% a relação entre SOC e QT. Estes resultados permitem inferir que o uso da folga financeira atua como impulsionadora de atividades ambientais, sociais e ESG.

Assim sendo, quanto melhor o uso de recursos para reduzir as emissões e resíduos, para beneficiar a sociedade e a comunidade, além de melhorar as práticas ESG desenvolvidas, maior será o reconhecimento pelo mercado da companhia, beneficiando o preço da ação e, conseqüentemente, o Q de Tobin. Os resultados vão ao encontro dos obtidos por [Duque Grisales e Aguilera-Caracuel \(2021\)](#). Os resultados da moderação da FF na relação entre ESG e seus pilares e o MTB estão na [Tabela 12](#).

Tabela 11. Efeito moderador da folga financeira na relação entre ESG e Q de Tobin

Variáveis	QT							
	Painel A (ESG)		Painel B (AMB)		Painel C (SOC)		Painel D (GOV)	
	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.
FF	-0.199	0.001*	-0.176	0.001*	-0.187	0.001*	-0.157	0.005*
ESGFF	0.153	0.062***						
AMBFF			0.122	0.047**				
SOCFF					0.112	0.065***		
GOVFF							0.060	0.412
TAMCA	0.034	0.010*	0.033	0.011**	0.035	0.007*	0.038	0.002*
INDCA	0.076	0.545	0.107	0.400	0.095	0.454	0.072	0.583
TAM	-0.252	0.006*	-0.255	0.005*	-0.242	0.007*	-0.216	0.017**
AF	-1.142	0.000*	-1.143	0.000*	-1.156	0.000*	-1.123	0.000*
Constante	3.117	0.000*	3.127	0.000*	3.036	0.000*	2.787	0.000*
R ²	37.70%		37.75%		37.63%		37.30%	
ANOVA	0.0000*		0.0000*		0.0000*		0.0000*	
VIF médio	≤ 1.77		≤ 1.71		≤ 1.74		≤ 1.75	
Durbin-Watson	1.3763		1.3744		1.3750		1.3853	
EF Setor e Ano	Sim							
N. obs.	483		483		483		483	

Nota: *significância a nível de 1%; ** 5%; ***10%.

Fonte: Elaboração própria (2022).

Tabela 12. Efeito moderador da folga financeira na relação entre ESG e Market to Book

Variáveis	MTB							
	Painel A (ESG)		Painel B (AMB)		Painel C (SOC)		Painel D (GOV)	
	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.	Coefic.	Sig.
FF	-0.241	0.060***	-0.187	0.097***	-0.221	0.061***	-0.138	0.238
ESGFF	0.335	0.041**						
AMBFF			0.259	0.035**				
SOCFF					0.259	0.035**		
GOVFF							0.111	0.398
TAMCA	0.019	0.496	0.019	0.495	0.021	0.436	0.029	0.266
INDCA	-0.076	0.782	-0.008	0.976	-0.036	0.897	-0.073	0.801
TAM	0.049	0.774	0.046	0.784	0.067	0.690	0.130	0.437
AF	1.060	0.009*	1.059	0.009*	1.027	0.012**	1.099	0.008*
Constante	0.839	0.479	0.833	0.483	0.697	0.548	0.095	0.933
R ²	20.12%		20.14%		20.09%		19.55%	
ANOVA	0.0000*		0.0000*		0.0000*		0.0000*	
VIF médio	≤ 1.77		≤ 1.71		≤ 1.74		≤ 1.75	
Durbin-Watson	1.6532		1.6524		1.6544		1.6506	
EF Setor e Ano	Sim							
N. obs.	483		483		483		483	

Nota: *significância a nível de 1%; ** 5%; ***10%.

Fonte: Elaboração própria (2022).

Os resultados revelam que empresas com recursos em excesso tornam os retornos de mercado (MTB) inferiores. Em oposição, gestores de empresas com recursos excedentes podem destinar tais recursos para atividades ESG, em especial para as ações voltadas ao meio ambiente e sociedade. Tais alocações geram maiores retornos de mercado, medido pelo *Market to Book*, pois, os resultados denotam uma relação positiva da FF nas relações entre ESG, AMB e SOC com o MTB (a 5% nos três modelos).

A partir deste resultado, denota-se a recomendação de se realizar maiores pesquisas envolvendo a folga financeira como moderadora da relação ESG e o desempenho de mercado (Li et al., 2017), entretanto, até o momento, não foram encontrados estudos que utilizaram a variável *Market to Book* como neste modelo proposto. Diante dos resultados evidenciados nesta etapa da análise, nota-se que a folga financeira tende a potencializar a relação entre o nível de divulgação ESG e o desempenho contábil (ROA e ROE), e o desempenho de mercado (QT e MTB). Além disso, os achados revelam os benefícios das empresas de atuarem com folga financeira para destinarem recursos para questões ambientais e sociais e, conseqüentemente, aumentar o desempenho corporativo.

A partir das variáveis de controle analisadas, também é possível refletir sobre as principais conclusões a respeito destas. Denota-se que conselhos maiores (TANCA) e com maior número de independência dos membros (INDCA), possibilita melhorias do desempenho corporativo. Empresas de porte maior (TAM) demonstraram-se negativamente relacionadas ao desempenho corporativo, o que provavelmente se justifica pela resistência a mudanças e ao conservadorismo presente, já que empresas maiores tendem a ser menos flexíveis (Lee et al., 2016; Liang & Renneboog, 2017).

Fato interessante ocorreu com a variável alavancagem financeira (AF) visto que se relacionou negativamente com o ROA e QT e positivamente com o ROE e MTB. Assim, em parte, os resultados denotam que empresas mais alavancadas acabam expostas a maiores riscos de liquidez (Li et al., 2018) o que exerce impactos negativos no desempenho, e aumenta o monitoramento da empresa por terceiros (Bian et al., 2016). Em oposição, os recursos obtidos com terceiros possibilitam a alocação em práticas ESG, que acabam por impulsionar o desempenho corporativo (Hasan & Habib, 2017).

4.1 Discussão dos resultados

A partir dos resultados encontrados, pode-se confirmar a hipótese H1, pois foram obtidos efeitos positivos do ESG no desempenho contábil. No entanto, quando analisados os efeitos individuais do ESG, os pilares ambiental e social apresentaram relação positiva com o desempenho contábil (ROA e ROE), e o pilar de governança apresentou efeitos positivos no desempenho

contábil medido pelo ROA não apresentando efeitos significativos no ROE. Do mesmo modo, os resultados permitiram aceitar a hipótese H2, pois, foram evidenciados efeitos positivos do nível de divulgação ESG no desempenho de mercado. Entretanto, na análise individual, os pilares ambiental e social se relacionaram positivamente com o desempenho de mercado (QT e MTB) e a governança corporativa não exerceu influência significativa no desempenho de mercado, seja este medido pelo QT ou pelo MTB.

Evidências dos efeitos positivos podem ser justificadas por diversos motivos. Inicialmente, maiores divulgações e ações ESG visam legitimar as operações da companhia e reduzir as pressões públicas frente as exigências de um comportamento mais ético (Qiu et al., 2016). Estes maiores níveis, ocasionam uma melhoria na imagem e no engajamento das partes interessadas onde tais empresas passam a ser consideradas líderes em sustentabilidade no mercado, beneficiando o desempenho corporativo (Lin et al., 2020). Ademais, ações ESG trazem retornos aos acionistas por causa de uma conduta estratégica pautada na diferenciação e na sinalização de que estas organizações preenchem lacunas institucionais, reduzem riscos de perdas e geram maior transparência (Duque Grisales & Aguilera-Caracuel, 2021).

Além da diferenciação, clientes acabam sendo fidelizados ao buscarem produtos sustentáveis (Albuquerque et al., 2019) pois existem clientes, acionistas e partes interessadas que priorizam empresas com maiores níveis ESG, devido ao fato de optarem por delegar às companhias a própria sustentabilidade, o que provoca maiores retornos (Li et al., 2018). Alguns clientes, muitas vezes, optam por pagar mais em um produto sustentável, enquanto funcionários buscam se engajar em empresas ambiental e socialmente responsáveis, o que também aumenta o desempenho corporativo e a produtividade (Qiu et al., 2016).

Outro ponto que possivelmente justifica os efeitos positivos do ESG nos retornos corporativos consiste no fato de que melhorias produtivas sustentáveis geram economia na produção de bens, redução de resíduos, menores níveis de emissões de poluentes, além de reduções na quantidade de punições judiciais por desrespeito às normas éticas, sociais e ambientais (Li et al., 2018). Esta economicidade, em contextos contábeis (ROA e ROE) motiva maiores lucros (Lin et al., 2020). Em termos de mercado, investidores reconhecem esta empresa como de menor risco e volatilidade das ações, o que aumenta o desempenho de mercado (Albuquerque et al., 2020). Logo, maiores níveis ESG causam recompensas empresariais no desempenho corporativo, seja por meio de investimentos, seja pelo consumo ou pela maior produtividade (Li et al., 2018).

Por meio das análises realizadas, denota-se que existem atividades que geram valor, como as atividades ambientais, sociais e ESG como um todo. Assim, cuidados com a água, com a energia, com os resíduos, com as

emissões de CO₂, bem como o uso de embalagens sustentáveis, o zelo pela biodiversidade e a adoção de um sistema de gestão ambiental (Albuquerque et al., 2020), impulsionam o pilar ambiental. Por outro lado, o pilar social é fomentado pela empresa ao se respeitar a igualdade de gênero, a redução da rotatividade de funcionários, a adoção de princípios de comércio justo, de segurança do produto, a realização de treinamentos e a garantia de direitos trabalhistas e humanos (Alareeni & Hamdan, 2020). Contudo, a governança corporativa das companhias não agrega valor ao ROE e ao desempenho de mercado (QT e MTB). Provavelmente, as atividades de governança não estão indo ao encontro dos desejos dos acionistas e demais partes interessadas (Buallay et al., 2020).

A terceira hipótese busca testar os efeitos moderadores da folga na relação entre ESG e desempenho contábil (ROA e ROE). Diante dos resultados evidenciados pode-se aceitar esta hipótese (H3). No que tange a análise individual do ESG, os resultados revelaram que a folga financeira modera a relação entre o pilar ambiental e o desempenho medido pelo ROA e ROE. Além disso, no contexto do ROA, a presença de excesso de recursos não impulsiona investimentos sociais capazes de melhorar o ROA, mas sim, o ROE. Quanto ao ROE, atividades de governança não geram ganhos sobre o ROE, mas sim, sobre o ROA, quando as empresas apresentam folga financeira.

Assim, conforme o presumido, uma maior folga financeira efetivamente contribui positivamente para o aumento do efeito da relação estabelecida entre ESG (geral e pilares ambiental e social) no desempenho corporativo, com exceção dos efeitos moderadores da folga na relação entre o *score* social e o ROA. A insignificância, neste caso, deve-se possivelmente ao fato de que gestores tomam decisões errôneas, ao se utilizarem de recursos extras de maneira imprudente, em atividades sociais inadequadas, que acabam por não cumprir o seu papel, onerando mais do que acrescentando valor as empresas (Li et al., 2017).

Além disso, a partir dos achados, tanto para o QT quanto para o MTB, pode-se confirmar a H4, visto que foram confirmados os efeitos moderadores da folga financeira na relação entre o nível de divulgação ESG e o desempenho de mercado. Em relação aos pilares do ESG, a folga financeira moderou positivamente a relação entre o *score* ambiental e social, e o desempenho de mercado. No entanto, para o pilar de governança corporativa os resultados foram insignificantes para ambos os desempenhos de mercado analisados. Diante destes resultados, pode-se concluir que a folga financeira contribui como impulsionadora das ações ESG, ambientais e sociais para a geração do desempenho de mercado (QT e MTB). A folga financeira acaba por demonstrar a existência de recursos disponíveis para investimento, expressando menores restrições financeiras, que podem melhorar a capacidade de as organizações investirem em ESG (Hasan & Habib, 2017).

Percebe-se, portanto, que a flexibilidade trazida por recursos excedentes, possibilita a mobilização para investimentos em tecnologias mais limpas, a melhora de práticas internas com políticas de gestão das partes interessadas, inovações verdes, liderança em sustentabilidade, melhorias na comunidade local da companhia e economia circular que, conseqüentemente, impactam o desempenho corporativo (Frynas & Yamahaki, 2016). O fato de existir folga financeira, torna as empresas mais flexíveis para investir e implementar atividades sustentáveis (Hasan & Habib, 2017). Os resultados obtidos podem ser justificados com base na Teoria da Visão Baseada em Recursos (VBR), porque estes valores, em folga, são recursos internos valiosos, raros e inimitáveis (Penrose, 1959; Wernerfelt, 1984), cuja exploração possibilita a obtenção de vantagem competitiva pela diferenciação empresarial.

Nas empresas analisadas, o diferencial está ocorrendo, provavelmente, pela aplicação dos excedentes em ações sustentáveis, desenvolvendo e melhorando as capacidades internas, e, em função disso, beneficia o desempenho corporativo (Frynas & Yamahaki, 2016). A VBR também expressa que os investimentos em ações ESG podem ser considerados iniciativas estratégicas que auxiliam na obtenção de vantagens competitivas (Lin et al., 2020; Wernerfelt, 1984) que acabam por beneficiar o desempenho organizacional e atender expectativas de acionistas com maior congruência (Li et al., 2017), pois negócios sustentáveis elevam a reputação, reduzem despesas legais, expandem a base de clientes e investidores, e aumentam a obtenção de subsídios (Duque-Grisales & Aguilera-Caracuel, 2021).

O capital é vital para a realização de investimentos em sustentabilidade, pois, na escassez, o enfoque recai em demandas prioritárias, deixando o ESG e ações voluntárias, em segundo plano (Lin et al., 2020). A ausência de restrições financeiras possibilita a absorção de adequações de custos de investimentos, vinculado ao ESG (Hasan & Habib, 2017) e ainda, a reação, de maneira mais eficaz e oportuna, em ameaças e imprevistos dos meios internos e externos, sem prejuízo de operações e estratégias (Lin et al., 2020).

Os efeitos insignificantes da governança corporativa podem ser explicados, possivelmente, por aspectos de carência de pontos de implementação que este pilar apresenta, ou pelo fato destes aspectos não estarem sendo executados adequadamente. Melhorias na diversidade do conselho (gênero, ideologia, cultural e conselheiros externos), formas mais robustas de monitoramento (como auditorias externas e internas e mudanças nos estatutos), entre outras questões (Lin et al., 2020) devem ser reformuladas nas empresas analisadas.

Outra possível explicação para a insignificância, conforme Li et al. (2018), é o fato do consumo de recursos extras ser tão grande, que os benefícios da aplicação em governança são neutralizados pelos altos custos, não trazendo retornos de desempenho corporativo (ROE, QT

e MTB). Tal argumento não diz respeito aos efeitos positivos da moderação da folga na relação entre governança e retorno sobre os ativos, pois, neste caso, as atividades governamentais acabam sendo impulsionadas pelos recursos excedentes e contribuem trazendo retornos contábeis, medidos pelo ROA.

Na [Tabela 13](#) apresenta-se um resumo dos resultados encontrados para as hipóteses testadas.

Tabela 13. Síntese dos resultados das hipóteses testadas

Hipóteses	Achados
H1: Existe relação entre o nível de divulgação ESG e o desempenho contábil de empresas brasileiras.	Aceita
H2: Existe relação entre o nível de divulgação ESG e o desempenho de mercado de empresas brasileiras.	Aceita
H3: A folga financeira em empresas brasileiras tem um efeito moderador na relação entre o nível de divulgação ESG e o desempenho contábil.	Aceita
H4: A folga financeira em empresas brasileiras tem um efeito moderador na relação entre o nível de divulgação ESG e o desempenho de mercado.	Aceita

Fonte: Elaboração própria (2022).

Nota-se que as hipóteses propostas foram confirmadas. Pode-se delimitar que práticas ESG e seus pilares impactam positivamente o desempenho corporativo, além da folga financeira atuar como impulsionadora desta relação. Outrossim, os efeitos do ESG (geral e pilares) no desempenho contábil (ROA e ROE) e de mercado (QT e MTB) variam nas equações testadas, o que reafirma a importância de se testar diferentes perspectivas. Entre os diferentes pilares, a governança (GOV), em todos os modelos testados, foi a dimensão que menos apresentou significância estatística.

Tal fato revela um ponto preocupante, pois a governança corporativa atua no estabelecimento de estratégias, padrões e medidas para controlar e direcionar a organização e os gestores, na busca por um ambiente de maior confiança, transparência, atendimento dos interesses das partes interessadas, em uma conduta mais ética, social e ambientalmente responsável ([Javeed & Lefen, 2019](#)). Portanto, denota-se que o enfoque das organizações analisadas deve recair na resolução de possíveis ineficiências desta área ([Li et al., 2018](#)).

5. Conclusão

A pesquisa desenvolvida teve como objetivo analisar o efeito moderador da folga financeira na relação entre ESG e desempenho contábil e de mercado, em empresas brasileiras. Na hipótese H1 constatou-se a significância positiva em todos os modelos testados, a exceção dos efeitos da governança, no desempenho medido pelo retorno sobre o patrimônio líquido. Em relação à hipótese H2, os efeitos positivos ocorreram em todos os modelos testados, a exceção do pilar governança. Assim, em termos gerais, a proeminência de ações ESG legítima e melhora a imagem corporativa, contribuindo para uma maior transparência.

Além disso, maiores níveis de divulgação ESG geram recompensas empresariais ao desempenho corporativo, por meio de investimentos externos, pelo consumo de clientes que optam por produtos sustentáveis, ou pela maior produtividade e redução de custos por melhorias dos sistemas produtivos ([Alareeni & Hamdan, 2020](#)). A insignificância predominante no pilar de governança corporativa demonstra que as empresas devem atentar para que seus mecanismos (composição do conselho de administração: independência, gênero e dualidade dos membros do conselho, auditoria interna e externa, políticas de sustentabilidade corporativa) consigam ir ao encontro dos anseios de acionistas e *stakeholders*.

Para a hipótese H3 obteve-se significância dos efeitos moderadores da folga financeira na relação entre ESG e pilar ambiental com o desempenho mensurado pelo retorno sobre os ativos e retorno sobre o patrimônio líquido e, parcialmente para o pilar social (ROE) e de governança (ROA). A hipótese H4 apenas foi rejeitada para o pilar de governança corporativa. A partir destes resultados, conclui-se que a flexibilidade de recursos pode originar na aplicação em atividades discricionárias, como as voltadas ao ESG, o que acaba gerando maiores níveis de desempenho corporativo. Tais resultados vão ao encontro dos pressupostos da Teoria da Visão Baseada em Recursos, pois, nas empresas analisadas, a diferenciação sustentável, promovida por valores excedentes, acaba por desenvolver capacidades internas, gerar vantagens competitivas e melhorar o desempenho ([Penrose, 1959](#); [Wernerfelt, 1984](#)).

A falta de significância entre o pilar governança (em especial) e o desempenho corporativo, moderado pela folga deve-se, possivelmente, à alocação de ações sustentáveis que não gerem os melhores benefícios disponíveis. Os resultados confirmam as suposições da importância de se analisar não somente o ESG geral, mas também de buscar avaliar as atividades de cada pilar, porque, em cada relação estabelecida, nota-se a agregação de valor ou a insignificância, podendo existir diminuições no desempenho corporativo e contribuições para a melhoria nas decisões gerenciais sobre estas atividades discricionárias ([Azmi et al., 2021](#)), sendo, portanto, um dos diferenciais do estudo, analisar as dimensões ESG.

Além de se analisar a relação direta que possui efeitos diversificados, o estudo contribui para a análise multidimensional do ESG com diferentes tipos de desempenho corporativo (contábil e de mercado) e a variável moderadora, folga financeira. Assim, outra contribuição teórica consiste em explicar, sob a lente da Teoria da Visão Baseada em Recursos ([Penrose, 1959](#); [Wernerfelt, 1984](#)) como elementos de folga de recursos alavancam ações ESG e o desempenho de empresas brasileiras.

De maneira prática, os resultados auxiliam empresas, gestores e conselhos de administração a perceber as peculiaridades de se ter excesso de recursos, além da importância de ações ESG para a obtenção de

melhores desempenhos empresariais e atendimento dos interesses das partes interessadas. Logo, espera-se que os resultados auxiliem na gestão empresarial e na redução de riscos, incentivando investimentos sustentáveis e promovendo a continuidade das empresas brasileiras, inseridas em contexto emergente.

Ademais, investidores e acionistas, mediante os achados deste estudo, podem se atentar às características empresariais ao decidirem sobre seus investimentos, a fim de analisar com maior cautela para contextos de escassez de recursos e menores índices ESG, que não geram congruência entre objetivos organizacionais e pessoais do gestor. Esta pesquisa também contribui para com o âmbito social, ao expressar os benefícios do ESG à sociedade, temática em grande ênfase nos últimos anos, pois o estudo visa auxiliar no desenvolvimento sustentável do país, no crescimento das atividades empresariais e da economia, com menores impactos, e efeitos das atividades empresariais sobre o meio ambiente, na sociedade e no bem-estar das partes interessadas.

Devido ao envolvimento, ainda relativamente baixo, entretanto crescente, das companhias com a divulgação de informações ESG e dos pilares, acaba por reduzir a amostra analisada. Ao mesmo tempo, esta pesquisa é limitada com relação ao período de análise, além de se limitarem as empresas analisadas e ao contexto institucional do Brasil. Sugere-se que novas pesquisas busquem ampliar o período amostral e, com isso, o tamanho da amostra, ainda reduzida, apesar do crescimento nos últimos anos, de informações ESG, que devido a voluntariedade, acabam sendo escassas nas companhias brasileiras.

Estudos adicionais podem explorar o crescimento do ESG e suas relações nos demais países, em especial outros países em desenvolvimento, para integrar as descobertas deste estudo e ajudar a fundamentar a formulação de estruturas regulatórias que permitam melhor transparência, adequadas a contextos semelhantes. Outra recomendação para estudos futuros seria a análise de outras variáveis moderadoras como contextos institucionais de países, cultura, internacionalização (em pesquisas de várias nacionalidades) ou moderadoras atreladas a fatores internos como a alavancagem empresarial e o risco corporativo.

Conflito de interesses

Os autores declaram não haver conflito de interesses.

Agradecimentos e/ou financiamento

Os autores agradecem a Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) pelo apoio financeiro na realização desta pesquisa - Código de Financiamento 001, à Fundação

de Amparo à Pesquisa do Estado do Rio Grande do Sul (FAPERGS) pelo apoio financeiro e a Universidade Federal de Santa Maria (UFSM). Artigo relacionado ao Projeto de Pesquisa UFSM Processo: 052409 e Termo de Outorga FAPERGS: 19/2551-0001877-0.

Referências

- Alareeni, B. A. & Hamdan, A. (2020). ESG impact on performance of US S&P 500-listed firms. *Corporate Governance: The International Journal of Business in Society*, 20(7), 1409-1428. <https://doi.org/10.1108/CG-06-2020-0258>
- Albuquerque, R., Koskinen, Y., Yang, S. & Zhang, C. (2020). Resiliency of environmental and social stocks: An analysis of the exogenous COVID-19 market crash. *The Review of Corporate Finance Studies*, 9(3), 593-621. <https://doi.org/10.1093/rcfs/cfaa011>
- Albuquerque, R., Koskinen, Y. & Zhang, C. (2019). Corporate social responsibility and firm risk: Theory and empirical evidence. *Management Science*, 65(10), 4451-4469. <https://doi.org/10.1287/mnsc.2018.3043>
- Atan, R., Alam, M. M., Said, J. & Zamri, M. (2018). The impacts of environmental, social and governance factors on firm performance: Panel study of Malaysian companies. *Management of Environmental Quality: An International Journal*, 29(2), 182-194. <https://doi.org/10.1108/MEQ-03-2017-0033>
- Azmi, W., Hassan, M. K., Houston, R. & Karim, M. S. (2021). ESG activities and banking performance: International evidence from emerging economies. *Journal of International Financial Markets, Institutions and Money*, 70, 101277. <https://doi.org/10.1016/j.intfin.2020.101277>
- Bian, C., Gan, C., Li, Z., & Hu, B. (2016). Corporate social responsibility engagement, corporate financial performance and CEO characteristics. *International Journal of Business Governance and Ethics*, 11(3), 243-265. <https://doi.org/10.1080/20430795.2021.1874211>
- Buallay, A. (2019). Is sustainability reporting (ESG) associated with performance? Evidence from the European banking sector. *Management of Environmental Quality: An International Journal*, 30(1), 98-115. <https://doi.org/10.1108/MEQ-12-2017-0149>
- Buallay, A., Fadel, S. M., Alajmi, J. & Saudagaran, S. (2020). Sustainability reporting and bank performance after financial crisis: evidence from developed and developing countries. *Competitiveness Review: An International Business Journal*, 31(4), 747-770. <https://doi.org/10.1108/CR-04-2019-0040>
- Chen, F., Ngniatedema, T. & Li, S. (2018). A cross-country comparison of green initiatives, green performance and financial performance. *Management Decision*, 68(4), 845-850. <https://doi.org/10.1108/MD-08-2017-0761>
- Duque-Grisales, E. & Aguilera-Caracuel, J. (2021). Environmental, social and governance (ESG) scores and financial performance of Multilatinas: moderating effects of geographic international diversification and financial slack. *Journal of Business Ethics*, 168, 315-334. <https://doi.org/10.1007/s10551-019-04177-w>
- Fávero, L. P., Belfiore, P., Silva, F. L. & Chan, B. L. (2009). *Análise de dados: modelagem multivariada para tomada de decisões*. (2ª ed.). Rio de Janeiro: Elsevier.
- Frynas, J. G. & Yamahaki, C. (2016). Corporate social responsibility: Review and roadmap of theoretical perspectives. *Business Ethics: A European Review*, 25(3), 258-285. <https://doi.org/10.1111/beer.12115>
- Gillan, S. L., Koch, A. & Starks, L. T. (2021). Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance*, 66, 101889. <https://doi.org/10.1016/j.jcorpfin.2021.101889>
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E. & Tatham, R. L. (2009). *Análise Multivariada de Dados*. (6ª ed.). Porto Alegre: Bookman.

- Han, J. J., Kim, H. J. & Yu, J. (2016). Empirical study on relationship between corporate social responsibility and financial performance in Korea. *Asian Journal of Sustainability and Social Responsibility*, 1(1), 61-76. <https://doi.org/10.1186/s41180-016-0002-3>
- Hasan, M. M. & Habib, A. (2017). Corporate life cycle, organizational financial resources and corporate social responsibility. *Journal of Contemporary Accounting & Economics*, 13(1), 20-36. <https://doi.org/10.1016/j.jcae.2017.01.002>
- Hsu, P., Liang, H. & Matos, P. (2021). Leviathan Inc. and corporate environmental engagement. *Management Science*, 1-25. <https://doi.org/10.1287/mnsc.2021.4064>
- Javeed, S. A. & Lefen, L. (2019). An analysis of corporate social responsibility and firm performance with moderating effects of CEO power and ownership structure: A case study of the manufacturing sector of Pakistan. *Sustainability*, 11(1), 248. <https://doi.org/10.3390/su11010248>
- Jost, J. P., Kroenke, A. & Hein, N. (2021). Relação entre Desempenho Sustentável e Desempenho de Mercado. *Revista de Administração, Contabilidade e Economia*, 20(2), 183-208. <https://doi.org/10.18593/race.27352>
- Lee, K., Cin, B. C. & Lee, E. Y. (2016). Environmental responsibility and firm performance: the application of an environmental, social and governance model. *Business Strategy and the Environment*, 25(1), 40-53. <https://doi.org/10.1002/bse.1855>
- Liang, H. & Renneboog, L. (2017). Corporate donations and shareholder value. *Oxford Review of Economic Policy*, 33(2), 278-316. <https://doi.org/10.1093/oxrep/grx024>
- Li, Y., Gong, M., Zhang, X. Y. & Koh, L. (2018). The impact of environmental, social and governance disclosure on firm value: The role of CEO power. *The British Accounting Review*, 50(1), 60-75. <https://doi.org/10.1016/j.bar.2017.09.007>
- Li, D., Cao, C., Zhang, L., Chen, X., Ren, S. & Zhao, Y. (2017). Effects of corporate environmental responsibility on financial performance: The moderating role of government regulation and organizational slack. *Journal of Cleaner Production*, 166, 1323-1334. <https://doi.org/10.1016/j.jclepro.2017.08.129>
- Lin, W. L., Ho, J. A., Ng, S. I. & Lee, C. (2020). Does corporate social responsibility lead to improved firm performance? The hidden role of financial slack. *Social Responsibility Journal*, 16(7), 957-982. <https://doi.org/10.1108/SRJ-10-2018-0259>
- Mohammad, W. M. W. & Wasiuzzaman, S. (2021). Environmental, Social and Governance (ESG) disclosure, competitive advantage and performance of firms in Malaysia. *Cleaner Environmental Systems*, 2, 1-11. <https://doi.org/10.1016/j.cesys.2021.100015>
- Nekhili, M., Nagati, H., Chtioui, T. & Rebolledo, C. (2017). Corporate social responsibility disclosure and market value: family versus nonfamily firms. *Journal of Business Research*, 77, 41-52. <https://doi.org/10.1016/j.jbusres.2017.04.001>
- Nollet, J., Filis, G. & Mitrokostas, E. (2016). Corporate social responsibility and financial performance: A non-linear and disaggregated approach. *Economic Modelling*, 52, 400-407. <https://doi.org/10.1016/j.econmod.2015.09.019>
- Penrose, E. T. (1959). *The Theory of the Growth of the Firm*. (4^a ed.). Wiley: New York.
- Qiu, Y., Shaukat, A. & Tharyan, R. (2016). Environmental and social disclosures: Link with corporate financial performance. *The British Accounting Review*, 48(1), 102-116. <https://doi.org/10.1016/j.bar.2014.10.007>
- Shakil, M. H., Mahmood, N., Tasnia, M. & Munim, Z. H. (2019). Do environmental, social and governance performance affect the financial performance of banks? A cross-country study of emerging market banks. *Management of Environmental Quality: An International Journal*, 30(6), 1331-1344. <https://doi.org/10.1108/MEQ-08-2018-0155>
- Taufik, M. & William, T. (2021). Does BOC's Characteristics Moderate The Effect of Corporate Social Responsibility on Performance?. *Journal of Applied Accounting and Taxation*, 6(2), 137-146. <https://doi.org/10.30871/jaat.v6i2.3236>
- Velte, P. (2020). Does CEO power moderate the link between ESG performance and financial performance? A focus on the German two-tier system. *Management Research Review*, 43(5), 497-520. <https://doi.org/10.1108/MRR-04-2019-0182>
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180. <https://doi.org/10.1002/smj.4250050207>

Modelo de desempeño en la tarea: estudio empírico con PLS-SEM y mapa de importancia-rendimiento

Judith Cavazos-Arroyo* Profesora-investigadora, Departamento de Ciencias Económico-Administrativas, Universidad Popular Autónoma del Estado de Puebla, Puebla, México.
judith.cavazos@upaep.mxAurora Irma Máynez-Guaderrama Profesora-investigadora, Instituto de Ingeniería y Tecnología, Universidad Autónoma de Ciudad Juárez, Ciudad Juárez, México.
amaynez@uacj.mx

Resumen

En este trabajo, se evaluó empíricamente un modelo de desempeño en la tarea considerando como antecedentes la percepción del apoyo de la familia y de los amigos, el bienestar psicológico y el desempeño contextual. Además, se valoró la importancia-rendimiento de las variables sobre el desempeño en la tarea. Se utilizó un diseño de investigación explicativo, no probabilístico y transversal. Las técnicas estadísticas fueron un modelo PLS-SEM y un mapa importancia-rendimiento. Se encontró que las percepciones del apoyo de la familia y los amigos influyen indirectamente sobre desempeño en la tarea, a través de la mediación del bienestar psicológico y el desempeño contextual, estos impactan directamente en el desempeño en la tarea. El desempeño contextual es la variable más relevante para el desempeño en la tarea.

Palabras clave: percepción de apoyo de la familia; percepción de apoyo de los amigos; bienestar psicológico; desempeño contextual; desempeño en la tarea.

Task performance model: An empirical study with PLS-SEM and importance-performance map analysis

Abstract

This paper empirically assessed a model of task performance examining as antecedents the perception of support from family and friends, psychological well-being, and contextual performance. Moreover, the importance-performance of the variables regarding task performance was evaluated. An explanatory, non-probabilistic, cross-sectional, explanatory research design was used. The statistical techniques were a PLS-SEM model and an importance-performance map. Perceptions of support from family and friends were found to indirectly influence task performance through the mediation of psychological well-being and contextual performance, both of which directly impact task performance. Contextual performance is the most relevant variable for task performance.

Keywords: perception of support from family; perception of support from friends; psychological well-being; contextual performance; task performance.

Modelo de desempenho de tarefas: estudo empírico com PLS-SEM e mapa importância-desempenho

Resumo

Neste trabalho, avaliou-se empiricamente um modelo de desempenho de tarefas considerando a percepção de apoio de familiares e amigos, bem-estar psicológico e desempenho contextual como antecedentes. Além disso, foi avaliada a importância-desempenho das variáveis sobre o desempenho na tarefa. Foi utilizado um desenho de pesquisa explicativo, não probabilístico e transversal. As técnicas estatísticas foram um modelo PLS-SEM e um mapa de importância-rendimento. Verificou-se que as percepções de apoio de familiares e amigos influenciam indiretamente o desempenho das tarefas, através da mediação do bem-estar psicológico e do desempenho contextual, estes impactam diretamente no desempenho das tarefas. O desempenho contextual é a variável mais relevante para o desempenho na tarefa.

Palavras-chave: percepção de apoio familiar; percepção de apoio dos amigos; bem-estar psicológico; desempenho contextual; desempenho da tarefa.

* Autor para dirigir correspondencia.

Clasificación JEL: M12; M10.

Cómo citar: Cavazos-Arroyo, J. y Máynez-Guaderrama, A. I. (2023). Modelo de desempeño en la tarea: estudio empírico con PLS-SEM y mapa de importancia-rendimiento. *Estudios Gerenciales*, 39(168), 314-326. <https://doi.org/10.18046/j.estger.2023.168.5818>

DOI: <https://doi.org/10.18046/j.estger.2023.168.5818>

Recibido: 11-11-2022

Aceptado: 13-04-2023

Publicado: 30-09-2023

1. Introducción

Durante una crisis, como es el caso de la pandemia de la COVID-19, el alto grado de incertidumbre percibida por los empleados puede considerarse una demanda laboral que hace que estos se sientan ansiosos (Usman et al., 2021). En ese sentido, el apoyo social es un recurso útil para lidiar con el estrés, ya que permite que se despliegue la confianza y el afecto de personas cercanas, a través de interacciones que ayudan a mantener niveles óptimos de bienestar y desempeño (Hobfoll y Stokes, 1988; Köse et al., 2021). Tanto el bienestar psicológico como el desempeño son constructos relevantes en el contexto de la economía y los negocios (Kristoffersen, 2010; Aung et al., 2023).

Trabajos recientes enfatizan en los beneficios del apoyo social (Köse et al., 2021); sin embargo, aún es necesario indagar en sus implicaciones (French et al., 2018), sobre todo en aspectos como el desempeño, los costos y los beneficios que este puede generar a las organizaciones (Foy et al., 2019). Además, dado que la mayoría de los trabajos estudian el efecto del apoyo social proveniente del entorno laboral, como compañeros o supervisores, se requiere profundizar en el efecto del apoyo social proveniente del entorno externo, como familia o amigos (Valenti et al., 2021).

Por otra parte, en investigaciones previas se ha analizado el efecto del bienestar psicológico sobre el desempeño organizacional (Loon et al., 2019), y se ha encontrado que es un predictor del desempeño en la tarea y contextual (Hannah et al., 2020). Por ello, en industrias en las que se ha incrementado el estrés y los conflictos laborales, se ha hecho un llamado a profundizar en la comprensión del bienestar de los empleados, sobre todo en temas asociados con la gestión del capital humano y el desempeño organizacional (He et al., 2019). La importancia de indagar en esta vertiente es aún mayor en tiempos recientes, dado que el bienestar a nivel organizacional fue afectado severamente por la pandemia COVID 19 (Mishra y Venkatesan, 2022).

En el contexto de la industria manufacturera de exportación ubicada en la frontera norte de México, se plantean dos objetivos de investigación. El primero consiste en evaluar un modelo de desempeño en la tarea considerando como antecedentes la percepción del apoyo de la familia y de los amigos, el bienestar psicológico y el desempeño contextual. El segundo, realizar una ampliación estándar del informe de resultados del modelo estructural. Se valora la importancia y el rendimiento de cada uno de los factores sobre el desempeño en la tarea. Este artículo se divide en cinco apartados adicionales a esta introducción: revisión de la literatura, método, resultados, discusión y conclusiones.

2. Revisión de la literatura

El desempeño laboral de los empleados es considerado un determinante clave para el éxito de la organización (Duan et al., 2023). Trabajos previos

han demostrado que existe una relación positiva entre el desempeño en el trabajo y el desempeño de la organización (Bieńkowska et al., 2022). La literatura señala que cuando en el contexto existen condiciones y variables favorables, es más probable que el desempeño laboral se incremente (Gutiérrez et al., 2020). Esta variable tiene dos dimensiones: contextual y en las tareas, amplias y diferenciadas (Schat y Frone, 2011), y se recomienda que ambas se examinen conjuntamente en los trabajos de investigación (Mohammed et al., 2002). El desempeño contextual implica acciones voluntarias que apoyan el entorno en el que tiene lugar el desempeño de la tarea (Bhardwaj y Kalia, 2021); es un comportamiento de los empleados que refuerza el funcionamiento de la organización, sin influir necesariamente de forma directa en su productividad (Budhiraja, 2021). Por otra parte, el desempeño en las tareas contribuye directamente al logro de los objetivos de la firma, involucra el desarrollo de actividades y el cumplimiento de responsabilidades señaladas en la descripción del puesto; en él se evalúa la calidad y cantidad de trabajo, su velocidad y precisión, y la diversidad de tareas desempeñadas (Qin y Jiang, 2011; Tufail et al., 2017). En esta investigación se estudia particularmente el efecto de variables antecedentes que afectan directa o indirectamente el desempeño en la tarea.

2.1 Apoyo social

Desde hace tiempo se ha identificado que el apoyo social es un recurso fundamental para mantener el bienestar y afrontar retos y amenazas (Valenti et al., 2021). El apoyo social puede surgir en ámbitos internos o externos a la empresa, y provenir de fuentes específicas, como la organización, el supervisor, los compañeros de trabajo, la comunidad, los amigos y los familiares (Boyar et al., 2014; French et al., 2018; Xu y Cao, 2019). Se trata de un constructo que opera como un recurso que proviene de relaciones interpersonales del entorno laboral o familiar, el cual puede ayudar a mitigar o amortiguar el efecto negativo de sucesos o eventos estresantes y proteger el bienestar de las personas en circunstancias adversas (French et al., 2018; Kılınc y Sis Çelik, 2021; Lin et al., 2014). Se le considera un recurso social clave, con funciones autodefinitorias e instrumentales para proteger los recursos existentes y obtener otros nuevos, además es especialmente importante en tiempos en los que los recursos son amenazados (Seiger y Wiese, 2009), como fue el caso de la pandemia de la COVID-19.

Hobfoll y Stokes (1988) definen el apoyo social como "interacciones o relaciones sociales que proporcionan a los individuos asistencia real o un sentimiento de apego a una persona o grupo que se percibe como afectuoso o cariñoso" (p. 499). Trabajos recientes (Valenti et al., 2021) lo conceptualizan como el grado en que las personas perciben que los demás están pendientes y son sensibles a sus necesidades. Esta variable implica recursos materiales o psicológicos que emergen en relaciones

sociales y que pueden ayudar a mitigar tensiones o estrés a través de una especie de efecto “amortiguador”; por lo que este apoyo puede provenir del entorno laboral o familiar (French et al., 2018; Scandurra et al., 2022).

Por un lado, el apoyo de los amigos es considerado un recurso personal útil para gestionar demandas o situaciones familiares o laborales (Carlson et al., 2021). En cambio, el apoyo familiar implica un recurso entre individuos de la familia para hacer frente a preocupaciones emocionales (Ju et al., 2020). El apoyo familiar incluye servicios formales, como el cuidado de los niños, e informales, como el asesoramiento, que ofrecen los miembros de la familia y que ayudan a las personas a superar sus problemas cotidianos y a laborar de forma productiva y responsable (Kalliath et al., 2018). Ambos tipos de apoyo social son relevantes porque funcionan como soporte informal que ayuda a aliviar el estrés (Mehta y Sharma, 2021).

Investigaciones previas han identificado que el apoyo social impacta positivamente en el bienestar psicológico de las personas (Scandurra et al., 2022). Un trabajo desarrollado en España estudió el efecto mediador del apoyo social de la familia y de los amigos en resultados asociados al bienestar —felicidad y satisfacción con la vida—, y se encontró que el apoyo de la familia incide en ambos resultados y que el apoyo de los amigos lo hace solo en la satisfacción con la vida (Rey et al., 2019). En otro trabajo, desarrollado con enfermeras de hospitales en Irán, se identificó que el apoyo social percibido proveniente de la familia y los amigos tiene efectos directos sobre el bienestar general de los individuos (Ebrahimi et al., 2021). También, en un trabajo desarrollado con funcionarios del Gobierno en Reino Unido, se identificó que el apoyo social tiene efectos favorables en el bienestar (Stansfeld et al., 2013). Por lo anterior, en el contexto estudiado se propone que:

H1: La percepción de apoyo de la familia influye positivamente sobre el bienestar psicológico.

H2: La percepción de apoyo de los amigos influye positivamente sobre el bienestar psicológico.

2.2 Bienestar psicológico

Inicialmente, la literatura previa estudió el bienestar psicológico tomando como guía concepciones restringidas del funcionamiento positivo y haciendo hincapié en el bienestar afectivo a corto plazo, en particular asociado a la felicidad, en detrimento de retos de vida más importantes, como tener un sentido de propósito y dirección, lograr relaciones satisfactorias con los demás y obtener un sentido de autorrealización (Ryff, 1989). Luego, esta variable se conceptualizó teniendo en mente dos aspectos: las necesidades humanas universales y el funcionamiento eficaz de las personas (Diener et al., 2009).

El bienestar psicológico se refiere a un estado en el que el individuo se siente bien, mantiene relaciones positivas con los demás, tiene un sentido de propósito en la vida, se autoacepta, crece como persona, es autónomo y siente que tiene dominio del entorno (Ryff y Keyes, 1995). Esta variable se asocia con el pensamiento flexible y creativo, el comportamiento prosocial y la buena salud física (Huppert, 2009). Asimismo, se ha comprobado que cuando los empleados tienen bienestar psicológico manejan mejor el estrés, se desempeñan mejor y contribuyen a la comunidad (Huppert, 2009; Liu et al., 2019).

Un trabajador feliz es un activo para las organizaciones, ya que tiene una productividad mayor que beneficia el desempeño (Mishra y Venkatesan, 2022). Trabajos previos (Edgar et al., 2017; Mishra y Venkatesan, 2022) han encontrado que el bienestar psicológico influye positivamente sobre ambos tipos de desempeño. Por ejemplo, un estudio en India encontró que el bienestar psicológico influye sobre el desempeño contextual (Kumar et al., 2021). Otro trabajo desarrollado con profesores en Pakistán (Nisar y Beenish, 2020) encontró que el bienestar psicológico predice el rendimiento laboral o desempeño en la tarea, y en particular se identificó que el desempeño está determinado por el propósito y significado de su trabajo, el optimismo, la capacidad de enseñanza, un ambiente de trabajo colaborativo y la satisfacción de sus necesidades de pertenencia y autoestima. Por lo anterior, en el contexto estudiado se propone que:

H3: El bienestar psicológico incide positivamente sobre el desempeño en las tareas.

H4: El bienestar psicológico incide positivamente sobre el desempeño contextual.

Trabajos recientes destacan que las variables positivas en el contexto influyen favorablemente sobre el desempeño laboral (Gutiérrez et al., 2020). Incluso, un estudio realizado con adictos al trabajo (Cheng y Gu, 2022) encontró que su preocupación por variables asociadas al contexto, como la imagen ante sus compañeros, jefes y la empresa para la que laboran, los impulsaba a ayudar a otros, lo que mejoró el desempeño contextual e incrementó el desempeño en las tareas de los compañeros. Por ello, en el contexto estudiado se propone que:

H5: El desempeño contextual incide positivamente sobre el desempeño en las tareas.

3. Método

En este trabajo de investigación se utilizó un diseño cuantitativo, explicativo y transversal. Los sujetos de estudio fueron empleados con cargos administrativos y

operativos en empresas manufactureras de exportación localizadas en Ciudad Juárez, Chihuahua, en México. Como técnica de recolección de datos se utilizó la encuesta personal, a través de un cuestionario auto-administrado, durante los meses de febrero, marzo y abril del año 2022. Se accedió a los participantes a través de contactos personales y profesionales de profesores y alumnos universitarios de nivel posgrado, a los cuales se les compartió un enlace electrónico. El muestreo fue no probabilístico y por conveniencia y en total participaron 220 empleados. Este tamaño de muestra sigue las recomendaciones de [Hair Jr et al. \(2018\)](#), que señalan que, en el caso de constructos que reciben un número máximo de dos flechas, es necesario contar con 130 observaciones para detectar una R^2 de 0,10, con una significación estadística del 1% y una potencia del 80%.

El instrumento se diseñó a partir de la adaptación de escalas validadas en la literatura. En la [tabla 1](#), se presentan las escalas utilizadas en el instrumento. Como en ella se observa, el apoyo de la familia y el apoyo de los amigos se evaluaron con cuatro ítems cada uno utilizando las escalas adaptadas de [Zimet et al. \(1988\)](#); el bienestar psicológico se midió con la escala adaptada de [Diener et al. \(2009\)](#) con siete ítems; y tanto el desempeño contextual

como el desempeño en las tareas se evaluaron con cinco y tres ítems respectivamente, adaptados de la escala de [Williams y Anderson \(1991\)](#). Todas las escalas fueron valoradas con opciones de respuesta tipo Likert de cinco puntos de asignación de respuesta, con opciones que iban desde totalmente en desacuerdo = 1 hasta totalmente de acuerdo = 5, para el caso del apoyo de la familia, el apoyo de los amigos y el bienestar psicológico; y desde 1 = nunca hasta 5 = siempre, para desempeño contextual y desempeño en las tareas.

Para confirmar la no existencia del sesgo de respuesta se realizó un análisis del sesgo del método común a través del factor único de Harman y los factores de inflación de la varianza (VIF). Los estadísticos descriptivos se calcularon con apoyo del software SPSS versión 24. Luego, el modelo estructural PLS se evaluó con el software SmartPLS versión 4. Finalmente, para evaluar la importancia y el rendimiento de los factores del modelo estructural, así como la importancia relativa de cada indicador, se utilizó un mapa de análisis de importancia-rendimiento (MAIR). A continuación, se describen las características y criterios de corte de cada una de las técnicas utilizadas.

Tabla 1. Escalas utilizadas.

Percepción de apoyo de la familia	Percepción de apoyo de los amigos	Desempeño contextual
PAF1. Mi familia realmente trata de ayudarme. PAF2. Obtengo la ayuda emocional y el soporte que necesito de mi familia. PAF3. Puedo hablar sobre mis problemas con mi familia. PAF4. Mi familia está dispuesta a ayudarme a tomar decisiones.	PAA1. Mis amigos realmente tratan de ayudarme. PAA2. Puedo contar con mis amigos cuando las cosas van mal. PAA3. Tengo amigos con quienes puedo compartir mis penas y alegrías. PAA4. Puedo hablar sobre mis problemas con mis amigos.	En mi trabajo: DC1. Ayudo a mis compañeros cuando necesitan salir del trabajo. DC2. Ayudo a mis compañeros que tienen mucha carga de trabajo. DC3. Cuando lo necesitan, hago pausas en mi trabajo para ayudar a mis compañeros. DC4. Si es necesario, me comunico con mis compañeros, usando medios personales, como teléfono, WhatsApp o correo, sobre asuntos relacionados con el trabajo. DC5. Si es necesario, envío a mis compañeros la información que puedan requerir para cumplir con su trabajo, usando medios personales, como teléfono, WhatsApp, o correo.
Desempeño en las tareas	Bienestar psicológico	
En mi trabajo: DT1. Cumpro adecuadamente con las tareas que me asignan. DT2. Cumpro con las funciones asignadas en la descripción de mi puesto. DT3. Cumpro con los requisitos formales de mi empleo.	BS1. Llevo una vida con propósito y sentido. BS2. Mis relaciones sociales son solidarias y gratificantes BS3. Estoy comprometido e interesado en mis actividades diarias. BS4. Contribuyo activamente a la felicidad y el bienestar de los demás. BS5. Soy competente y capaz en las actividades que son importantes para mí. BS6. Soy una buena persona y vivo una buena vida. BS7. Soy optimista sobre mi futuro.	

Fuente: elaboración propia.

3.1 Sesgo del método común

Se verificó que no existiera sesgo del método común, ya que su presencia podría afectar la validez de las conclusiones sobre las relaciones entre las medidas consideradas (Podsakoff et al., 2003), dada la probabilidad de existencia de error en la medición, porque los datos provienen de una misma fuente. Para ello, se utilizaron dos pruebas: la prueba de factor único de Harman (Fuller et al., 2016) y los valores del factor de inflación de la varianza (FIV). En la primera prueba el límite máximo aceptado es de 50% (Tehseen et al., 2017), mientras que la segunda considera aceptables valores menores de 5,0, lo que evidencia que no existen problemas de colinealidad (Hair et al., 2010).

3.2 Modelos de ecuaciones estructurales [MEE]

Estos modelos permiten testar relaciones de causalidad entre constructos o variables latentes. Los modelos MEE pueden estar basados en varianza o en covarianza. En este trabajo de investigación se utiliza el primer tipo. En este tipo de modelación, antes de evaluar el modelo teórico que se testa, es necesario asegurarse de que las variables latentes están bien medidas, es decir, la primera etapa consiste en cerciorarse de la calidad del modelo de medición y, luego, en la segunda etapa, se examinan las relaciones estructurales.

Para asegurar que el *modelo de medición* propuesto es fiable y válido, se revisaron varios criterios: estimación y significancia de las cargas factoriales; fiabilidad de los indicadores (ítems); fiabilidad del constructo; varianza media extraída (AVE), y validez discriminante. Respecto a la estimación y significancia de las cargas factoriales, se revisó que las cargas factoriales estandarizadas fueran iguales o mayores a 0,708, con valores *t* superiores a $\pm 1,96$. Para determinar la fiabilidad de los indicadores, se elevaron al cuadrado las cargas de los ítems, pues con ello se calcula una medida de la varianza compartida entre cada ítem y la varianza latente asociada, a fin de asegurarse que los ítems comparten más del 50% de la varianza con su constructo. La fiabilidad compuesta se determina con tres indicadores: alfa de Cronbach (α), fiabilidad compuesta (ρ_a) y fiabilidad compuesta (ρ_c). En los tres casos se recomienda que los valores sean mayores a 0,700 y menores a 0,950 (Hair et al., 2020). La varianza media extraída valora la varianza media compartida entre la variable latente y sus ítems y se recomienda que los valores sean iguales o mayores a 0,500. Para evaluar la validez discriminante se calculó el heterotrait-monotrait de correlaciones (HTMT). Existe validez discriminante cuando la varianza compartida dentro de un constructo (AVE) es mayor que la varianza compartida entre los constructos (Henseler et al., 2015). De acuerdo con Hair et al. (2020), los puntos de

corte máximos recomendados son 0,850, cuando los constructos son conceptualmente diferentes; o 0,90, cuando los constructos son similares conceptualmente.

Los criterios utilizados para la evaluación del modelo estructural son los siguientes: colinealidad del modelo estructural; tamaño y significancia de los coeficientes de trayectoria; tamaño del efecto f^2 ; coeficientes de determinación R^2 de las variables endógenas, y relevancia predictiva Q^2 . Para la colinealidad del modelo estructural, se revisó que los valores VIF de los constructos del modelo fueran menores a 3,0, pues esto indica que es poco probable que existan problemas de multicolinealidad (Hair et al., 2020). Respecto del tamaño y la significancia estadística de los coeficientes de trayectoria (β), se recomienda que sus valores estandarizados se encuentren lo más cercanos a +1 o -1; esto indica qué tan fuertes son (Hair et al., 2020). El tamaño del efecto [f^2] es una medida de estimación aplicable solo para la muestra, que estima la capacidad predictiva de los constructos independientes del modelo: valores entre 0,02 y 0,15 evidencian efectos pequeños, entre 0,15 y 0,35 se clasifican como efectos medianos y mayores de 0,35 se consideran grandes (Hair et al., 2020). Por otro lado, los coeficientes de determinación R^2 de las variables endógenas son medidas de predicción dentro de la muestra de los constructos endógenos y, por tanto, no deben ser inferidos a la población. Su valor mínimo es 0 y el máximo 1, y entre mayor sea el número de constructos en el modelo estructural, mayor será el valor R^2 (Hair et al., 2020). Los criterios usuales para determinar su magnitud son igual o mayor a 0,670: explicación sustancial; alrededor de 0,35: explicación moderada, y alrededor de 0,19: explicación débil (Henseler et al., 2009). Finalmente, la relevancia predictiva [Q^2] es un indicador útil para evaluar el poder de predicción del modelo fuera de la muestra. Cuando los valores de Q^2 son mayores a cero, se considera que son significativos y su magnitud se determina utilizando como criterios los siguientes: menor a 0,25: relevancia predictiva pequeña; entre 0,25 y 0,50: relevancia predictiva media; mayores a 0,50: relevancia predictiva grande (Chin, 2010).

3.3 Mapa de análisis de importancia rendimiento del modelo (MAIR)

El MAIR compara los efectos totales del modelo estructural sobre un constructo específico, es decir, el impacto que sobre una variable endógena específica tienen las puntuaciones medias de los constructos que la anteceden. Los efectos totales representan la importancia de los constructos precedentes cuando se explica dicha variable endógena, mientras que las puntuaciones medias de los constructos exhiben su rendimiento (Hair et al., 2019).

4. Resultados

4.1 Sesgo del método común

Los resultados de la prueba de Harman arrojaron 27,35% de varianza, cifra menor en comparación con el límite del 50%. Por otro lado, los valores VIF son menores de 5,0, lo que evidencia que no existen problemas de colinealidad: apoyo de los amigos VIF = 1,098; apoyo de la familia VIF = 1,098; bienestar psicológico VIF = 1,000; desempeño contextual VIF = 1,118, y desempeño en la tarea = 1,118.

4.2 Estadísticos descriptivos

Más de la mitad de los participantes eran de sexo masculino (50,9%). En lo relativo al estado civil, la mayoría de ellos estaban casados (41,7%). La edad promedio fue de 35,67 años con una desviación estándar de 9,96. El 37,5% de los participantes reportó tener entre 31 y 40 años, el 31,9% señaló entre 21 y 30 años y el 14,8% indicó entre 41 y 50 años. El 56,9% reportó una escolaridad equivalente a licenciatura terminada. Respecto a la antigüedad, el 39,8% refirió haber trabajado más de cinco años en la empresa. En su mayoría, los encuestados ocupaban un puesto de ingeniería [38,4%]. Respecto al sector de la empresa, el 46,5% reportó laborar para el sector automotriz. Las [tablas 2 y 3](#) concentran estas características.

4.3. Modelo de ecuaciones estructurales

4.3.1 Modelo de medición

Del modelo de medición original de 23 ítems, se eliminaron dos de ellos [DC4 y DC5], pues no cumplían con alguno de los criterios. En la [tabla 4](#) se presentan la estimación y significancia de las cargas factoriales; la fiabilidad de los indicadores (ítems); la fiabilidad del constructo, y la AVE. En este trabajo, los ítems del modelo de medición mostraron cargas factoriales con valores entre 0,723 y 0,923, y en todos los casos estadísticamente significativas. Luego, se revisó la fiabilidad de los indicadores. En todos los casos, los ítems comparten más del 50% de la varianza con su constructo asociado. La fiabilidad compuesta de los constructos se determinó con tres indicadores: alfa de Cronbach (α), fiabilidad compuesta (ρ_a) y fiabilidad compuesta (ρ_c). En el modelo de medición de esta investigación, los valores fueron α : 0,850-0,930; fiabilidad compuesta (ρ_a): 0,867-0,933; y fiabilidad compuesta (ρ_c): 0,908-0,950. Los valores AVE de esta investigación se encuentran entre 0,608 y 0,835.

Como se muestra en la [tabla 5](#), el modelo de medición cumple con la validez discriminante, ya que todos los ratios son menores a 0,85.

Tabla 2. Características individuales de los participantes.

Género	n	%	Grupos de edad	n	%	Escolaridad	n	%	Estado civil	n	%
Hombre	110	50,9	< 21	8	3,7	Secundaria	4	1,9	Soltero	83	38,4
Mujer	106	49,1	21 - 30	69	31,9	Bachillerato	23	10,6	Casado	90	41,7
Total	216	100,0	31 - 40	81	37,5	Técnico	3	1,4	Divorciado	13	6,0
			41 - 50	32	14,8	Licenciatura trunca	11	5,1	Separado	4	1,9
			51 - 60	21	9,7	Licenciatura terminada	123	56,9	Unión libre	26	12,0
			> 60	5	2,3	Maestría	52	24,1	Total	216	100,0
			Total	216	100,0	Total	216	100,0			

Fuente: elaboración propia.

Tabla 3. Características asociadas a la afiliación organizacional de los participantes.

Puesto	n	%	Antigüedad	n	%	Sector de la empresa	n	%
Operador	13	6,0	Menos de un año	19	8,8	Automotriz	101	46,8
Técnico	18	8,3	Un año	26	12,0	Aeroespacial	1	0,5
Asistente	18	8,3	Dos años	19	8,8	Electrónico	41	19,0
Jefe de grupo	13	6,0	Tres años	30	13,9	Médico	22	10,2
Jefe de departamento	15	6,9	Cuatro años	17	7,9	Textil	2	0,9
Supervisor	25	11,6	Cinco años	19	8,8	Otro	49	22,6
Ingeniero	83	38,4	Más de cinco años	86	39,8	Total	216	100,0
Gerente de área	26	12,0	Total	216	100,0			
Gerente de planta	5	2,3						
Total	216	100,0						

Fuente: elaboración propia.

Tabla 4. Validez convergente.

Constructo	Ítem	Cargas	Valor t	Fiabilidad del ítem	Alfa de Cronbach	Fiabilidad compuesta (rho_a)	Fiabilidad compuesta (rho_c)	Varianza Extraída Media (AVE)
Percepción de apoyo de los amigos	PAA1	0,907	54,546	0,822	0,930	0,933	0,950	0,827
	PAA2	0,917	38,789	0,841				
	PAA3	0,913	41,101	0,834				
	PAA4	0,900	46,926	0,081				
Percepción de apoyo de la familia	PAF1	0,889	42,959	0,789	0,924	0,925	0,946	0,815
	PAF2	0,911	51,613	0,830				
	PAF3	0,902	40,521	0,813				
	PAF4	0,910	48,066	0,827				
Bienestar psicológico	BS1	0,727	15,600	0,529	0,892	0,896	0,915	0,608
	BS2	0,723	18,523	0,522				
	BS3	0,804	28,964	0,647				
	BS4	0,750	23,137	0,562				
	BS5	0,792	22,945	0,627				
	BS6	0,822	39,926	0,675				
	BS7	0,833	39,066	0,694				
Desempeño contextual	DC1	0,867	40,382	0,752	0,850	0,867	0,908	0,768
	DC2	0,919	67,178	0,844				
	DC3	0,841	30,511	0,707				
Desempeño en la tarea	DT1	0,898	58,027	0,806	0,901	0,904	0,938	0,835
	DT2	0,923	71,976	0,852				
	DT3	0,920	66,778	0,847				

Fuente: elaboración propia.

Tabla 5. Validez discriminante según el criterio del ratio HTMT.

	Percepción de apoyo de los amigos	Percepción de apoyo de la familia	Bienestar psicológico	Desempeño contextual
Percepción de apoyo de la familia	0,319			
Bienestar psicológico	0,426	0,568		
Desempeño contextual	0,428	0,224	0,361	
Desempeño en la tarea	0,395	0,322	0,512	0,670

Fuente: elaboración propia.

4.3.2 Modelo estructural

En la [tabla 6](#) se presentan los valores VIF del modelo estructural. En todos los casos, se cumple con el criterio recomendado (< 3,0).

Tabla 6. Valores VIF del modelo estructural.

	Bienestar psicológico	Desempeño contextual	Desempeño en la tarea
Percepción de apoyo de los amigos	1,098		
Percepción de apoyo de la familia	1,098		
Bienestar psicológico		1,000	1,118
Desempeño contextual			1,118

Fuente: elaboración propia.

En la [tabla 7](#) se presentan los valores de los coeficientes de trayectoria del modelo estructural. Como

en ella se observa, el coeficiente más bajo se presenta en la relación entre percepción de apoyo de los amigos y bienestar psicológico, y el coeficiente mayor se localiza en la relación entre desempeño contextual y desempeño en la tarea. Todas las hipótesis propuestas fueron validadas.

En la [tabla 8](#) se presentan el tamaño del efecto f^2 y los coeficientes de determinación R^2 de las variables endógenas. Como en ella se observa, el nivel de explicación de los constructos endógenos del modelo es desempeño contextual: estimación débil (0,106); bienestar psicológico: estimación moderada 0,328; y desempeño en la tarea: estimación moderada (0,437). Los resultados mostraron efectos pequeños en tres de las relaciones: percepción de apoyo de los amigos → bienestar psicológico (0,090); bienestar psicológico → desempeño contextual (0,118); bienestar psicológico → desempeño en la tarea (0,144), y en dos de ellas se presentó un efecto mediano: desempeño contextual →

desempeño en la tarea (0,396); y percepción de apoyo de la familia → bienestar psicológico (0,263).

Los resultados de la relevancia predictiva Q^2 fueron bienestar psicológico: 0,300, desempeño contextual: 0,080 y desempeño en la tarea: 0,128. Así, puede decirse que el modelo tiene un poder de predicción pequeño para el desempeño en la tarea y para el desempeño contextual y un poder de predicción medio para el bienestar psicológico. En la figura 1 se presenta el modelo estructural contrastado.

En la tabla 9 se presentan los cinco efectos indirectos del modelo. En todos los casos son significativos. Como en ella se observa, el apoyo de los amigos y el apoyo de la familia tienen efectos indirectos sobre el desempeño contextual y el desempeño en la tarea. Además, también el bienestar psicológico tiene un efecto indirecto sobre el desempeño en la tarea. En este último caso, existe una mediación parcial complementaria, dado que tanto el efecto directo como el indirecto son significativos y tienen la misma dirección.

Tabla 7. Coeficientes de trayectoria del modelo estructural.

Trayectorias	B	Desviación estándar	Valor t	Valor p	Resultado de la hipótesis
H1: Percepción de apoyo de la familia -> Bienestar psicológico	0,441	0,070	6,338	0,0001	Validada
H2: Percepción de apoyo de los amigos -> Bienestar psicológico	0,257	0,069	3,730	0,0001	Validada
H3: Bienestar psicológico -> Desempeño en la tarea	0,301	0,058	5,154	0,0001	Validada
H4: Bienestar psicológico -> Desempeño contextual	0,325	0,074	4,387	0,0001	Validada
H5: Desempeño contextual -> Desempeño en la tarea	0,499	0,055	9,009	0,0001	Validada

Fuente: elaboración propia.

Tabla 8. Resultados del coeficiente de determinación y del tamaño del efecto.

	f cuadrado		
	Bienestar psicológico	Desempeño contextual	Desempeño en la tarea
Percepción de apoyo de los amigos	0,090		
Percepción de apoyo de la familia	0,263		
Bienestar psicológico		0,118	0,144
Desempeño contextual			0,396
R ²			
Bienestar psicológico	0,328		
Desempeño contextual	0,106		
Desempeño en la tarea	0,437		

Fuente: elaboración propia.

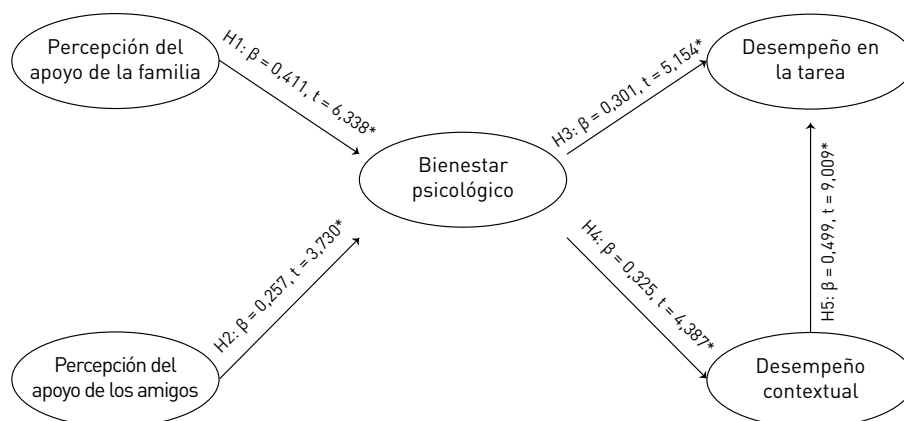


Figura 1. Modelo estructural contrastado.

* $p < 0,001$.

Fuente: elaboración propia.

Tabla 9. Efectos indirectos y mediación del modelo.

	B ₁	Valores p	B ₂	Valores p	B ₃	Valores p
Apoyo amigos -> Desempeño contextual	0,000		0,084	0,020	0,084	0,020
Apoyo amigos -> Desempeño en la tarea	0,000		0,119	0,004	0,119	0,004
Apoyo familia -> Desempeño contextual	0,000		0,143	0,000	0,143	0,000
Apoyo familia -> Desempeño en la tarea	0,000		0,204	0,000	0,204	0,000
Bienestar psicológico -> Desempeño en la tarea	0,301	0,000	0,162	0,000	0,463	0,000

B₁ = Efecto directo, B₂ = Efecto indirecto, B₃ = Efecto total

Fuente: elaboración propia.

4.4 Mapa de análisis de importancia-rendimiento del modelo (MAIR)

Para evaluar la importancia y el rendimiento de los factores del modelo estructural, así como la importancia relativa de cada indicador, se utilizó un MAIR. Como primer paso, se revisaron tres aspectos: a) el reescalado de los puntajes de los resultados de las variables latentes, con el fin de asegurar que se encontraran en un rango de cero a cien, pues esto implica que los indicadores del modelo PLS tienen una escala métrica o equidistante; b) la codificación de los indicadores para garantizar que tienen la misma dirección; y c) cargas positivas en los estimadores de las cargas externas del modelo de medición. En esta investigación, se cumplió con los tres aspectos. Luego, se verificaron los puntajes de las variables latentes reajustadas. En la [tabla 10](#) se presentan los valores promedio de rendimiento reajustados.

Tabla 10. Promedio de las variables latentes reajustadas.

	Rendimientos
Percepción de apoyo de los amigos	73,412
Percepción de apoyo de la familia	81,825
Bienestar psicológico	73,763
Desempeño contextual	77,886
Desempeño en la tarea	80,834

Fuente: elaboración propia.

En el tercer paso, se verificaron los efectos de las variables latentes predictoras de la variable explicada, en este caso, el desempeño en la tarea. Los resultados muestran que el desempeño contextual es la variable que más explica el desempeño en la tarea, seguido del bienestar psicológico, la percepción de apoyo de la familia y finalmente la percepción de apoyo de los amigos ([tabla 11](#)).

En el paso cuatro se creó el mapa de importancia-rendimiento. En este trabajo, el constructo de interés fue el desempeño en la tarea. En la [figura 2](#) se presentan los valores de importancia y rendimiento de los cuatro constructos predecesores del desempeño en la tarea. A partir de su promedio, se generan cuatro cuadrantes o áreas. El bienestar psicológico quedó en el cuadrante

inferior derecho, lo que implica que este constructo tiene la mayor oportunidad de mejora o rendimiento respecto a los otros constructos estudiados. La segunda oportunidad de mejora se presenta en el cuadrante superior derecho, en este caso en la variable desempeño contextual. Luego, la tercera alternativa se localiza en el cuadrante inferior izquierdo y corresponde a la variable Percepción de apoyo de los amigos. Finalmente, en el cuadrante superior izquierdo se ubica la percepción de apoyo de la familia, que presenta un buen rendimiento, pero con un grado de importancia bajo en comparación con las otras variables.

Tabla 11. Efectos totales en el análisis MAIR.

	Desempeño en la tarea
Percepción de apoyo de los amigos	0,119
Percepción de apoyo de la familia	0,204
Bienestar psicológico	0,463
Desempeño contextual	0,499

Fuente: elaboración propia.

En el quinto paso se replicó el procedimiento anterior, pero a nivel de ítems. Dentro del cuadrante inferior derecho, el indicador con la mayor oportunidad de mejora es “ayudo a mis compañeros que tienen mucha carga de trabajo” (DC2, importancia = 0,190, rendimiento = 75,795), seguido de “cuando lo necesitan, hago pausas en mi trabajo para ayudar a mis compañeros” (DC3, importancia = 0,160, rendimiento = 64,205), luego “estoy comprometido e interesado en mis actividades diarias” (BS3, importancia = 0,089, rendimiento = 72,727), y “contribuyo activamente a la felicidad y el bienestar de los demás” (BS4, importancia = 0,085, rendimiento = 64,848).

En el cuadrante superior derecho se ubican tres ítems: uno de desempeño contextual y dos de bienestar psicológico. En este cuadrante se presentan ítems con alta importancia y alto nivel de rendimiento. Los ítems son “ayudo a mis compañeros cuando necesitan salir del trabajo” (DC1, importancia = 0,220, desempeño = 81,932), seguido de “soy una buena persona y vivo una buena vida” (BS6, importancia = 0,099, desempeño = 78,750) y finalmente “soy competente y capaz en las actividades que son importantes para mí” (BS5, importancia = 0,086, desempeño = 76,136). La [figura 3](#) muestra los resultados.

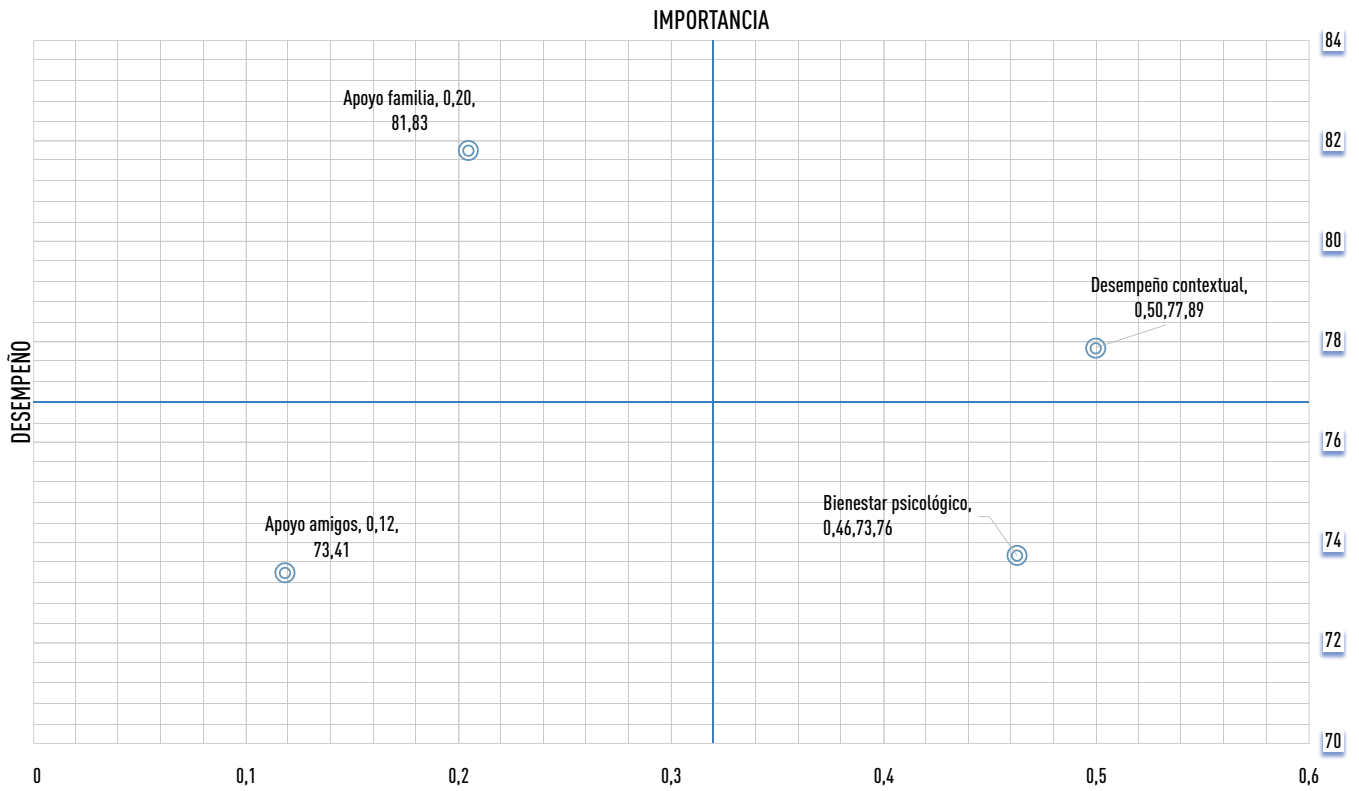


Figura 2. Mapa importancia-rendimiento ajustado de los constructos sobre rendimiento en la tarea.
Fuente: elaboración propia.

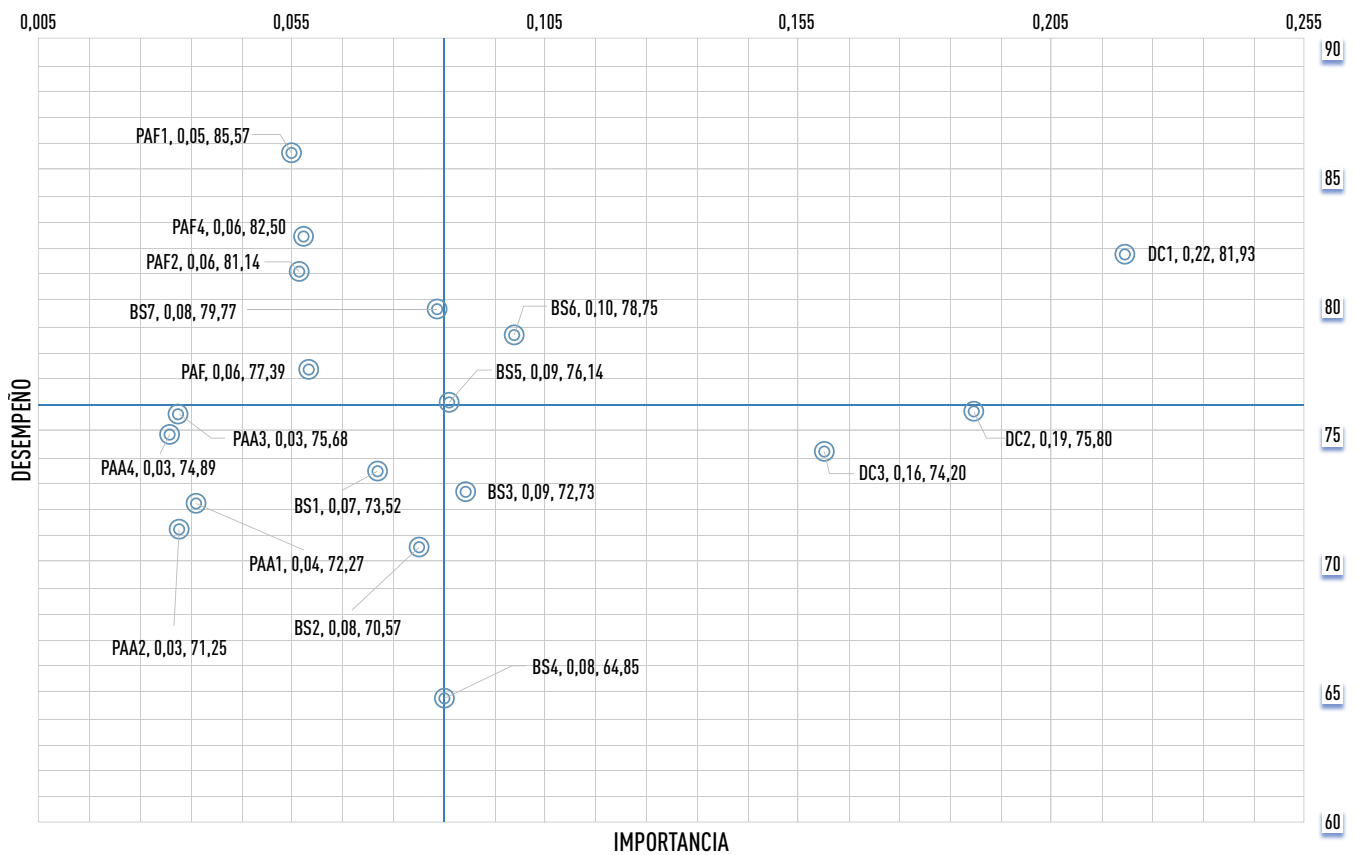


Figura 3. Mapa importancia-rendimiento ajustado de los indicadores de los constructos sobre capacidad de respuesta.
Fuente: elaboración propia.

5. Discusión

En esta investigación se plantearon dos objetivos. El primero, evaluar un modelo de desempeño en la tarea considerando como antecedentes la percepción del apoyo de la familia y de los amigos, el bienestar psicológico y el desempeño contextual.

Tanto el apoyo social de la familia como el proveniente de los amigos inciden favorablemente sobre el desempeño en la tarea, a través de la mediación del bienestar psicológico. Estos resultados coinciden con hallazgos de trabajos previos que señalan la relación positiva del apoyo social sobre el bienestar psicológico [Ebrahimi et al., 2021; Rey et al., 2019; Scandurra et al., 2022; Stansfeld et al., 2013]. Así, se confirma que este tipo de apoyo es un recurso que protege el bienestar de las personas, dado que perciben que los demás están pendientes de ellas y son sensibles a lo que necesitan [French et al., 2018; Kılınc y Sis Çelik, 2021; Lin et al., 2014; Valenti et al., 2021], lo que favorece el desempeño en la tarea.

Además, en este trabajo se indagó si el bienestar psicológico incide directa e indirectamente sobre el desempeño en las tareas, a través de la mediación del desempeño contextual. Los resultados comprobaron que este constructo incide de forma directa sobre el desempeño en las tareas y sobre el desempeño contextual, y coinciden con los reportados por Kumar et al. (2021) y Nisar y Beenish (2020). De forma comparada, el bienestar psicológico tiene un efecto total importante sobre el desempeño en la tarea, a través de la mediación parcial complementaria del desempeño contextual. Esto reitera la necesidad de seguir investigando en el entorno empresarial sobre el bienestar psicológico, dados sus beneficios en el manejo del estrés y el desempeño laboral [Huppert, 2009; Kristoffersen, 2010; Liu et al., 2019].

Luego, se consideró que el desempeño contextual tiene un efecto favorable sobre el desempeño en las tareas. Los hallazgos en la realidad empírica confirman tal postulado y reiteran lo señalado por trabajos como el de Gutiérrez et al. (2020) y el de Cheng y Gu (2022). Es decir, las acciones y comportamientos voluntarios de los empleados con sus compañeros benefician el desempeño en las tareas. Así, se confirma que el desempeño contextual refuerza el funcionamiento de la organización [Budhiraja, 2021].

Como segundo objetivo de esta investigación, se evaluó la importancia y el rendimiento de los factores del modelo estructural sobre el desempeño en la tarea, así como la importancia relativa de cada indicador. La variable más importante para el desempeño en la tarea es el desempeño contextual y, en el entorno estudiado, presenta un buen nivel de rendimiento. La segunda variable en importancia es el bienestar psicológico, pero su rendimiento debe mejorar.

A nivel de indicadores, el más importante se refiere a la ayuda voluntaria que el empleado ofrece a sus compañeros cuando necesitan salir del trabajo, y en el

contexto estudiado este ítem exhibe un buen nivel de rendimiento. El segundo ítem en importancia se refiere a la ayuda que se da a los compañeros que tienen mucha carga de trabajo; en este caso, su nivel de rendimiento necesita ser mejorado. Finalmente, el tercer ítem se refiere a la disposición que el empleado tiene para realizar pausas en su trabajo a fin de ayudar a sus compañeros cuando lo necesitan; en este caso, también existen oportunidades de mejora. Los tres indicadores reflejan la naturaleza del desempeño contextual a través de comportamientos voluntarios de los empleados que apoyan el entorno y benefician a la organización, en este caso por su efecto en el desempeño en la tarea [Bhardwaj y Kalia, 2021; Budhiraja, 2021].

6. Conclusiones

El desempeño laboral es un factor relevante y determinante para que las organizaciones alcancen sus metas. Por ello, en el entorno de la industria manufacturera de exportación ubicada en la frontera norte de México, este trabajo de investigación evaluó el efecto de la percepción de apoyo de la familia y de los amigos, el bienestar psicológico y el desempeño contextual sobre el desempeño en la tarea. Este trabajo evidenció que la percepción del apoyo social externo, familia y amigos, genera resultados favorables en la firma. Se destaca, en particular, la percepción de apoyo de la familia. Por ello, se recomienda que las organizaciones implementen programas sociales que la incluyan, dado que este tipo de acciones incidirán en el bienestar psicológico de los empleados y con ello se favorecerá el desempeño contextual y en las tareas.

Por otro lado, se evaluó la importancia y el rendimiento de los factores del modelo estructural sobre el desempeño en la tarea, así como la importancia y rendimiento relativos de cada indicador. Entre las variables precedentes del desempeño en la tarea, destaca el desempeño contextual como la más importante, y en cuanto a indicadores, el más relevante se relaciona con la ayuda voluntaria que el empleado ofrece a sus pares cuando requieren salir de su trabajo. En ambos casos, el nivel de rendimiento fue adecuado. Respecto al constructo, se identificó que el bienestar psicológico debe ser mejorado, y respecto al indicador, existen áreas de oportunidad en relación con la ayuda del empleado hacia sus compañeros con cargas altas de trabajo y con su disposición para pausar su trabajo y ayudar a sus pares cuando lo requieran.

Al igual que otros trabajos, este cuenta con algunas limitaciones, ya que se utilizó un diseño transversal y una muestra no probabilística por conveniencia, por lo que los resultados no pueden ser generalizados a la población ni a otros entornos. Es recomendable que estudios futuros exploren el efecto de otros tipos de apoyo social dentro de la organización, como el apoyo del supervisor y el apoyo de los compañeros. Asimismo, se considera valioso profundizar en el efecto del desempeño

contextual sobre el desempeño en la tarea, pues, aunque se identificaron diversos trabajos teóricos, son escasos los estudios empíricos sobre su vínculo.

Conflicto de intereses

Los autores declaran no tener ningún conflicto de intereses.

Referencias

- Aung, Z. M., San Santoso, D. y Dodanwala, T. C. (2023). Effects of demotivational managerial practices on job satisfaction and job performance: Empirical evidence from Myanmar's construction industry. *Journal of Engineering and Technology Management*, 67, 101730. <https://doi.org/10.1016/j.jengtecman.2022.101730>
- Bhardwaj, B. y Kalia, N. (2021). Contextual and task performance: role of employee engagement and organizational culture in hospitality industry. *Vilakshan-XIMB Journal of Management*, 18(2), 187-201. <https://doi.org/10.1108/XJM-08-2020-0089>
- Bieńkowska, A., Koszela, A., Satamacha, A. y Tworek K. (2022). COVID-19 oriented HRM strategies influence on job and organizational performance through job-related attitudes. *PLoS ONE* 17(4): e0266364. <https://doi.org/10.1371/journal.pone.0266364>
- Boyar, S. L., Campbell, N. S., Mosley Jr, D. C. y Carson, C. M. (2014). Development of a work/family social support measure. *Journal of Managerial Psychology*, 29(7), 901-920. <https://doi.org/10.1108/JMP-06-2012-0189>
- Budhiraja, S. (2021). Can continuous learning amplify employees' change-efficacy and contextual performance? Evidence from post-merger Indian organization. *International Journal of Manpower*, 42(6), 1144-1158. <https://doi.org/10.1108/IJM-05-2020-0208>
- Carlson, D. S., Thompson, M. J., Hackney, K. J. y Crawford, W. S. (2021). With a little help from my (her) friends: The role of friend support on the negative effects of work engagement for married couples. *Journal of Vocational Behavior*, 125, 103539. <https://doi.org/10.1016/j.jvb.2021.103539>
- Cheng, B. y Gu, J. (2022). The test based on meta-analysis on "does workaholism prefer task performance or contextual performance?". *Frontiers in Psychology*, 13, 860687. <https://doi.org/10.3389/fpsyg.2022.860687>
- Chin, W. W. (2010). How to write up and report PLS analyses. En V. E. Vinzi, W. W. Chin, J. Henseler y H. Wang (Eds.), *Handbook of partial least squares* (pp. 655-690). Springer.
- Diener, E., Wirtz, D., Biswas-Diener, R., Tov, W., Kim-Prieto, C., Choi, D. W. y Oishi, S. (2009). New measures of well-being. En Diener, E. (Ed.), *Assessing well-being* (pp. 247-266). Springer, Dordrecht.
- Duan, S. X., Deng, H. y Wibowo, S. (2023). Exploring the impact of digital work on work-life balance and job performance: A technology affordance perspective. *Information Technology & People*, (ahead-of-print). <https://doi.org/10.3390/su15031931>
- Ebrahimi, H., Jafarjalal, E., Lotfolahzadeh, A. y Kharghani Moghadam, S. M. (2021). The effect of workload on nurses' quality of life with moderating perceived social support during the COVID-19 pandemic. *Work*, 70, 347-354. <https://doi.org/10.3233/WOR-210559>
- Edgar, F., Geare, A. y Zhang, J. A. (2017). A comprehensive concomitant analysis of service employees' well-being and performance. *Personnel Review*, 46(8), 1870-1889. <https://doi.org/10.1108/PR-05-2016-0108>
- French, K. A., Dumani, S., Allen, T. D. y Shockley, K. M. (2018). A meta-analysis of work-family conflict and social support. *Psychological Bulletin*, 144(3), 284-314. <https://doi.org/10.1037/bul0000120>
- Foy, T., Dwyer, R. J., Nafarrete, R., Hammoud, M. S. S. y Rockett, P. (2019). Managing job performance, social support and work-life conflict to reduce workplace stress. *International Journal of Productivity and Performance Management*, 68(6), 1018-1041. <https://doi.org/10.1108/IJPPM-03-2017-0061>
- Fuller, C. M., Simmering, M. J., Atinc, G., Atinc, Y. y Babin, B. J. (2016). Common methods variance detection in business research. *Journal of Business Research*, 69(8), 3192-3198. <https://doi.org/10.1016/j.jbusres.2015.12.008>
- Gutiérrez, O. I., Polo, J. D., Zambrano, M. J. y Molina, D. C. (2020). Meta-analysis and scientific mapping of well-being and job performance. *The Spanish Journal of Psychology*, 23, e43, Article e43. <https://doi.org/10.1017/SJP.2020.40>
- Hair, J., Black, W., Babin, B. y Anderson, R. (2010). *Análisis de datos multivariados*. Prentice Hall.
- Hair, J. F., Howard, M. C. y Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research*, 109, 101-110. <https://doi.org/10.1016/j.jbusres.2019.11.069>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Castillo Apraiz, J., Cepeda Carrión, G. y Roldán, J. L. (2019). *Manual de partial least squares structural equation modeling (PLS-SEM)* (2.a ed.). OmniaScience.
- Hair Jr, J. F., Sarstedt, M., Ringle, C. M. y Gudergan, S. P. (2018). *Advanced issues in partial least squares structural equation modelling*. Sage Publications.
- Hannah, S. T., Perez, A. L., Lester, P. B. y Quick, J. C. (2020). Bolstering workplace psychological well-being through transactional and transformational leadership. *Journal of Leadership & Organizational Studies*, 27(3), 222-240. <https://doi.org/10.1177/1548051820933>
- He, J., Morrison, A. M. y Zhang, H. (2019). Improving millennial employee well-being and task performance in the hospitality industry: The interactive effects of HRM and responsible leadership. *Sustainability*, 11(16), 4410. <https://doi.org/10.3390/su11164410>
- Henseler, J., Ringle, C. M. y Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135. <https://doi.org/10.1007/s11747-014-0403-8>
- Henseler, J., Ringle, C. M. y Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. En R. R. Sinkovics y P. N. Ghauri (Ed.), *New challenges to international marketing. Advances in International Marketing*, vol. 20 (pp. 277-319). Emerald Group Publishing Limited. [https://doi.org/10.1108/S1474-7979\(2009\)0000020014](https://doi.org/10.1108/S1474-7979(2009)0000020014)
- Hobfoll, S. E. y Stokes, J. P. (1988). The process and mechanics of social support. En S. Duck (Ed.), *Handbook of personal relationships* (pp. 497-517). John Wiley & Sons, Ltd.
- Huppert, F. A. (2009). Psychological well-being: Evidence regarding its causes and consequences. *Applied Psychology: Health and Well-Being*, 1(2), 137-164. <https://doi.org/10.1111/j.1758-0854.2009.01008.x>
- Ju, L., Zhao, W., Wu, C., Li, H. y Ning, X. (2020). Abusive supervisors and employee work-to-family conflict in Chinese construction projects: How does family support help? *Construction Management and Economics*, 38(12), 1158-1178. <https://doi.org/10.1080/01446193.2020.1817962>
- Kalliath, P., Kalliath, T., Chan, X. W. y Chan, C. (2018). Linking work-family enrichment to job satisfaction through job well-being and family support: A moderated mediation analysis of social workers across India. *The British Journal of Social Work*, 49(1), 234-255. <https://doi.org/10.1093/bjsw/bcy022>
- Kılınc, T. y Sis Çelik, A. (2021). Relationship between the social support and psychological resilience levels perceived by nurses during the COVID-19 pandemic: A study from Turkey. *Perspectives in Psychiatric Care*, 57(3), 1000-1008. <https://doi.org/https://doi.org/10.1111/ppc.12648>
- Köse, S., Baykal, B. y Bayat, İ. K. (2021). Mediator role of resilience in the relationship between social support and work life balance. *Australian Journal of Psychology*, 73(3), 316-325. <https://doi.org/10.1080/00049530.2021.1895678>
- Kristoffersen, I. (2010). The metrics of subjective wellbeing: Cardinality, neutrality and additivity. *Economic Record*, 86(272), 98-123. <https://doi.org/10.1111/j.1475-4932.2009.00598.x>

- Kumar, A., Mohapatra, M. y Dhir, S. (2021). Linking personality with contextual performance through subjective well-being using pls sem modelling. *Global Business Review*, 1-15. <https://doi.org/10.1177/09721509211030360>
- Lin, J.-H., Wong, J.-Y. y Ho, C.-H. (2014). Beyond the work-to-leisure conflict: A high road through social support for tourism employees. *International Journal of Tourism Research*, 16(6), 614-624. <https://doi.org/https://doi.org/10.1002/jtr.1956>
- Liu, D., Baumeister, R. F., Yang, C.-C. y Hu, B. (2019). Digital communication media use and psychological well-being: A meta-analysis. *Journal of Computer-Mediated Communication*, 24(5), 259-273. <https://doi.org/10.1093/jcmc/zmz013>
- Loon, M., Otaye-Ebede, L. y Stewart, J. (2019). The paradox of employee psychological well-being practices: An integrative literature review and new directions for research. *The International Journal of Human Resource Management*, 30(1), 156-187. <https://doi.org/10.1080/09585192.2018.1479877>
- Mehta, P. y Sharma, J. (2021). Moderation effect of social support and personal resources between emotional work and employee wellbeing. *Asia-Pacific Journal of Business Administration*, 13(2), 235-255. <https://doi.org/10.1108/APJBA-07-2020-0252>
- Mishra, H. y Venkatesan, M. (2022). Psychological well-being of employees, its precedents and outcomes: A literature review and proposed framework. *Management and Labour Studies*, 0258042X221117960. <https://doi.org/10.1177/0258042X221117960>
- Mohammed, S., Mathieu, J. E. y 'Bart' Bartlett, A. L. (2002). Technical-administrative task performance, leadership task performance, and contextual performance: Considering the influence of team- and task-related composition variables. *Journal of Organizational Behavior*, 23(7), 795-814. doi: <https://doi.org/10.1002/job.169>
- Nisar, A. y Beenish, M. (2020). Impact of psychological empowerment on job performance of teachers: Mediating role of psychological well-being. *Review of Economics and Development Studies*, 5(3), 451-460. <https://doi.org/10.26710/reads.v5i3.693>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y. y Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Qin, X. y Jiang, Y. (2011). The impact of natural disaster on absenteeism, job satisfaction, and job performance of survival employees: An empirical study of the survivors in Wenchuan earthquake. *Frontiers of Business Research in China*, 5(2), 219-242. <https://doi.org/10.1007/s11782-010-0129-0>
- Rey, L., Extremera, N. y Sánchez-Álvarez, N. (2019). Clarifying the links between perceived emotional intelligence and well-being in older people: Pathways through perceived social support from family and friends. *Applied Research in Quality of Life*, 14(1), 221-235. <https://doi.org/10.1007/s11482-017-9588-6>
- Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1069-1081. <https://doi.org/10.1037/0022-3514.57.6.1069>
- Ryff, C. D. y Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, 69(4), 719-727. <https://doi.org/10.1037/0022-3514.69.4.719>
- Scandurra, C., Muzii, B., La Rocca, R., Di Bello, F., Bottone, M., Califano, G., Longo, N., Maldonado, N. M. y Mangiapia, F. (2022). Social support mediates the relationship between body image distress and depressive symptoms in prostate cancer patients. *International Journal of Environmental Research and Public Health*, 19(8), 4825. <https://doi.org/10.3390/ijerph19084825>
- Schat, A. C. y Frone, M. R. (2011). Exposure to psychological aggression at work and job performance: The mediating role of job attitudes and personal health. *Work & Stress*, 25(1), 23-40. <https://doi.org/10.1080/02678373.2011.563133>
- Seiger, C. P. y Wiese, B. S. (2009). Social support from work and family domains as an antecedent or moderator of work-family conflicts? *Journal of Vocational Behavior*, 75(1), 26-37. <https://doi.org/https://doi.org/10.1016/j.jvb.2009.03.001>
- Stansfeld, S. A., Shipley, M. J., Head, J., Fuhrer, R. y Kivimaki, M. (2013). Work characteristics and personal social support as determinants of subjective well-being. *PLoS ONE* 8(11): e81115. <https://doi.org/10.1371/journal.pone.0081115>
- Tehseen, S., Ramayah, T. y Sajilan, S. (2017). Testing and controlling for common method variance: A review of available methods. *Journal of Management Sciences*, 4(2), 142-168. <https://doi.org/10.20547/jms.2014.1704202>
- Tufail, M. S., Mahesar, H. A. y Pathan, S. K. (2017). Organizational justice, task and contextual performance: Empirical analysis for front line managers. *Journal of Grassroots*, 51(1), 269-281.
- Usman, M., Cheng, J., Ghani, U., Gul, H. y Shah, W. U. (2021). Social support and perceived uncertainties during COVID-19: Consequences for employees' wellbeing. *Current Psychology*, 1-24. <https://doi.org/10.1007/s12144-021-02293-3>
- Valenti, G. D., Faraci, P. y Magnano, P. (2021). Emotional intelligence and social support: Two key factors in preventing occupational stress during COVID-19. *International Journal of Environmental Research and Public Health*, 18(13), 6918. <https://doi.org/10.3390/ijerph18136918>
- Xu, S. y Cao, Z. C. (2019). Antecedents and outcomes of work-nonwork conflict in hospitality: A meta-analysis. *International Journal of Contemporary Hospitality Management*, 31(10), 3919-3942. <https://doi.org/10.1108/IJCHM-11-2018-0897>
- Williams, L. J. y Anderson, S. E. (1991). Job satisfaction and organizational commitment as predictors of organizational citizenship and in-role behaviors. *Journal of Management*, 17(3), 601-617. <https://doi.org/10.1177/014920639101700305>
- Zimet, G. D., Dahlem, N. W., Zimet, S. G. y Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment*, 52(1), 30-41. <https://doi.org/10.1207/s15327752jpa52012>

Research article

The more intra-firm equity, the higher employee retention: Evidence from the universe of urban firms in Colombia

Eduardo Lora 

Associate researcher, Fedesarrollo, Bogotá, Colombia.

Eduardo.A.Lora@gmail.com

Abstract

Fairness and equity considerations may influence workers' decision to stay or quit their jobs. This paper tests several hypotheses derived from theory on the relation between intra-firm equity and employee retention. It uses administrative data covering the universe of urban firms in Colombia between 2008 and 2016. The average wage of the firm, the intra-firm dispersion of real wage adjustments, and the share of women in the firm are significantly associated with retention rates in the directions predicted by theory. The intra-firm wage gap is directly associated with retention, at odds with theory. The results suggest that equity considerations are important in employees' decision to stay or quit.

Keywords: intra-firm equity; employee retention; personnel turnover; wage structure.

A mayor equidad en las empresas, mayor retención del personal: Evidencia del universo de empresas urbanas en Colombia

Resumen

Las consideraciones de equidad pueden influir en la decisión de los trabajadores de permanecer o renunciar a sus trabajos. Este artículo plantea varias hipótesis derivadas de la teoría sobre la relación entre la equidad intraempresa y la retención de personal, y utiliza datos administrativos del universo de empresas urbanas en Colombia entre 2008 y 2016. El salario promedio de la empresa, la dispersión intraempresa de los ajustes salariales y la participación de las mujeres en la empresa están significativamente asociados con las tasas de retención, como lo predice la teoría. La brecha salarial intraempresarial está directamente asociada con la retención, en contra de la teoría. Así, las consideraciones de equidad parecen influir en la decisión de los empleados de quedarse o renunciar.

Palabras clave: equidad intraempresarial; retención de personal; rotación de personal; estructura salarial.

Mais equidade nas empresas, maior retenção de pessoal: evidências do universo das empresas urbanas na Colômbia

Resumo

As considerações de equidade podem influenciar as decisões dos trabalhadores de permanecerem ou abandonarem os seus empregos. Este artigo propõe diversas hipóteses derivadas da teoria sobre a relação entre patrimônio intra-empresa e retenção de funcionários, e utiliza dados administrativos do universo de empresas urbanas na Colômbia entre 2008 e 2016. O salário médio da empresa, a dispersão intra-empresa dos reajustes salariais e da participação das mulheres na empresa estão significativamente associados às taxas de retenção, conforme prevê a teoria. A disparidade salarial intra-empresa está diretamente associada à retenção, contrariamente à teoria. Assim, as considerações de equidade parecem influenciar a decisão dos empregados de permanecer ou demitir-se.

Palavras-chave: patrimônio intra-empresa; retenção de pessoal; rotação de pessoal; estrutura salarial.

* Corresponding author.

JEL classification: J31; J33; J63.

How to cite: Lora, E. (2023). The more intra-firm equity, the higher employee retention: Evidence from the universe of urban firms in Colombia. *Estudios Gerenciales*, 39(168), 327-340. <https://doi.org/10.18046/j.estger.2023.168.5897>

DOI: <https://doi.org/10.18046/j.estger.2023.168.5897>

Received: 14-12-2022

Accepted: 20-04-2023

Available on line: 30-09-2023

1. Introduction

Employee turnover is costly to firms because personnel selection, recruitment, and training demand expenditures and organizational efforts. Especially for firms in sophisticated industries, employee turnover is additionally costly because the productivity of any team depends on the quality of the matching between all its members (Kremer, 1993; O'Connell, and Mei-Chuan Kung, 2007). High employee retention facilitates training, both at the individual and the team level, given that any investment is more profitable the longer the period over which returns can accrue. Therefore, firms facing high employee turnover may be discouraged to invest in their own personnel, falling into a low productivity trap (Glance, Hogg, and Huberman, 1997).

Many critical factors identified by motivation theories may influence workers' decision to stay or quit their jobs. Among them are fairness and equity considerations, since employees want to be treated and rewarded in a fair and equitable manner (Ramlall, 2004). Abundant studies for specific firms, industries and/or professions in both developed and developing economies have identified factors affecting employee retention (see the review by Das and Baruah, 2013). With very few recent exceptions (Pfeifer and Schneck, 2012; Mohrenweisen and Pfeifer, 2019), employee retention studies have not taken advantage of the growing availability of matched employer-employee panel data that provide information on all registered firms and their workers in a location over several years. Although this type of data does not contain the nuanced information by individual often used in psychology, business, and managerial studies, it does provide enough information at the individual level to compute precise employee retention measures, along with indicators on wage levels, wage gaps, wage adjustments, and gender equity across large numbers of firms and industries over time.

The purpose of this paper is to assess the influence of equity variables on employee retention; these variables may be quantified with a rich matched employer-employee database for Colombia over 2008-2016. Apart from the availability of data, Colombia is a fitting case to study the influence of intra-firm equity variables on personnel retention for several reasons. First, Colombia's labour earnings are the third most concentrated among 38 countries in the world (Rodríguez-Castelán et al., 2016). Second, Colombia is the Latin American country with the largest share of salaried workers with less than five years of tenure (71.8 percent versus 51.8 percent on average in the whole region between 2010 and 2019, according to the Inter-American Development Bank, 2020). And third, most firms are poorly managed: Colombia is ranked 26th among the 34 countries included in the World Management Survey, which assesses the quality of management practices in large firms based on criteria derived from profit maximization theory and empirical evidence (Scur et

al., 2021). Colombian firms have the greatest deficiencies in human resources management. According to the Survey, good human resources management implies promoting and remunerating employees according to their performance and contribution to the success of the company, being very selective in the hiring of new staff and very determined to retain the best employees. Very few Colombian companies rate well in these matters (Bloom et al., 2012).

The dependent variable in this study is the employee retention rate by firm, city, and year. Based on equity theory, relative deprivation theory, efficiency wage theory, and gender theory, the main explanatory variables are measures of equity in remuneration, such as firms' average wages relative to those paid by comparable firms, intra-firm wage gaps, intra-firm real average wage adjustments and their variance; and gender equity measures, such as the share of women and the gender wage gap within firms. Since the dependent variable may be correlated with unobserved firm characteristics, standard estimators such as ordinary least squares yield inconsistent estimates of the parameters relating the dependent and the explanatory variables. Furthermore, if the autoregressive parameter of the dependent variable is too large, the standard dynamic panel estimator (Arellano and Bond, 1991) can perform poorly. Therefore, this study uses the dynamic system estimator developed by Blundell and Bond (1998), which is suitable to deal with potential endogeneity of the explanatory variables in panel data with few periods and many observations.

The econometric results are consistent with some predictions of equity theory, efficiency wage theory, relative deprivation theory, and gender theory on the testable factors affecting employee retention. Employee retention is higher in firms that pay higher wages with respect to those paid by other firms in the same industry and city, that adjust wages uniformly, and in those where a higher proportion of their employees are women. These results are consistent with theory. However, employee retention is higher in firms with larger wage gaps between their top and their middle-wage employees, which is at odds with relative deprivation theory. Incidentally, this paper uncovers evidence that supports a prediction of labour search theory, i.e., industry concentration at the local level is positively correlated with personnel retention. Most of the results are consistent across groups of firms by size, by the size of the city where they operate, and by sector.

The rest of this paper is organized as follows. Section 2 is a short survey of the empirical literature on the determinants of employee turnover/retention, aimed at providing background on the attention given by previous studies to fairness considerations, social preferences for equity and gender differences. Section 3 elaborates on the choice of explanatory variables and the resulting testable hypotheses based on equity theory, efficiency wage theory, relative deprivation theory and

gender theory. The database and the main variables are described in Section 4. The main econometric results are presented in Section 5. Section 6 discusses the results and concludes the paper.

2. Literature background

Since the 1980s, in the US and other developed countries, personnel retention has been an important concern in sectors such as the armed forces and the health sector. Several organisational studies have addressed the issue with the aim of recommending improvements in recruitment, training, managing, and remunerating practices to increase retention in those sectors [Berger and Boyle, 1992; Bergman, Eckerling and Golander, 1984; Doig and Beck, 2005; Faris, 1984; Gilroy, Horne, and Smith, 1991; Orrick, 2008].

There is a wide literature on management studies that has analyzed the determinants of turnover intentions. Individual and organizational factors have been found to affect variables like commitment, job satisfaction, personal agency, self-esteem, and others, which in turn influence turnover intentions [Jha, 2009; Flint, Haley, and McNally, 2013]. The same mechanisms and factors that affect employee's turnover intentions have been considered to study actual turnover in longitudinal studies. An early review of the research on the topic concluded that intentions were more predictive of attrition than overall job satisfaction, satisfaction with work itself, or organizational commitment [Steel and Ovalle, 1984]. A study of staff nurses in Taiwan [Chen, Chu, Wang, and Lin, 2008] found that, except for workload, those mechanisms and factors do not help to predict actual turnover. This suggests that a more comprehensive selection of turnover factors may be needed to explain variations in actual turnover. For instance, as predicted by social exchange theory (which states that voluntary actions initiated by employers in support of workers elicit reciprocation; see Blau, 1964), and contrary to human capital theory predictions, participation in general training programs sponsored by the firm reduces turnover significantly [Koster, De Grip and Fouarge, 2011].

A few recent studies have focused on the role of intra-firm equity variables in personnel turnover. Using matched employer-employee data for Germany, Pfeifer and Schneck [2012] find that the probability of workers to quit is negatively associated with their wage as well as with an internal reference wage measure that reflects their relative wage. In a field experiment with an information treatment among employees of the University of California, Card et al. [2012] find that workers who are made aware of having relatively low wages feel less satisfied with their jobs and are more likely to search for a new job. Using an employer-employee longitudinal dataset for Germany, Mohrenweisen and Pfeifer [2019] find that intrafirm wage structure affects perceived wage fairness and turnover intentions. Dube et al. [2019], using personnel data of a large US retailer and a regression-

discontinuity design, find strong causal effects of workers' own wages as well as their peers' wages on quits, suggesting that peer comparisons and fairness concerns affect personnel turnover. Their estimates suggest that when a wage raise is uniform across peers within the firm, the rate of job separations remain unchanged, and that the overall effect of wages on separations is driven mostly by peer comparisons. The study by Breza, Kaur, and Shamdasani [2018] is closely related to Dube et al [2019]; they randomized Indian manufacturing workers to pay units where pay raises resulted in either compressed or unequal wage structures; in the latter case, absenteeism increased very strongly. This growing literature consistently points towards the importance of intra-firm equity variables in personnel retention.

The topics of personnel retention and turnover are related to personnel economics, which uses economic theory and empirical methods to understand the internal workings of the firm [Grund, Bryson, Dur, Harbring and Lazear, 2017]. The main original tenet of personnel economics theory was that firms gravitate towards equilibrium because of the process of utility and profit maximization by workers and firms. However, personnel economists now consider firm managers and workers not to be purely egoistic "homo oeconomicus" but "homo reciprocans" [Backes-Gellner et al., 2008; Dohmen et al., 2009; and Dohmen, 2014]. The new approach extends personnel economics to include fairness considerations, social preferences for equity or equality, and gender differences in decisions and behaviour.

3. Choice of explanatory variables

In this study, the choice of equity variables as explanatory variables for personnel retention rests on equity theory, efficiency wage theory, relative deprivation theory, and gender theory. Equity theory (Adams, 1965; Homans, 1974; Walster, Walster, and Berscheid, 1978) assumes that individuals judge the fairness of their relationships within organizations by comparing the balance between the inputs they contribute (e.g., work effort) and the outcomes they receive vis-à-vis the balance of inputs and outcomes of their reference groups, both inside and outside their organizations. Workers feel that equity exists when their own ratio of inputs to outcomes is like that of their comparative referents. If they perceive inequity, they attempt to reduce the distress by (1) changing their perceptions of either their own or their reference group's inputs and outcomes; (2) altering their own balance of inputs (e.g., decrease their work effort) and outcomes (e.g., get a pay raise); or (3) leaving their organizations. Based on equity theory, this study posits that personnel retention may be affected by several intra-firm variables—average wage raise (positively), wage gaps, and wage raise dispersion (both negatively)—and by one inter-firm variable, namely the average wage of the firm relative to the average wage of other firms in the same location and industry (positively).

The efficiency wage hypothesis in labor economics poses that managers have the incentive to pay their employees more than the market-clearing wage to reduce the costs associated with employee turnover, especially in sectors in which the costs of replacing labor are high (Stiglitz, 1974; Schlicht, 1978). This strategy, which is compatible with profit maximization, implies that employee retention is higher in firms that pay higher wages than other firms operating in the same labor market. Therefore, the efficiency wage hypothesis points in the same direction of equity theory.

Relative deprivation theory states that individuals in the lower strata of an organization compare the rewards that they (or their groups) receive to those received by upper-strata groups. These interclass comparisons result in feelings of injustice when individuals find that they have received less than they deserve (Martin, 1981; Crosby, 1984; Cowherd and Levine, 1992). Based on relative deprivation theory, this study posits that a wider wage gap between top and middle level employees in a firm should reduce personnel retention.

Several theories have been proposed to understand the role of gender in organizations (Ely and Meyerson, 2000). The choice of gender related variables in the present study, which is constrained by the database, cannot make justice to any of those theories. Just two intra-firm variables are considered: the share of female employees and the gender wage gap (male versus female). The proportion of females in groups has been found to be strongly correlated with a general “collective intelligence factor” that measures the performance of groups in a variety of tasks that is left unexplained by the individual intelligence of its members (Woolley et al., 2010). The effect is explained in part by the higher social sensibility of women, which improves processes. Research on the influence that gender composition variables may have on personnel retention is very limited; some (weak) evidence suggests that greater gender diversity reduces turnover intentions in the public sector (Nielsen and Madsen, 2017). The hypothesis in the present study is that a larger feminine participation is positively associated with personnel retention. As mentioned, based on equity theory, it is also hypothesized that a wider gender wage gap is negatively related with personnel retention (but causality may run in both directions because gender differences in worker turnover may incentivize employers to pay men and women differently; see Barth and Dale-Olsen, 2009). It is also hypothesized that the influence of the share of women in the firm and the gender wage gap on personnel retention may reinforce each other. A negative sign should be expected for the interaction of the two variables because a larger gender wage gap—which is expected to have a negative effect on retention—will affect workers’ motivation more in firms with a larger share of women.

Among the additional controls that will be included in the estimations, there is a measure of industry concentration, which warrants some theoretical

justification. Monopsony in the labour market is a recently revitalized concept in economics due to labour search theory. Within a search model, each single firm or establishment operating in a location faces its own labour supply curve because workers quit endogenously and must be replaced by new hires (Burdett and Mortensen, 1998; Manning, 2003). Workers quit more often and can be replaced by firms more easily when there are many firms of the same, or similar, industry in the location. Therefore, it is expected that industry concentration at the city level is negatively correlated with personnel turnover and positively correlated with personnel retention.

4. Data and descriptive statistics

The database is the social security administrative data collected by the Health and Social Protection Ministry, known as PILA (*Planilla Integrada de Liquidación de Aportes*). It collects information reported monthly by firms of all sectors and sizes that contribute to the social security system. It provides information of age, sex, days of work, monthly-equivalent wage, and municipality of the establishment (firms may operate in several municipalities) of each worker in a firm. This study uses PILA data from 2008 to 2016, which were cleaned and processed by Harvard’s Center for International Development to construct the Atlas of Economic Complexity of Colombia (DatlasColombia.com)¹.

The unit of observation in this paper is firm j that operates in city c in year t . Most firms operate in just one city. When a firm has several establishments in a city, they are consolidated into a single observation. A city may be a single municipality or a metropolitan area with population of at least 50,000 people. A metropolitan area is defined as a group of municipalities with regular commuting flows of workers among them, according to the algorithm developed by Duranton (2015). The 62 resulting municipalities are classified in four groups by size, as explained below. The industry of operation in the firm corresponds to the 4-digit ISIC code (there are 433 industries in the database). The industries are classified in eight sectors, as shown below.

The universe of firms in PILA covers firms of all sizes, but this study includes only those with an average “effective size” over the years (between 2008 and 2016) of at least 10 employees. Also, only firms that reported to PILA in 2016 and at least one previous consecutive year were included (this was done to exclude firms that closed, therefore terminating jobs unilaterally)². In the computation of effective size, each employee i counts in proportion to the number of weeks they worked in firm j in city c during year t :

¹ As inconsistencies were found by CID in the industry code of the ISIC reported by the firms, they developed a verification methodology based on information on the activities of each firm according to the Customs Office (DIAN), the Superintendence of Companies and the records of the Chambers of Commerce throughout the country. Therefore, the ISIC codes used here are not the ones reported by the firms, but those corrected by CID.

² The database does not inform if quits are voluntary or forced. However, given the high firing costs imposed by the labour code, firing employees is not a common practice among Colombian firms.

$$effective\ size_{j,c,t} = \sum_{i \in j} number\ of\ weeks_{i,c,t} * 7/365 \quad (1)$$

Effective size as a control variable is expressed in logs. Firms are classified by size based on their effective size.

The dependent variable is the *employee retention rate* of firm j in period t , which is defined as the proportion of employees e that were in the firm's roster in period t , who appear again in the roster in period $t+1$:

$$employee\ retention\ rate_{j,c,t} = \frac{\sum_{i \in j, (t+1) \cap t} e_{i,t+1}}{\sum_{i \in j, t} e_{i,t}} \quad (2)$$

Table 1 presents descriptive statistics of the dependent variable for the 334,698 observations and information of all the explanatory variables in the regressions below. On average, employee retention rate is 0.675, with a standard deviation of 0.202. Very similar averages and standard deviations are found across the firm size, city size, and sector categories.

Table 1. Employee retention rates: descriptive statistics

	Mean	Standard deviation	Number of observations
Urban firms with at least 10 employees	0,6746	0,2022	334.698
<i>By firm size (by effective number of employees):</i>			
10 to 25 employees	0,6784	0,2033	175.316
25 to 50 employees	0,6665	0,1989	73.625
50 to 100 employees	0,6671	0,2010	41.747
100 or more employees	0,6798	0,2039	44.010
<i>By city size (by working age population):</i>			
Largest 6 cities	0,6759	0,1981	239.126
Medium-large 15 cities	0,6719	0,2106	69.217
Medium-small 16 cities	0,6556	0,2196	17.108
Smallest 25 cities	0,6943	0,2064	9.247
<i>By industry quartiles of complexity:</i>			
First quartile (110 industries)	0,6657	0,2038	122.845
Second quartile (110 industries)	0,6793	0,2057	61.494
Third quartile (110 industries)	0,6993	0,1864	50.648
Fourth quartile (110 industries)	0,7026	0,1842	32.023

Source: own calculations from Ministry of Health's PILA 2008-2016. It includes the observations of firms present in 2016, irrespective of their year of creation, which have data for all the explanatory variables of regression (4) in Table 4. An observation is a firm in a city in a year. See in text the definitions of variables to define the groups.

The indicators of intra-firm equity are defined as follows:

- The firm's *average wage relative to the rest of firms in the same industry and city* is the difference between

the (log of) average monthly wage of the firm in city c in period t and that of the rest of the industry in the same city and period.

- *Wage gap* of firm j in period t is the (log) difference between the wage of the worker(s) at the bottom of the 90th percentile of the firm's wage distribution and the wage of the worker(s) at the bottom of the 50th percentile.
- *Average real wage adjustment* of firm j between period $t-1$ and period t is the nominal wage increase of those workers that appear in both periods in the firm workers' roster, corrected by the increase in the official consumer price index (published by DANE: the National Statistical Office).
- *Dispersion of real wage adjustments* of firm j in period t is the standard deviation of the real wage adjustments between periods $t-1$ and t of those workers that appear in both periods.
- *Share of women in personnel* is computed for all employees in the firm's roster in year t (irrespective of their dedication).
- *Gender wage gap* is the (log) difference between the (simple) average of the men and women wages.
- *Interaction of the last two variables (Share of women in personnel X Gender wage gap)*.

Variables related to the firm's industry k are as follows:

The normalised *Herfindahl index* of firm concentration by industry k in city c in year t :

$$Herfindahl\ index_{k,c,t} = \frac{\sum_{j \in k} S_{j,c,t}^2 - 1/N_{k,c,t}}{1 - 1/N_{k,c,t}} \quad (4)$$

where:

$$S_{j,c,t} = \frac{effective\ size_{j,c,t}}{\sum_{j \in k} effective\ size_{j,c,t}} \quad (5)$$

and $N_{k,c,t}$ is the number of firms in industry k in city c in year t .

- The *Bartik instrument of nation-wide sectoral shocks* of industry k in city c in year t is a measure of the shocks affecting the industry nation-wide, as reflected in the change of its employment level. As suggested by Bartik (1991), to mitigate endogeneity, it is computed for each industry and city by subtracting from national employment, by industry, the employment in that industry in the city, and expressed in logs:

$$Bartik\ instrument_{k,c,t} = \log(effective\ size_{k,t} - effective\ size_{k,c,t}) - \log(effective\ size_{k,t-1} - effective\ size_{k,c,t-1}) \quad (6)$$

Finally, there is one explanatory variable related to the city c where the firm operates:

- *Government expenditure per capita*, in constant prices, computed from expenditure data by municipality by the National Planning Department, population by municipality and the official CPI, both by DANE.

Three categorical variables are used to explore possible sources of heterogeneity by groups, as follows:

- Firm size groups (by the average effective number of employees of the firm throughout the whole period of analysis). Firms smaller than 10 employees are not included:
 - 10 to 25 employees
 - 25 to 50 employees
 - 50 to 100 employees
 - 100 or more employees.
- City size groups by working age population (in 2016, from DANE):
 - *Largest cities*: more than 700,000
 - *Medium-large cities*: between 200,000 and 700,000

- *Medium-small cities*: between 100,000 and 200,000
- *Smallest cities*: less than 100,000.
- Sectors: using their 2-digit ISIC, firms are classified in sectors as follows (agriculture and mining firms are not included in this classification)
 - *Manufacturing*: ISIC codes 15-37
 - *Construction*: ISIC code 45
 - *Commerce*: ISIC codes 50-58
 - *Finance*: ISIC codes 65-67 and 70
 - *Utilities and transportation*: ISIC codes 40-43 and 60-64
 - *Services to firms*: ISIC codes 71-74
 - *Government and social services*: ISIC codes 75-85
 - *Other services*: ISIC codes 86-99.

Table 2 presents descriptive statistics of the explanatory variables that will be included in the regressions (334,698 observations). Correlations with the dependent variable are also shown. Table 3 shows the largest pairwise correlations between explanatory variables (all the correlations larger than 0.2 in absolute value are presented).

Table 2. Descriptive statistics of explanatory variables.

	Mean	Standard deviation	Minimum	Maximum	Correlation with dependent variable
<i>Firm level variables</i>					
Effective size (logs)	3,4084	1,1458	-3,9540	9,7669	0,0746
Average wage relative to rest of industry in city (logs)	-0,0469	0,4594	-2,3551	2,7572	0,2479
Wage gap (90-to-50 percentile ratio)	0,5967	0,4024	0,0000	4,1529	0,2048
Average real wage adjustments (logs)	0,0358	0,1046	-2,4534	2,2028	0,0601
Dispersion of real wage adjustments	0,1336	0,0894	0,0000	2,0882	-0,2247
Share of women	0,4123	0,2378	0,0020	0,9982	0,1010
Gender diversity	0,7430	0,2529	0,0070	1,0000	0,1066
Gender wage gap (logs)	0,0481	0,2385	-3,6423	4,2239	0,0489
<i>Industry and city level variables</i>					
Herfindahl concentration index of industry in city	0,1388	0,2130	0,0006	1,0000	0,0662
Bartik instrument of nation-wide industry shocks (logs)	0,0936	0,2748	-8,5916	14,4374	0,0177
Government expenditure per capita (constant prices, logs)	0,1606	0,3662	-1,3164	5,7390	-0,0323

Source: own calculations from Ministry of Health's PILA 2008-2016. Number of observations is 334,698 (an observation is a firm in a city in a year).

Table 3. Largest pairwise correlations between explanatory variables.

	(a)	(b)	(c)	(d)	(e)	(f)
(a) Average wage relative to rest of industry in city (logs)		0,43				
(b) Wage gap (90-to-50 percentile ratio)	0,43		0,22		0,30	
(c) Dispersion of real wage adjustments		0,22				
(d) Share of women					0,43	0,24
(e) Gender diversity		0,30		0,43		
(f) Gender wage gap (logs)				0,24		

Source: own calculations from Ministry of Health's PILA 2008-2016. An observation is a firm in a city in a year. Correlations computed for the 334,698 observations with data for all variables. All the correlations larger (in absolute value) than 0.2 are shown.

5. Econometric estimates

The database is unbalanced and has large cross-sectional variation (61,887 firms) with few years of time variation (2008-2016). The fact that the lagged dependent variable may be correlated with unobserved city-level characteristics makes standard estimators, such as ordinary least squares, inconsistent. The [Arellano and Bond \(1991\)](#) estimator is designed to deal with this problem based on the assumption of sequential exogeneity: current unobserved determinants of employee retention (the error term) are not correlated with past realizations of employee retention (lagged values of the dependent variable). It uses moment conditions in which lagged levels and lagged differences are instruments for the endogenous variables in the level equation and it can deal with unbalanced panels, such as our database. However, the Arellano and Bond estimator can perform poorly if the autoregressive parameter is too large or the ratio of the variance of the panel-level effect to the variance of idiosyncratic error is too large. To deal with this problem, the [Blundell and Bond \(1998\)](#) dynamic system estimator uses additional moment conditions, assuming that there is no autocorrelation in the idiosyncratic errors and that the city-level fixed effect is uncorrelated with the first difference of the first observation of the dependent variable. The core model for all Blundell and Bond regressions below is the following:

$$y_{j,ct} = \beta_0 + \beta_1 y_{j,ct-1} + \beta_2 X_{j,ct} + \beta_3 T_t + \theta_{j,c} + u_{j,ct} \quad (7)$$

where subscript j refers to firms, subscript c refers to cities, and subscript t refers to years. The employee retention rate y is the dependent variable, and it has an autocorrelation component. All other observed variables are included in vector X . They may be endogenous to the other variables or predetermined (that is, autocorrelated but independent from the other variables). Vector T is the set of year dummies, which are exogenous. Vector θ captures all firm fixed effects (which are time invariant, and which make redundant other firm-and-time invariant fixed effects, such as city or industry). Finally, u is the error term. All the β coefficients are estimated with the Blundell and Bond dynamic system estimator (which differentiates between exogenous, predetermined, and endogenous regressors).

All the variables in vector X that vary across *all* firms in a city and year are considered endogenous. The remaining variables, which do not vary across *all* firms in a city and year (either related to the firm's industry or the firm's city) are assumed predetermined.

The regressions in [Table 4](#) test the relation with employee retention rates of three groups of variables: intra-firm remuneration equity variables (regression 1), intra-firm gender equity variables (regression 2), and variables related to the firm's industry and city (regression 3). The three groups of variables are

combined in regression (4). All regressions include the lagged dependent variable, the variable "effective size" as an additional control—both are always significant—and year dummies (not shown).

In regression (1), the firm's average wage relative to the rest of its industry in the city and the dispersion of real wage adjustments are statistically significant (with 99.9 percent confidence) with the sign predicted by theory. The wage gap (90-50 percentile ratio) is also statistically significant, but not in the direction predicted by relative deprivation theory. In regression (2), the share of women and the interaction of this variable with the gender wage gap are highly significant with the expected signs. However, without the interaction, the gender wage gap is significant in the wrong direction (like the wage gap). In regression (3), consistently with theory, firms that operate in more concentrated industries in their city have higher employee retention rates, with high statistical significance. In this regression, employee retention is related directly and significantly with the nation-wide industry shocks and with the level of government expenditure per capita in the city. All the previous results remain when the three sets of explanatory variables are combined in regression (4). Excluding the only non-significant variable of regression (4) does not alter the significance of the remaining explanatory variables (results not shown). The statistical tests at the bottom of the table indicate that there is no evidence of model miss-specification or auto-correlation of the residuals.

The parameters estimated in regression (4) can be used to calculate the changes in the employee retention rate associated with typical changes in the explanatory variables ([Table 5](#)). For each explanatory variable, the same-year change in the dependent variable is the product of the coefficient estimated in regression 4 of [Table 4](#) and the standard deviation of the explanatory variable ([Table 2](#)). When the explanatory variable forms part of an interaction, the interaction effect is added, evaluated at the mean value of the interacting variable. The firm's average wage relative to the rest of the industry in the same city has the largest simulated impact on the employee retention rate of a typical firm: one standard deviation of the explanatory variable is associated with an increase of 11.4 percent points in the employee retention rate (which corresponds to 56 percent of the standard deviation of the employee retention rate across all firms). Second in magnitude is the dispersion of real wage adjustments within the firm: flattening real wage adjustments, one standard deviation is associated with a 7.3 percent point increase in retention, which is equivalent to 36 percent of its own standard deviation. Following in order by impact is the share of women: 4.1 percent points of additional employee retention, including the effect of its interaction with the gender wage gap. As the last column of [Table 5](#) shows, long-term effects are approximately 16 percent larger than the same-year effects just mentioned, as higher retention rates reinforce themselves through time (assuming that the

change in the explanatory variable is permanent and other explanatory variables remain unchanged).

These results must be interpreted with caution because strict causality is not guaranteed and because the explanatory variables may be interdependent, even in the same year. For instance, raising the firm's average wage with respect to the rest of the industry in the city may result in changing the intra-firm wage gap, the average real wage adjustments, and the dispersion of real wage adjustments, all of which may impinge in workers' decisions to stay or quit.

It must also be kept in mind that the effects of the explanatory variables on retention rates may not be the same for firms of different sizes, located in cities of diffe-

rent size or that operate in different sectors (see Appendix tables for details). Variables that are not significant in the regression that uses the full sample of firms may be significant for specific groups. It is the case of the average real wage adjustment, which is not significant in the whole sample, but it is among some groups of firms (directly in some groups, inversely in others). Also, variables that are significant for the whole universe of firms may not be significant or may even change sign for some groups of firms. The latter is the case of the gender wage gap, which is directly associated with personnel retention in the universe of firms (at odds with theory) but is inversely associated in the largest firms and in group of firms that operate in the smallest cities.

Table 4. System dynamic panel data estimations of employee retention rates.

	Regression (1)	Regression (2)	Regression (3)	Regression (4)
Lagged dependent variable	0.139*** (0,0043)	0.158*** (0,0042)	0.158*** (0,0043)	0.137*** (0,0042)
Firm level variables				
Effective size (logs)	-0.0342*** (0,0022)	-0.0603*** (0,0025)	-0.0744*** (0,0025)	-0.0235*** (0,0022)
Average wage relative to rest of industry in city (logs)	0.252*** (0,0097)			0.216*** (0,0093)
Wage gap (90-to-50 percentile ratio)	0.0755*** (0,0068)			0.0624*** (0,0065)
Average real wage adjustments (logs)	0,00701 (0,0142)			-0,0121 (0,0134)
Dispersion of real wage adjustments	-0.771*** (0,0230)			-0.706*** (0,0221)
Share of women		0.162*** (0,0137)		0.140*** (0,0135)
Gender diversity		0.0651*** (0,0118)		0.0899*** (0,0109)
Gender wage gap (logs)		0,0128 (0,0078)		0,00415 (0,0081)
Industry and city level variables				
Herfindahl concentration index of industry in city			0.250*** (0,0100)	0.159*** (0,0091)
Bartik instrument of nation-wide industry shocks (logs)			0.0073*** (0,0011)	0.0074*** (0,0010)
Government expenditure per capita (logs)			0.0219*** (0,0038)	0.0182*** (0,0038)
Number of observations (firms in city in year)	334698	334698	334698	334698
Number of firms (firms in city)	61887	61887	61887	61887
Number of instruments in estimation	190	170	71	295
Sum of squared differenced residuals	8792,1	8188,8	8495,8	8313,6
Chi-squared	8484,3	4874,4	4573,1	9549,4
Arellano-Bond test for zero autocorrelation, order 1	-101.02***	-101.92***	-102.37***	-100.79***
Arellano-Bond test for zero autocorrelation, order 2	6.29***	4.78***	4.09***	6.31***
Regression (1) tests the relation between employee retention and intra-firm equity variables. Regression (2) considers gender equities. Regression (3) considers industry and city variables. The three sets of explanatory variables are combined in Regression (4).				
Robust standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001. All the regressions include a constant term and year dummies.				

Source: own calculations from Ministry of Health's PILA 2008-2016.

Table 6 presents the estimated long-term effects of one standard deviation changes of the three firm-level explanatory variables with the most consistent impact predicted by theory on employee retention in the groups of firms considered. The computations are made with the same method of Table 5, with the coefficients and the standard deviations of the corresponding groups (Appendix tables A1, A2, and A3 show the group regressions from

which the coefficients are taken). Retention rates are consistently associated (directly) with the firm's average wage with respect to the rest of the industry in the city, (inversely) with the intra-firm dispersion of real wage adjustments, and (directly) with the share of women (the calculations in this case consider the interaction effect, which is evaluated at the mean value of the interacting variable, namely the gender wage gap).

Table 5. Estimated impact on employee retention rates of one standard deviation of change in explanatory variables.

	Coefficients (from Regression 4 of Table 4)	Standard deviation of variable (from Tables 1 and 2)	Same year effect on employee retention rate (coefficient* standard deviation)	Long-term effect on employee retention rate (coefficient* standard deviation/(1-coefficient of lagged dependent variable))
Lagged dependent variable	0,1370 ***	0,2022
Firm level variables				
Effective size (logs)	-0,0235 ***	1,1458	-0,0269	-0,0312
Average wage relative to rest of industry in city (logs)	0,2160 ***	0,4594	0,0992	0,1150
Wage gap (90-to-50 percentile ratio)	0,0624 ***	0,4024	0,0251	0,0291
Average real wage adjustments (logs)	-0,0121	0,1046	-0,0013	-0,0015
Dispersion of real wage adjustments	-0,7060 ***	0,0894	-0,0631	-0,0731
Share of women	0,1040 ***	0,2378	0,0247	0,0287
Gender diversity	0,0899 ***	0,2529	0,0227	0,0263
Gender wage gap (logs)	0,0042	0,2385	0,0010	0,0011
Industry and city level variables				
Herfindahl concentration index of industry and city	0,1590 ***	0,2130	0,0339	0,0393
Bartik instrument of nation-wide industry shocks (logs)	0,0074 ***	0,2748	0,0020	0,0024
Government expenditure per capita (logs)	0,0182 ***	0,3662	0,0067	0,0077

Source: own calculations from Ministry of Health's PILA 2008-2016. * p<0.05, ** p<0.01, *** p<0.001.

Table 6. Estimated same-year effect on employee retention of one standard deviation change of selected equity variables by groups of firm size, city size and industry quartiles of complexity

	Average wage relative to rest of industry in city	Intra-firm dispersion of real wage adjustments	Share of women
All urban firms with at least 10 employees	0,100	-0,067	0,036
By firm size (by effective number of employees):			
10 to 25 employees	0,076	-0,074	0,041
25 to 50 employees	0,090	-0,052	0,026
50 to 100 employees	0,109	-0,042	0,022
100 or more employees	0,123	-0,034	0,014
By city size (by working age population):			
Largest 6 cities	0,093	-0,064	0,035
Medium-large 15 cities	0,103	-0,061	0,022
Medium-small 16 cities	0,081	-0,060	0,038
Smallest 25 cities	0,040	-0,056	0,064
By industry quartiles of complexity:			
Lowest quartile (110 industries)	0,093	-0,063	0,038
Second quartile (110 industries)	0,117	-0,052	0,030
Third quartile (110 industries)	0,058	-0,057	0,019
Highest quartile (110 industries)	0,086	-0,054	...

Method: the effects are computed as the product of the coefficients estimated (from regressions in Tables 4, A1, A2, and A3) and the standard deviations of the corresponding variables by group.

... indicates that the coefficient is not statistically significant with at least 95% confidence.

Source: own calculations from Ministry of Health's PILA 2008-2016.

6. Summary and discussion

This paper seeks to advance our understanding of how equity considerations influence the decision of workers to stay or leave their jobs. Although previous empirical literature has paid attention to many determinants of personnel retention, a comprehensive analysis of how equity variables affect turnover is expected. Also, although abundant studies have focused on specific firms, industries and/or professions, only a few studies (for developed countries) have taken advantage of the growing availability of matched employer-employee panel data that provide information on all registered firms.

This paper presented evidence for the universe of Colombian urban firms with at least 10 employees during 2008-2016, and the relation between intra-firm equity and employee retention. Colombia is a fitting case for this topic because, in international comparisons, labour earnings are very concentrated, salaried workers change jobs with high frequency, and most firms are poorly managed. Based on equity theory, efficiency wage theory, relative deprivation theory, and gender theory, a set of explanatory variables was chosen to study the association between intra-firm equity and employee retention. The [Blundell and Bond \(1998\)](#) method of estimation was adopted, which is suitable for panel data with large cross-sectional variation but few years of time variation when the error term and some of the explanatory variables may be endogenous to the dependent variable.

The estimations gave strong support to the main hypotheses derived from equity, efficiency wage, and diversity theories, but not to a hypothesis derived from relative deprivation theory, i.e., employee retention is lower when intra-firm wage gaps are larger (the opposite was found consistently). Apart from the latter, the equity variables most strongly and consistently associated with employee retention in the whole universe of firms and across groups of firms (of different size, operating in cities of different sizes, or in different sectors) were firm's average wages relative to the rest of the industry in the city of operation of the firm (directly), the intra-firm dispersion of real wage adjustments (inversely), and the share of women (directly), except in the firms operating in the smallest cities and in finance, utilities, and transportation.

This study also uncovered evidence of the relationship between employee retention and some other variables. Retention rates are higher in smaller firms, in those operating in more locally concentrated industries, in industries facing favourable nation-wide shocks, and in cities that have higher government expenditure per capita. However, these relationships do not hold consistently across groups, thus indicating the presence of heterogeneities.

Simple calculations using the estimated coefficients and the standard deviations of the explanatory variables suggest that equity considerations play an important

role in employees' decisions to stay or quit their jobs. Although this study makes no claims of causality, the results suggest that raising average wages with respect to those paid by other firms in the same industry and city, flattening intra-firm wage adjustments and increasing female participation, may substantially improve the ability of firms to retain their employees.

Some of the results of this study are at odds with human resource management principles advocated by some organisations. According to the World Management Survey, good human resource management implies remunerating employees according to their performance, and not simply based on tenure, as most Colombian firms do ([Bloom et al., 2012](#)). But our results strongly suggest that flat wage adjustments are conducive to higher employee retention rates. However, our finding that employee retention is higher in firms with larger wage gaps between top and middle-level workers—which is at odds with relative deprivation theory—does not contradict human resource management principles because a strong management hierarchy, with highly paid employees in the upper echelons of the firm, may be a necessary condition for the efficient performance of the whole employee team, especially if the firm is large and highly sophisticated.

Based on the World Management Survey, [Bloom et al. \(2012\)](#) have argued that cultural differences may be behind some of the stark differences in human resource management practices across countries. The results of this paper may shed some light on the issue, especially regarding the role of gender. According to the results, more female participation is associated with higher employee retention in the universe of firms, but not in some groups of firms. The main source of heterogeneity is the size of the city: in the smallest cities, where more traditional values about the role of women tend to prevail, higher female participation is (weakly) associated with lower retention.

However, culture may be only one among many factors influencing equity considerations and their effect on employee retention. If enhancing intra-firm equity entails pecuniary costs that override the potential productivity gains of having more motivated and stable employees, low wages, uneven wage adjustments, and discriminatory treatment of women may be rational strategies from the point of view of profit maximising firms. Nevertheless, such strategies may generate negative externalities if they deteriorate workers' wellbeing and if, as mentioned in the introduction, firms choose not to invest in training, thus tipping the economy into a low productivity trap. These issues are fertile ground for future research.

Conflict of interest

The authors declare no conflict of interest.

References

- Arellano, Manuel, and Stephen Bond. (1991). "Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations." *The Review of Economic Studies* 58(2), 277-297.
- Backes-Gellner U, D. Bessey, K. Pull K and S. Tuor. (2008). "What behavioural economics teaches personnel economics." *Die Unternehmung* 62, 217-234.
- Barth, Erling, and Harald Dale-Olsen. (2009). "Monopsonistic discrimination, worker turnover, and the gender wage gap." *Labour Economics* 16(5), 589-597.
- Berger, J. E., and R. L. Boyle Jr. (1992). "How to avoid the high costs of physician turnover." *Medical Group Management Journal* 39(6), 80-82.
- Bergman, Rebecca, Shoshana Eckerling, Hava Golander, Rena Sharon, and Adrian Tomer. (1984). "Staff composition, job perceptions, and work retention of nursing personnel in geriatric institutions." *International Journal of Nursing Studies* 21(4), 279-293.
- Bloom, Nicholas, Christos Genakos, Raffaella Sadun, and John Van Reenen. (2012). "Management practices across firms and countries." *Academy of Management Perspectives* 26(1), 12-33.
- Blundell, Richard, and Stephen Bond. (1998). "Initial conditions and moment restrictions in dynamic panel data models." *Journal of Econometrics* 87(1), 115-143.
- Breza, Emily, Supreet Kaur, and Yogita Shamdasani. (2018). "The morale effects of pay inequality." *The Quarterly Journal of Economics* 133(2), 611-663.
- Burdett, Kenneth, and Dale T. Mortensen. (1998). "Wage differentials, employer size, and unemployment." *International Economic Review*, 257-273.
- Card, David, Alexandre Mas, Enrico Moretti, and Emmanuel Saez. (2012). "Inequality at work: The effect of peer salaries on job satisfaction." *American Economic Review* 102(6), 2981-3003.
- Chen, Hsing-Chu, Cheng-I. Chu, Ying-Hui Wang, and Ling-Chu Lin. (2008). "Turnover factors revisited: a longitudinal study of Taiwan-based staff nurses." *International Journal of Nursing Studies* 45(2), 277-285.
- Cowherd, Douglas M., and David I. Levine. (1992). "Product quality and pay equity between lower-level employees and top management: An investigation of distributive justice theory." *Administrative Science Quarterly*, 302-320.
- Crosby, Faye. "Relative deprivation in organizational settings. (1984). "In Barry M. Staw and L.L. Cummings (eds.), *Research in Organizational Behavior*, 6, 51-93.
- Das, Bidisha Lahkar, and Mukulesh Baruah. (2013). "Employee retention: A review of literature." *Journal of Business and Management* 14(2), 8-16.
- Dohmen T. (2014). Behavioral labor economics: Advances and future directions. *Labour Economics* 30, 71-85.
- Dohmen, Thomas, Armin Falk, David Huffman, and Uwe Sunde. (2009). "Homo reciprocans: Survey Evidence on Behavioural Outcomes." *The Economic Journal* 119(536), 592-612
- Doig, Kathy, and Susan Beck. (2005). "Factors contributing to the retention of clinical laboratory personnel." *American Society for Clinical Laboratory Science* 18(1) 16-27.
- Dube, Arindrajit, Laura Giuliano, and Jonathan Leonard. (2019). "Fairness and frictions: The impact of unequal raises on quit behavior." *American Economic Review* 109(2): 620-63.
- Ely, Robin J., and Debra E. Meyerson. (2000). "Theories of gender in organizations: A new approach to organizational analysis and change." *Research in Organizational Behavior* 22, 103-151.
- Faris, John H. (1984). "Economic and noneconomic factors of personnel recruitment and retention in the AVF." *Armed Forces & Society* 10(2), 251-275.
- Flint, Douglas, Lynn M. Haley, and Jeffrey J. McNally. (2013). "Individual and organizational determinants of turnover intent." *Personnel Review*.
- Frederiksen, Anders. (2017). "Job Satisfaction and Employee Turnover: A firm-level perspective." *German Journal of Human Resource Management* 31(2), 132-161.
- Gilroy, Curtis L., David K. Horne, and D. Alton Smith. (1991). *Military Compensation and Personnel Retention. Models and Evidence. Army Research Institute for the Behavioral and Social Sciences.*
- Glance, Natalie S., Tad Hogg, and Bernardo A. Huberman. (1997). "Training and turnover in the evolution of organizations." *Organization Science* 8(1), 84-96.
- Grund, Christian, Alex Bryson, Robert Dur, Christine Harbring, Alexander K. Koch, and Edward P. Lazear. (2017). "Personnel economics: A research field comes of age." *German Journal of Human Resource Management* 31(2), 101-107.
- Homans, George C. (1974). *Social Behavior: Its Elementary Forms*, rev. ed. New York: Harcourt, Brace, Jovanovich..
- Inter-American Development Bank. (2020, October 20). Database: Labor Markets and Social Security Information System: <https://www.iadb.org/en/sector/social-investment/sims/home>.
- Jha, Shweta. (2009). "Determinants of employee turnover intentions: A review." *Management Today*, 9(2).
- Koster, Fleur, Andries De Grip, and Didier Fouarge. (2011). "Does perceived support in employee development affect personnel turnover?" *The International Journal of Human Resource Management*, 22(11), 2403-2418.
- Kremer, Michael. (1993). "The O-ring theory of economic development." *The Quarterly Journal of Economics* 108(3): 551-575.
- Manning, Alan. (2003). *Monopsony in motion: Imperfect competition in labor markets*. Princeton University Press.
- Martin, Joanne. (1981). "Relative deprivation: A theory of distributive injustice for an era of shrinking resources." In L. L. Cummings and Barry M. Staw (eds.), *Research in Organizational Behavior*, 3, 53-107.
- Mohrenweiser, J. and Pfeifer, C. (2019). *Firms' Wage Structures, Workers' Fairness Perceptions, Job Satisfaction and Turnover Intentions: Evidence from Linked Employer-Employee Data. IZA Discussion Paper Series IZA DP 12821.*
- Nielsen, Vibeke Lehmann, and Mikkel Bo Madsen. (2017). "Does Gender Diversity in the Workplace Affect Job Satisfaction and Turnover Intentions?" *International Public Management Review* 18(1), 77-115.
- O'Connell, Matthew, and Mei-Chuan Kung. (2007). "The Cost of Employee Turnover." *Industrial Management* 49(1).
- Orrick, Dwayne W. (2008). *Recruitment, retention, and turnover of police personnel: Reliable, practical, and effective solutions.* Charles C Thomas Publisher.
- Pfeifer, Christian, and Stefan Schneck. (2012). "Relative wage positions and quit behavior: Evidence from linked employer-employee data." *ILR Review* 65(1), 126-147.
- Ramlall, Sunil. (2004). "A review of employee motivation theories and their implications for employee retention within organizations." *Journal of American Academy of Business* 5(1/2), 52-63.
- Rodríguez-Castelán, Carlos, Luis F. López-Calva, Nora Lustig, and Daniel Valderrama. (2016). *Understanding the dynamics of labor income inequality in Latin America.* The World Bank.
- Schlicht, Ekkehart. (1978). "Labour turnover, wage structure, and natural unemployment." *Zeitschrift für die Gesamte Staatswissenschaft/ Journal of Institutional and Theoretical Economics*, 337-346.
- Scur, Daniela, Raffaella Sadun, John Van Reenen, Renata Lemos, and Nicholas Bloom. (2021). "The World Management Survey at 18: lessons and the way forward." *Oxford Review of Economic Policy* 37(2), 231-258.
- Steel, Robert P., and Nestor K. Ovalle. (1984). "A review and meta-analysis of research on the relationship between behavioral intentions and employee turnover." *Journal of Applied Psychology* 69(4), 673.
- Stiglitz, Joseph E. (1974). "Alternative theories of wage determination and unemployment in LDC's: The labor turnover model." *The Quarterly Journal of Economics* 88(2), 194-227.
- Walster, Elaine, G. William Walster, and Ellen Berscheid. (1978). *Equity: Theory and Research.* Boston: Allyn and Bacon.
- Woolley, Anita Williams, Christopher F. Chabris, Alex Pentland, Nada Hashmi, and Thomas W. Malone. (2010). "Evidence for a collective intelligence factor in the performance of human groups." *Science* 330(6004), 686-688

Annexes

Table A1. System dynamic panel data estimations of employee retention rates by group of firm size.

	10 to 25 employees	25 to 50 employees	50 to 100 employees	100 or more employees
Lagged dependent variable	0.108*** (0,0055)	0.164*** (0,0089)	0.211*** (0,0123)	0.273*** (0,0131)
Firm level variables				
Effective size (logs)	-0.0496*** (0,0029)	-0.0189*** (0,0031)	-0,00579 (0,0038)	0.0177*** (0,0035)
Average wage relative to rest of industry in city (logs)	0.166*** (0,0146)	0.197*** (0,0165)	0.238*** (0,0213)	0.267*** (0,0152)
Wage gap (90-to-50 percentile ratio)	0.0585*** (0,0084)	0.0970*** (0,0135)	0.0693*** (0,0172)	0.102*** (0,0164)
Average real wage adjustments (logs)	-0.0665** (0,0231)	-0,024 (0,0263)	0,0028 (0,0234)	0.0845*** (0,0193)
Dispersion of real wage adjustments	-0.762*** (0,0345)	-0.622*** (0,0460)	-0.526*** (0,0423)	-0.488*** (0,0409)
Share of women	0.170*** (0,0195)	0.109*** (0,0252)	0.0967** (0,0294)	0.0600* (0,0266)
Gender diversity	0.122*** (0,0155)	0.103*** (0,0193)	0,0123 (0,0244)	-0.134*** (0,0207)
Gender wage gap (logs)	0,00826 (0,0103)	-0,00311 (0,0168)	0,0183 (0,0221)	-0,0358 (0,0242)
Industry and city level variables				
Herfindahl concentration index of industry in city	0.0997*** (0,0127)	0.139*** (0,0181)	0.189*** (0,0241)	0.135*** (0,0220)
Bartik instrument of nation-wide industry shocks (logs)	0.00567** (0,0017)	0.00505* (0,0022)	0.00970*** (0,0025)	0.0149*** (0,0022)
Government expenditure per capita (logs)	0.0254*** (0,0059)	0,00281 (0,0076)	0.0208* (0,0094)	0.0227* (0,0090)
Number of observations (firms in city in year)	175316	73625	41747	44010
Number of firms (firms in city)	34327	13347	7168	7045
Number of instruments in estimation	295	295	295	295
Sum of squared differenced residuals	5645	1604,9	725,5	578,7
Chi-squared	4274	2535,4	1950,5	2948,1
Arellano-Bond test for zero autocorrelation, order 1	-72.70***	-47.32***	-33.71***	-31.88***
Arellano-Bond test for zero autocorrelation, order 2	4.01***	3.30***	1,02	5.01***

Robust standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001. All the regressions include a constant term and year dummies.
Source: own calculations from Ministry of Health's PILA 2008-2016.

Table A2. System dynamic panel data estimations of employee retention rates by group of city size.

	Largest 6 cities	Medium-large 15 cities	Medium-small 16 cities	Smallest 25 cities
Lagged dependent variable	0.131*** (0,0048)	0.157*** (0,0093)	0.151*** (0,0184)	0.150*** (0,0256)
Firm level variables				
Effective size (logs)	-0.0274*** (0,0028)	-0.00929* (0,0038)	-0,00625 (0,0061)	-0,00167 (0,0102)
Average wage relative to rest of industry in city (logs)	0.195*** (0,0107)	0.247*** (0,0182)	0.203*** (0,0284)	0.115** (0,0415)
Wage gap (90-to-50 percentile ratio)	0.0613*** (0,0071)	0.0692*** (0,0153)	0.0756** (0,0288)	0.102*** (0,0309)
Average real wage adjustments (logs)	-0.0417* (0,0194)	0,0251 (0,0202)	-0,0468 (0,0252)	-0.0746* (0,0374)
Dispersion of real wage adjustments	-0.714*** (0,0281)	-0.705*** (0,0397)	-0.629*** (0,0689)	-0.586*** (0,0747)
Share of women	0.147*** (0,0165)	0.0934*** (0,0249)	0.155*** (0,0435)	0.258*** (0,0615)
Gender diversity	0.0912*** (0,0131)	0.0844*** (0,0214)	0,0351 (0,0406)	0,0441 (0,0504)
Gender wage gap (logs)	0,0117 (0,0089)	-0,0329 (0,0204)	-0,00939 (0,0381)	-0,062 (0,0418)
Industry and city level variables				
Herfindahl concentration index of industry in city	0.195*** (0,0147)	0.143*** (0,0144)	0.110*** (0,0216)	0.143*** (0,0337)
Bartik instrument of nation-wide industry shocks (logs)	0.00344** (0,0012)	0.0179*** (0,0024)	0.0241*** (0,0053)	0,0131 (0,0077)
Government expenditure per capita (logs)	0.0215*** (0,0056)	0,00752 (0,0082)	-0.0515*** (0,0136)	0,0164 (0,0112)
Number of observations (firms in city in year)	239126	69217	17108	9247
Number of firms (firms in city)	43403	13168	3412	1904
Number of instruments in estimation	295	295	295	295
Sum of squared differenced residuals	6218,5	1486,8	380,9	201,8
Chi-squared	6583,6	2542,3	659,8	292,5
Arellano-Bond test for zero autocorrelation, order 1	-85.62***	-43.83***	-22.79***	-16.12***
Arellano-Bond test for zero autocorrelation, order 2	4.71***	4.48***	1.18	1.88

Robust standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001. All the regressions include a constant term and year dummies.
Source: own calculations from Ministry of Health's PILA 2008-2016.

Table A3. System dynamic panel data estimations of employee retention rates by group of industry complexity.

	Lowest quartile of industry complexity	Second quartile of industry complexity	Third quartile of industry complexity	Highest quartile of industry complexity
Lagged dependent variable	0.130*** (0,0065)	0.139*** (0,0095)	0.165*** (0,0110)	0.143*** (0,0145)
Firm level variables				
Effective size (logs)	-0.0243*** (0,0035)	-0,00727 (0,0045)	-0.0172*** (0,0048)	-0,00746 (0,0062)
Average wage relative to rest of industry in city (logs)	0.210*** (0,0140)	0.249*** (0,0169)	0.125*** (0,0170)	0.184*** (0,0205)
Wage gap (90-to-50 percentile ratio)	0.0621*** (0,0103)	0.0618*** (0,0133)	0.0476*** (0,0138)	0,0278 (0,0167)
Average real wage adjustments (logs)	-0,00314 (0,0228)	0,00298 (0,0189)	-0.0636* (0,0273)	-0,0303 (0,0333)
Dispersion of real wage adjustments	-0.683*** (0,0365)	-0.599*** (0,0450)	-0.699*** (0,0479)	-0.675*** (0,0629)
Share of women	0.158*** (0,0210)	0.126*** (0,0298)	0.0831** (0,0279)	0,0663 (0,0413)
Gender diversity	0.0875*** (0,0172)	0.0521* (0,0237)	0,0389 (0,0261)	0.0742* (0,0345)
Gender wage gap (logs)	0,0101 (0,0134)	-0,00838 (0,0176)	0,0133 (0,0174)	0,00444 (0,0223)
Industry and city level variables				
Herfindahl concentration index of industry in city	0.189*** (0,0182)	0.0591*** (0,0165)	0.0447* (0,0192)	0,013 (0,0179)
Bartik instrument of nation-wide industry shocks (logs)	0.00429* (0,0020)	0.00708*** (0,0019)	0.00788** (0,0029)	0.0119*** (0,0024)
Government expenditure per capita (logs)	0.0202** (0,0066)	0.0352*** (0,0086)	0.0267** (0,0086)	0,00923 (0,0103)
Number of observations (firms in city in year)	122845	61494	50648	32023
Number of firms (firms in city)	23838	10996	8101	5109
Number of instruments in estimation	295	295	295	295
Sum of squared differenced residuals	3225,1	1353,8	1031	610
Chi-squared	3540,6	1910,7	1465,1	834,7
Arellano-Bond test for zero autocorrelation, order 1	-62.19***	-44.25***	-39.57***	-30.28***
Arellano-Bond test for zero autocorrelation, order 2	3.46***	4.05***	3.98***	0.56

Robust standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001. All the regressions include a constant term and year dummies.
Source: own calculations from Ministry of Health's PILA 2008-2016.

Selecting corporate strategies using an Analytic Network Process Model: A case study

Oscar Rubiano-Ovalle* Docente, Escuela de Ingeniería Industrial, Universidad del Valle, Cali, Colombia.
oscar.rubiano@correounivalle.edu.coJenny Fabiana Gaviria-Cuevas Docente, Escuela de Ingeniería Industrial, Universidad del Valle, Cali, Colombia.
jenny.gaviria@correounivalle.edu.co

Abstract

The selection of organizational strategies should be approached with a systemic process that interrelates the decision elements. The objective of this paper is to present an organizational decision framework that incorporates the key elements in a decision-making process to select the best strategic option, considering the interdependence among all of them. A large Colombian company in the manufacturing sector is used as a case study. The Strengths, Weaknesses, Opportunities, Threats and Opportunities (SWOT) and the Analytical Network Process (ANP) approaches were combined for this purpose. The network integrates SWOT, Porter's generic strategies, corporate strategies, and, as a new addition, key success factors (KSF). The results include the simultaneous ranking of the generic strategies and associated corporate strategies, as well as the ranking of the influence the key criteria clusters on the prioritized strategies.

Keywords: ANP; SWOT; strategy; multi-criteria; decision-making.

Selección de estrategias corporativas aplicando un Modelo de Proceso Analítico en red: un estudio de caso

Resumen

La selección de estrategias organizacionales debe abordarse con un proceso sistémico que interrelacione los elementos de decisión. El objetivo de este trabajo es presentar un marco de decisión organizacional que incorpore los elementos clave en un proceso de toma de decisiones para seleccionar la mejor opción estratégica, considerando la interdependencia entre todos ellos. Se utiliza como caso de estudio una empresa grande colombiana del sector manufacturero. Para ello se combinaron los enfoques de Debilidades, Amenazas, Fortalezas y Oportunidades (DOFA) y el Proceso Analítico de Redes (ANP por su sigla en inglés). La red integra la DOFA, las estrategias genéricas de Porter, las estrategias corporativas y, como novedad, los factores clave del éxito (FCE). Los resultados incluyen la jerarquización simultánea de las estrategias genéricas y las estrategias corporativas asociadas, así como la jerarquización de la influencia de los grupos de criterios clave en las estrategias priorizadas.

Palabras clave: ANP; DOFA; estrategia; multicriterio; toma de decisiones.

Seleção de estratégias corporativas aplicando um modelo de Processo Analítico Hierárquico: um estudo de caso

Resumo

O objetivo deste trabalho é apresentar um quadro de decisão que incorpore sinergicamente todos os elementos-chave em um processo de tomada de decisão que contribua metodologicamente para a seleção da melhor opção estratégica, considerando a interdependência entre todos os elementos que intervêm em uma decisão a nível empresarial. Nesse sentido, foram combinadas como metodologia as abordagens de fraquezas, oportunidades, forças e ameaças (SWOT pela sua sigla em inglês) e Processo Analítico Hierárquico (ANP pela sua sigla em inglês), considerando como elementos os fatores-chave de sucesso, as estratégias genéricas de Porter e as estratégias corporativas aplicadas a um estudo de caso na Colômbia. O resultado mais relevante é a hierarquia das diferentes estratégias genéricas: estratégia de diferenciação, abordagem estratégica e liderança em custos, bem como as estratégias competitivas que estão associadas às genéricas.

Palavras-chave: ANP; SWOT; estratégia; multicritério; tomada de decisão.

* Corresponding author.

JEL classification: L19.

How to cite: Rubiano-Ovalle, O. & Gaviria-Cuevas, J. F. [2023]. Select corporate strategies using an Analytic Network Process Model: A case study. *Estudios Gerenciales*, 39(168), 341-356. <https://doi.org/10.18046/j.estger.2023.167.5873>

DOI: <https://doi.org/10.18046/j.estger.2023.167.5873>

Received: 30-11-2022

Accepted: 04-07-2023

Available on line: 30-09-2023

1. Introduction

One distinctive feature of management is the importance it attaches to making strategic decisions. As more markets become global, the number of dependencies between the factors that arise in a decision grows exponentially. Furthermore, evolving technologies drive changes in markets and products must change with them (Ervural, Zaim, Demirel, Aydin, & Delen, 2018). Some industries change faster than others, but change is now the norm rather than the exception.

In this field, Wheelen et al. (2015) focus on making the strategy formulation process more effective to respond to the complexity of the competitive environment through the implementation of decision techniques such as multi-criteria analysis, as well as robust and flexible tools for all types of organizations.

In this sense, facing the challenge of change gives companies the options to react, anticipate or lead the market in terms of their own strategies. These are defined as the reconciliation that an organization makes between its internal resources and its capacities, the opportunities and the risks or threats created by its external factors. They define the essence of strategic planning when relating a company with its environment (Porter, 1997). Although there are innovative tools to analyze the decision-making problem of a company, this publication aims to analyze the synergy of traditional tools that provide a frame of reference for the future adoption of corporate, competitive, and functional strategies in combination with the different key success factors identified by each type of company.

In relation to the problem that justifies this study, specifically in the field of corporate strategy formulation based on complementing SWOT analysis with other prioritization tools to refine the selection and improve its effectiveness, although authors have agreed that the dependence between decision elements cannot be overlooked, few of them have applied SWOT-ANP approaches to evaluate and select them. In fact, one of the most comprehensive studies is the one by Sanny et al. (2018), who analyze the internal and external environment of companies to formulate alternative strategies during the planning process and use various multi-criteria hybrids such as Fuzzy ANP, ANP and Fuzzy TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) to finally select the best alternative strategy. Moreover, looking for criteria that influence the occurrence of damage based on data from cooperatives and SMEs in Batik Madura, Khotimah et al. (2017) used SWOT Analysis combined with FANP method to determine the most appropriate business strategy to be applied in SMEs. However, among the decision elements related to corporate strategy selection, neither a key cluster such as the key success factors, nor Porter's generic strategy cluster has been considered as an additional conditioner, thus reducing the completeness of the decision. The other constituent concepts of the study framework for this paper are illustrated below.

1.1 Key or critical success factors

According to Rockart (1982), these are general objectives adopted as performance requirements that an organization must meet to achieve its strategic objectives; this concept is validated by Mohammadi (2021). Their achievement leads to generate significant and economic value for the organization (Tu et. al, 2018). KSFs are the key areas whose results, once achieved, will ensure organizational success (Mohr & Spekman, 1994). "They are a set of limited factors that, when applied and reinforced in an organization, give competitive advantage" (Mosadeghrad et al., 2022). According to Hastig & Sodhi (2020), KSTs for implementation are "companies' capabilities; collaboration; technology maturity; supply chain practices; leadership; and governance of the traceability efforts". Managers can use KSFs as descriptions, predictors and guidelines for levels of achievement (Vedder, 1992). For example, a critical success factor can be set to increase brand awareness; this is an ambitious goal that generates significant value and market share for the organization. Other uses are as a management measure in various disciplines, such as manufacturing (Mohr & Spekman, 1994) and quality management (Seetharaman et al., 2006). Although some KSFs have been recognized in the literature, the existing critical factor analysis approach does not provide a way to analyze the relationships between factors, and empirically verify how these factors affect organizational performance (Tu et. al, 2018).

1.2 Porter's Generic Strategies

According to Porter's (1997) competitive strategy, there are several competitive strategies that organizations can employ to create added value and differentiate themselves from their competitors. The generic strategies originally distinguish the following: cost leadership, differentiation, and focus.

Cost leadership or low-cost strategy. Through this competitive strategy, organizations seek to optimize their processes. It aims to reduce costs compared to the competition and increase their profit margin. The result is to take advantage of an opportunity to offer products at a lower price than the competition. Low cost can be achieved through corporate strategies such as vertical or direct integration, horizontal strategy, market penetration strategy, among others; and variables such as economies of scale, lower labor costs, standardization and simplification (products and processes), process outsourcing, control of fixed costs, among others.

Differentiation strategy. This strategy aims to create a unique image. Products become important if one or more of the product properties are unique, so it is based on product characteristics as well as brand image. In return, buyers are willing to pay a higher price for this unique product in exchange for receiving "differentiated" or even customized values. Differentiation can be based

on corporate strategies such as product development, unrelated diversification, or variables such as superior quality, product innovations, image, product design and properties, brand name, among others.

Focus strategy. This strategy aims to compete in a niche market instead of the total market. This allows the producer to know the segments it is targeting, which makes it possible to respond better to consumers' needs. The focus can be on cost or differentiation.

1.3 Corporate strategies

Through corporate strategy, an organization seeks to design a specific plan that defines the actions to be taken for growing satisfactorily over time, i.e., it is the road map or guide that must be followed to achieve the proposed objectives (Barbosa et al., 2020). Corporate strategy makes it possible to better understand and maintain a broad or specific focus on the market in which the organization operates, know what the products should be like to satisfy the needs of the target customer segment, and establish which actions are most profitable. In the end, it provides a complete vision of the activities to be carried out in the medium and long term, as well as the points to be strengthened to achieve the established goals. The strategies to be evaluated in this study fall into categories (Hitt et al., 2019) such as: a) stability strategies, through which the company's situation is maintained, as well as its performance and profitability, e.g., related diversification strategy and Product development strategy; b) growth strategies focused on increasing sales, profits, and brand value through the creation of new products or the introduction in new markets; c) contraction strategies focused on reducing the company's volume of operations, e.g., the number of references or selecting the most profitable segments. Some well-known contraction strategies are Divestment strategy, Downsizing strategy, and even Liquidation strategy.

The present work approaches the study of the formulation of corporate and competitive strategies through the development of a proposed systemic methodology that integrates the main concepts of this stage of strategic planning, the SWOT reconciliation technique, and a multi-criteria decision method to define the prioritization of strategic alternatives by applying it to an organization selected as a case study.

ANP (Analytic Network Process) is the generalization of the AHP (Analytic Hierarchy Process) method (Khan & Ali, 2020). In AHP direct influence is generated between criteria, subcriteria, and alternatives, while in ANP complex systems are analyzed and hierarchies are replaced by networks because it allows establishing the influences or dependencies that exist between some decision elements. This means that just as the criteria or sub-criteria influence the alternatives, so could the alternatives influence criteria, sub-criteria and other elements related to the decision (Saaty, 2016).

This paper consists of seven sections organized as follows: Section two presents the literature background on research trends and application of SWOT-ANP analysis; Section three presents the methodology developed to achieve the research objective; Section four contains the development of the methodology applied to a case study; Section five shows the results and their discussion; Section six presents the conclusions.

2. Conceptual background

In addition to the works of Sanny et al. (2018) & Khotimah et al. (2017), and to find research trends and application of SWOT-PSA analysis in different contexts related to strategic decision making, a bibliometric analysis was performed for a time horizon in searches between 2007 and 2023 obtaining the results shown in Figure 1. The search equation used for this analysis was **"anp AND swot AND strateg*"** in the database SCOPUS with the filter Article Title, Abstract and Keywords. In the Web of Science database, the search equation was "All fields". The search yielded 106 articles that were unified through the Mendeley bibliographic manager, which was used to export them with the .RIS extension to the VosViewer® software. Note the close relationship between the SWOT analysis and the decision-making processes for strategic planning considering the key internal and external factors.

The results in Figure 1 highlight the use of multicriteria methods such as ANP and AHP, together with hybrid methods such as fuzzy theory and TOPSIS they support the processes of strategic analysis, application of SWOT analysis, evaluation of key success factors, among other decision elements in organizations.

In this sense, correlated authors stand out and are shown in Figure 2. This is the case of Kabak et al. (2016), who in their collaborations have investigated and applied multi-criteria methods to prioritize energy policies in countries such as Turkey. Those policies have been first evaluated by means of SWOT analysis to then achieve their prioritization (Genç et al., 2018). Kabak, in other of his collaborations with Dağdeviren & Burmaoğlu in 2016, analyze the situation of energy strategy in Turkey using a hybrid model combining SWOT with fuzzy ANP, their main achievement was the evaluation of 4 factors and 21 sub-factors to prioritize 7 energy policies as alternatives; also the accuracy of the information coming from the decision stakeholders was achieved by means of FANP (fuzzy ANP) (Kabak et al., 2012, 2016). In the same sector, Akçaba & Eminer (2022) propose an integrated ANP-SWOT- Fuzzy FTOPSIS approach to identify strategic energy alternatives for the energy sector in Northern Cyprus. In the energy field, Kaytez (2022) also applied a hybrid Fuzzy Network Analytical Process (FANP) approach based on SWOT to assess the future development of wind energy capacities in Turkey in light of the sectoral effects of the Covid-19 outbreak in

2020. In pandemic times, Sobhani et al. [2022] also used SWOT-ANP models to identify optimal strategies to cope with the Iranian tourism crisis generated by COVID-19 and increase resilience to its effects.

Some authors are not listed with direct correlations but are within the results of the bibliometric study and constitute an important reference for the present article. That is the case of Arsić et al. [2017], who built a model in which, combining SWOT analysis of the situation and the ANP method, identified sustainable development and environmental protection scenarios that would enable the company to achieve its vision. In this context of sustainable solid waste management, using ANP and SWOT, Pongpimol et al. [2020] examined issues affecting end-of-life (EOL) management of flexible packaging. In the same vein, Islami & Farajollahi [2022] used SWOT-ANP to investigate and prioritize strategies to improve

livelihoods in Bagherabad, a village of Sanandaj city, based on natural resource approaches. In the field of sustainable energy, Yontar & Derse [2022] applied an integrated AHP/ANP methodology with SWOT Analysis SWOT Matrix to determine strategies of the Sustainable Energy Action Plan for the Yenişehir region in the Turkish province of Mersin. Živković et al. [2015] formulated models for prioritization of strategies generated at the university level, in the case of the Technical Faculty of Bor, University of Belgrade, Serbia, also prioritizing factors and sub-factors associated with this type of decision. The authors constructed a four-level hierarchical ANP model: “Objective (selection of the best strategy) - SWOT factors - SWOT sub-factors - alternative strategies, which establish the interaction between the clusters at different hierarchical levels of the model, as well as the interactions between the elements within each cluster”.

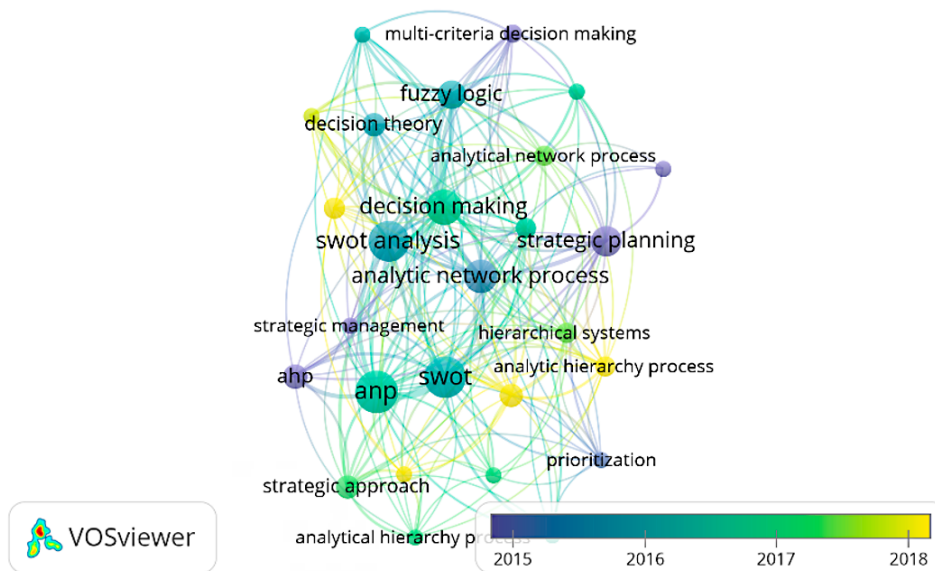


Figure 1. Network of co-occurring terms for the use of SWOT in strategic decision models. Source: own elaboration, supported by VosViewer®.

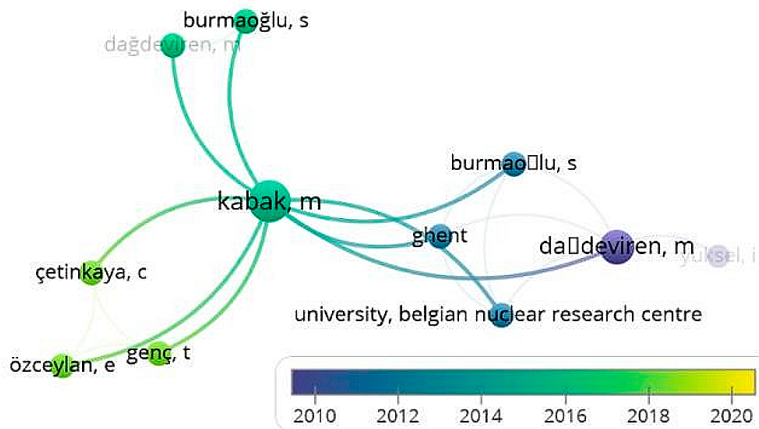


Figure 2. Author network on the use of SWOT in strategic decision models. Source: own elaboration, supported by VosViewer®.

Other authors complemented multicriteria analysis techniques with ANP-SWOT in decision-making in different fields. With the aim of improving the analytical dimension of SWOT with group decision-making, [Yüksel \(2012\)](#) proposed an integrated ANP and Fuzzy TOPSIS model showing that it is applicable to SWOT analysis and strategy selection. In the same vein, [Kaymaz et al. \(2022\)](#) evaluated the socio-economic structure of Erzurum with AHP and digitized SWOT analysis considering the Sustainable Development Goals (SDGs). [Voronova et al. \(2018\)](#) conducted a comparative analysis of development strategy selection using the SWOT-ANP to develop a company strategy. Based on a SWOT-ANP approach, to propose strategies for energy efficiency improvement of the building sector in Iran, [Borjoeifar et al. \(2021\)](#) conducted a study to evaluate the branding strategies of the medicinal herb *Ferula assa-foetida*, a species of the Umbelliferae family in Kerman province, also located in Iran. [Lak et al. \(2020\)](#) investigated and analyzed the potential of heritage tourism to help regenerate the historic city of Birjand, Iran, using urban cultural capital based on a SWOT-ANP approach. [Khojaste-Sarakhsi et al. \(2019\)](#) found that modification of the energy tariff system was the most important strategy.

For Aceh Songket business, an Indonesian traditional weaving, [Ilyas et al. \(2018\)](#) detected seven problems of internal and external factors of the company using SWOT analysis to produce nine marketing strategies. The sub-criteria defined in their study to determine the best strategy were viewed in terms of the marketing mix. Then, from ANP, they determined the development of product diversification as the best strategy. [Liu et al. \(2018\)](#) applied it in energy service companies (ESCOs) for the construction sector in China. Based on a comprehensive ANP-SWOT analysis model, [Zhang & Rao \(2021\)](#) determined the essential characteristics of the best strategy for the innovation and development of the Chinese high-end medical equipment industry during the COVID-19 pandemic. [Namin et al. \(2019\)](#), to address the shortcomings of the assumed independence between factors and AHP decision options, implemented an ANP-based algorithm that, according to them, can perform well even when there is a dependency between the SWOT factors, illustrating its application for strategic planning in the green space of Tehran's District 19.

[Quezada et al. \(2019\)](#) developed a quantitative hybrid method with BSC (Balanced Scorecard) and SWOT analysis to evaluate the performance of a company in the food industry, validating it with managers, who found the method useful but time-consuming. [Shahanipour et al. \(2020\)](#) identified and prioritized human resource strategies in a document management area, initially conducting analysis using the SWOT matrix, and then using ANP to prioritize the strategies. The strategy for human resources maintenance, based on the extended creativity criterion, was selected as the highest priority. [Wahyono et al. \(2020\)](#) combined ANP with SWOT for decision-making to determine the strategy for developing robust coffee in

Jember, seeking for ANP to contribute to decision-making by prioritizing alternatives. In order to strategically plan for the optimal development of aquaculture in the coastal areas of Qeshm Island, [Zarei et al. \(2020\)](#) especially analyzed the island's aquaculture activities within the framework of integrated coastal zone management. The authors used the ANP and Super Decision software in the SWOT matrix to evaluate and prioritize the related factors. They showed the most efficient strategies for the optimal development of aquaculture use in the coastal areas of Qeshm Island. For the same purpose, [Li et al. \(2020\)](#) applied it in the development of methanol vehicles. Fuzzy-logic and grey-relational ANP-based SWOT was used in the development of ceramic and tile industries by [Karimi et al. \(2019\)](#). Furthermore, SWOT-ANP Fuzzy TOPSIS was applied for energy development ([Ervural et al., 2018](#)). [Aghasafari et al. \(2020\)](#) used SWOT, fuzzy theory, and ANP to determine the best strategies for organic farming development based on global factors affecting organic farming, considering the interdependence between them under uncertainty in the decision-making environment, focusing on the Iranian province of Khorasan Razavi. They integrated the ANP method into the SWOT analysis to determine the most suitable strategy for Turkey's medical tourism. [Sevim & Önder \(2020\)](#) also integrated the ANP method into the SWOT analysis to determine the most suitable strategy for Turkey's medical tourism. [Barati et al. \(2018\)](#) developed a hybrid method for formulating and choosing strategies for rural cooperative development in Iran by combining SWOT analysis, SWOT matrix and ANP. Using the SWOT-ANP framework, [Starr et al. \(2019\)](#) concluded that the presence of healthy, resilient forests and the opportunities associated with increased revenue could be the driving forces behind active management of Cross-timbers, an ecoregion stretching from north-central Texas through central Oklahoma to southern Kansas. And recently, [Gao et al. \(2022\)](#) applied SWOT-ANP seeking to determine roadmaps and strategies for blockchain application in construction management in China. Also in China, [Zhang & Paudel \(2021\)](#) used the SWOT-ANP framework to identify the key elements and main strategies related to the management of small-scale forestry cooperatives under the Grain for green program (GFGP) in Xinjiang. Similarly in China, [Hu et al. \(2019\)](#) developed a SWOT-ANP model to prioritize carbon labeling policy in Taiwan. [Wang et al. \(2021\)](#) constructed a conceptual framework for the utilization of abandoned mine resources, the authors employed an integrated SWOT-ANP approach to explore suitable reuse strategies for these mines. [Agnusdei et al. \(2023\)](#) conducted a SWOT-ANP analysis, combined with the Axial Distance Based Aggregate Measurement (ADAM) method, showing the impact of digitization on driving circularity within agribusiness, and highlighting the most impactful strategies driving the transition to a circular economy. [Oktari et al. \(2023\)](#) selected knowledge management implementation strategies for coping with disasters and the Covid-19 pandemic in Indonesia. The authors used SWOT analysis to determine the strategies

and ANP to prioritize them. Likewise, in Indonesia, [Ali & Kassim \(2021\)](#) trying to raise the development of waqf forests in the country, used SWOT and ANP methods to identify and prioritize the best strategy. Also in Indonesia, in order to formulate strategies to improve the e-waste management supply chain, [Wibowo et al. \(2021\)](#) used the Decision-Making Trial and Evaluation Laboratory (DEMATEL), ANP, SWOT, and the Quantitative Strategic Planning Matrix (QSPM). [Hasiba et al. \(2021\)](#) developed for Micro Waqf Bank (BWM), an Islamic microfinance institution in Indonesia, a study to define the main survival and maintenance strategies. The study employed a SWOT-ANP analysis. In another banking case, in the face of the difficulties that the European banking sector went through during and after the global financial crisis (GFC), [Dinçer et al. \(2018\)](#), assessed aspects related to the sustainability of the sector and proposed competitive strategies for European policy makers. The authors applied SWOT analysis, an integrated DEMATEL-ANP model (DANP) and fuzzy TOPSIS. Finally, it is worth citing the work of [Zakeri et al. \(2019\)](#), who implemented another approach complementary to SOWT in the process of strategy formulation, selection, and prioritization in unpredictable situations in a mathematical framework, known as strategy interaction model (SIM), in a dairy company located in northern Iran. The authors argue that the SIM approach possesses the advantages of AHP, ANP and other multicriteria decision making (MCDM) techniques applied to SWOT analysis.

The usefulness of decision-making approaches is evident. They allow companies to adapt a selection method in their strategic analysis to prioritize their business actions, and also improve the benefits of SWOT in terms of the influences between the strategic elements and factors.

3. Materials and methods

First, the methodological framework is shown in [Figure 3](#), which integrates the four combined concepts.

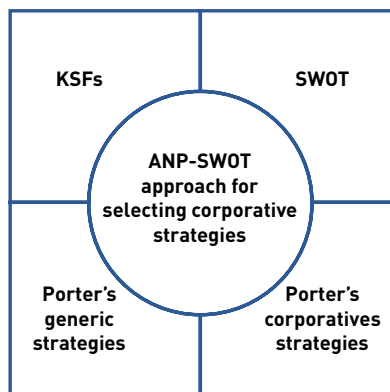


Figure 3. Research methodological framework. Source: own elaboration.

This methodological framework was developed in the following phases:

- a. Problem definition in terms of the current gap in the modeling, which combines the four concepts.
- b. Selection of the case study.
- c. Literature review, with the objective of finding research trends and application of SWOT analysis in the context of strategic business decision making.
- d. Meetings with managers of the case study organization to carry out the information gathering plan related to the strategies and other decision elements such as the selection of experts, construction of the SWOT matrix, the definition of the KSF, and identification of potential strategies.
- e. Modeling procedure to select corporate strategies.
- f. Analysis of results.

The modeling procedure for strategy selection ([Figure 4](#)) made it possible to work with relevant information on the elements of the ANP to prioritize both generic and corporate strategies, from the identification of decision elements to the prioritization of alternatives and factors related to the decision. [Figure 4](#) presents the structure of this methodological procedure with a process approach.

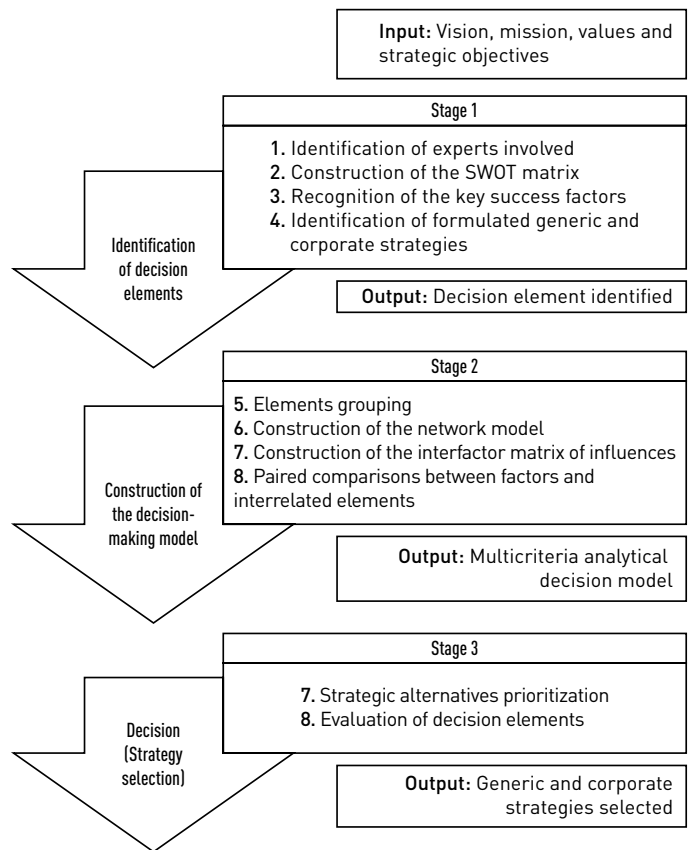


Figure 4. Modeling procedure for selecting corporate strategies. Source: own elaboration.

The first stage, dedicated to the identification of decision elements, was developed in the meetings with managers. Stages 2 and 3 were developed under the conceptual model of the ANP methodology, integrating

the decision elements defined in stage 1. In the second stage, the identified decision elements are grouped into clusters based on their affinity to determine these. In this phase, the participating experts, acting as evaluators, determine what influence each element has and receives in relation to the others. An element of a cluster in the network may have influence on some or all of the elements of that same cluster or of a different cluster in the network. The relationship between elements in the same cluster is called feedback and the relationship between elements in different clusters is called interdependence. From these interrelationships, the network model of the problem and the inter-factor matrix of influences are constructed to continue with the paired comparison between factors and interrelated elements, and to complete the multicriteria analytical decision model. Finally, in stage 3, the decision model is processed with the support of a software, which guides the decision making, it yielded a prioritization of the strategic alternatives, both generic and corporate. In this research, by means of a proprietary application developed in Excel, the interrelationships between all the elements were explored and some relevant influence relationships were highlighted. The general conceptual model is explained below:

a. Structure of the network model: it consists of identifying and grouping all the elements associated with the decision in clusters called K_n (Figure 5), according to the ANP methodology proposed by Saaty (2016) in the book "Decision making in complex environments".

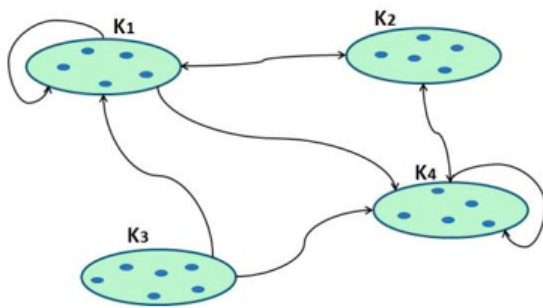


Figure 5. Elements grouped into clusters. Source: own elaboration.

b. Interfactorial matrix: the influence of each element e_{ij} is established for each related element e_{ji} by means of a panel of experts who determine with a score of "1" when one element influences another and "0" when no influence of any kind is evident. In Figure 5 these influences are represented by arrows, the ones entering the same cluster indicate that there are influences between the elements of the same group. This step is also part of the proposal by Rozann

Saaty (2016) in her book "Decision making in complex environments".

c. Paired comparison: similar to the AHP method, a pairwise comparison is made between the elements that have influences equal to 1 and in the framework of a matrix the local priority vector is obtained between the related elements, as well as to define the importance of the clusters; here, Equation 1 is followed:

$$Vp = A \times w \tag{1}$$

Where A is the paired comparison matrix multiplied by the priority vector w of this comparison to obtain the weighted vector Vp of matrix A, which, according to Equation 2, is multiplied again by the priority vector w to obtain a consistency vector Vc.

$$Vc = Vp \times w \tag{2}$$

Then the values of Vc are averaged to obtain the largest eigenvalue of A, called λ_{max} . With this value, we proceed to determine the consistency index C_i under Equation 3. The consistency index is related to the way of obtaining the vector of priorities using the geometric mean by rows procedure, which is equivalent to using the logarithmic least squares method.

$$I_c = \frac{\lambda_{max} - n}{n - 1} \tag{3}$$

Where n corresponds to the number of alternatives being evaluated. Once C_i has been calculated, the consistency coefficient C_R is determined by taking the random index RI associated with the number of alternatives proposed by Saaty (1980) in his book "The Analytic Hierarchy Process", RI is the expected value of C_i , according to Equation 4. The acceptable limit of C_R is 0.1.

$$C_R = \frac{C_i}{R_i} \tag{4}$$

d. Original supermatrix: to construct this matrix, it is necessary to locate all the priority vectors w for the elements that have been compared in a paired manner with respect to the element on which they have had a direct influence equal to "1", as shown in Equation 5.

$$W = \begin{matrix} & \begin{matrix} K_1 & K_j & K_n \end{matrix} \\ \begin{matrix} K_1 \\ K_j \\ K_n \end{matrix} & \begin{matrix} e_{11} & e_{12} & e_{1j} & \dots & e_{j1} & e_{j2} & e_{jm} & \dots & e_{n1} & e_{n2} & e_{nm} \\ \left[\begin{matrix} V_{11} & \dots & V_{1j} & \dots & V_{1m} \\ V_{j1} & \dots & V_{jj} & \dots & V_{jm} \\ V_{n1} & \dots & V_{nj} & \dots & V_{nm} \end{matrix} \right] \end{matrix} \end{matrix} \tag{5}$$

Where K_j corresponds to the clusters of the decision problem, e_{ij} are the elements within each cluster, and V_{ij} represents the values of the priority vectors of the elements related by their influences organized by columns. This is a step that combines the fundamentals of Thomas Saaty & compiled by Rozann Saaty (2016), thus generalizing the AHP method.

e. Weighted supermatrix: the first step to obtain this matrix is to obtain the weights of the clusters K_j following the same procedure described in paragraph c of the paired comparisons. Once the weights of each cluster are available, the original supermatrix W is multiplied by the priority vector V_k of the clusters compared according to Equation 6 (Saaty, 2016).

$$W_p = \begin{matrix} & \begin{matrix} K_1 & & K_j & & K_n \end{matrix} \\ \begin{matrix} e_{11} & e_{12} & e_{1j} & \dots & e_{j1} & e_{j2} & e_{jm} & \dots & e_{n1} & e_{n2} & e_{nm} \end{matrix} \\ \begin{matrix} K_1 \\ K_j \\ K_n \end{matrix} \begin{matrix} e_{11} \\ e_{12} \\ e_{1j} \\ \vdots \\ e_{j1} \\ e_{j2} \\ e_{jm} \\ \vdots \\ e_{n1} \\ e_{n2} \\ e_{nm} \end{matrix} \end{matrix} \times \begin{bmatrix} V_{11} & \dots & V_{1j} & \dots & V_{1m} \\ \vdots & & \vdots & & \vdots \\ V_{i1} & \dots & V_{ij} & \dots & V_{im} \\ \vdots & & \vdots & & \vdots \\ V_{n1} & \dots & V_{nj} & \dots & V_{nm} \end{bmatrix} \times V_k \quad (6)$$

f. Boundary supermatrix: results from raising to the power of $2k + 1$ the weighted supermatrix W_p , where k is an arbitrarily large number; this procedure is like the concept of Markov chains as established by Saaty (2016).

g. Prioritization of alternatives: at this point, the boundary supermatrix has the same form as the weighted supermatrix, but all columns of the boundary supermatrix are equal. The scores of the prioritized alternatives are found both in the column and in the row containing the alternatives against all the elements that have influenced them and the ones they have influenced (Saaty, 2016).

4. Results - application to the case study

The methodology was applied in an organization of the manufacturing sector in Colombia with the purpose of proposing a strategic direction to obtain competitive advantages in this highly competitive sector, as well as to help the organization improve its strategic decision-making model. The case study organization has a wide experience in the production of the highest quality papers and serves diverse market needs in the segments of distributors, converters, and printers by supplying a variety of formats, colors, and grammages.

However, the evolution of some environmental variables has seriously impacted the performance of the organization, for instance: (i) technological progress,

which has generated a decrease in production in the printing and publishing sector; (ii) longer winter seasons, which restrict the availability of raw materials and increases production costs; and (iii) strong foreign competition, which offers products at lower cost. Together with the collateral impacts of the COVID-19 pandemic, it has led the organization to implement staff reduction strategies, which in turn has generated a tense labor climate and negative effect on productivity, leading the organization into a vicious circle.

The development of the modeling procedure is presented below.

4.1. Stage 1. Identification of decision elements

At this stage, all the elements of the decision process were identified. The input required was information concerning the components of the strategy formulation, such as the vision, mission, values, and strategic objectives of the organization. The process at this stage allowed i) to outline and determine the experts involved in the construction of the respective information, they were appointed by senior management, e.g., senior managers responsible for the functional areas, most of them were heads of areas related to the graphic arts sector, packaging of different types of materials, clothing and footwear, who were interested in the assurance of their environmental responsibility. They had more than 10 years of experience in management positions and some had postgraduate degrees; ii) the construction of the SWOT matrix, based on internal and external analysis so the organization can focus on what really matters and prevent unfavorable situations for growth, development, and maintenance (Table 1). iii) to recognize key success factors, defined by managers through an in-depth study of the organization objectives, and validating that they contribute to the creation of added value for customers (Table 2). iv) to identify generic and corporate strategies, which are the alternatives to be evaluated (Tables 3 and 4). In this context, among the two possible alternatives of competitive advantage, there are low cost or differentiation, which combined with the scope of activities lead to three generic strategies to achieve above-average performance in an industry, namely: cost leadership, differentiation, and focus (Porter, 1997). Likewise, to select strategies to be completed, the proposed model suggests exploring all the alternatives of corporate strategies formulated by Porter, so that the experts evaluate the two types (generic and corporate) against all the opportunities, threats, strengths, and weaknesses identified, and key success factors.

The information was obtained through workshops with managers and staff of the strategic committee.

Table 1. SWOT Matrix.

	Negative aspects	Positive aspects
Internal factors	Weaknesses (D1) High management costs. (D2) Production system not adaptable to different raw materials. (D3) High sales costs.	Strengths (F1) Brand positioning at national scale and international scale. (F2) Processes and products that are environmentally responsible. (F3) High R&D capacity.
External factors	Threats (A1) Few entry barriers to the domestic market. (A2) Low-cost imported product supply from other countries increase competition in the sector. (A3) Scarcity and price increase raw materials (A4) Revaluation of dollar.	Opportunities (O1) Growth in demand for ecological products in the other countries. (O2) Increased demand for products for other applications.

Source: own elaboration.

Table 2. Key success factors.

(KSF1) Low prices: This factor allows the company to achieve growth in sales and profit margin.
(KSF2) High quality: The objective is to offer good quality products at competitive prices.
(KSF3) Sustainability: This factor refers to the sustainability of production over time, given the threats of technological change in the environment.
(KSF4) Fast delivery: This factor is considered a highly expected value by customers.

Source: own elaboration.

Table 3. Generic strategies cluster.

- (GS1) Differentiation strategy
- (GS 2) Focus strategy
- (GS 3) Cost leadership strategy

Source: own elaboration.

Table 4. Corporate strategy cluster.

-(CS1) Horizontal integration strategy
-(CS2) Backward integration strategy
-(CS3) Direct integration strategy
-(CS4) Market development strategy
-(CS5) Product development strategy
-(CS6) Market penetration strategy
-(CS7) Related diversification strategy
-(CSD8) Unrelated diversification strategy
-(CS9) Divestment strategy
-(CS10) Liquidation strategy
-(CS11) Downsizing strategy

Source: own elaboration.

4.2 Stage 2. Construction of the decision-making model

As planned, in the Modeling procedure, the identified decision elements were grouped according to their affinity to establish clusters. Two clusters contain the generic and corporate strategies, respectively. The other two clusters represent the decision criteria and sub-criteria: key success factors and SWOT elements. At this stage, as established by the method, the experts involved, acting as evaluators, determined what influence each element has and receives in relation to the other and even on itself. In this part of the process, the information

is captured and processed in the SuperDecisions® support software to build the systemic network model. The software for decision making with dependence and feedback was developed by William Adams in 1999-2003. He and his team have developed SuperDecisions® (Creative Decisions Foundation, Pittsburgh, USA).

The described clusters were entered into the software configuring the network shown in [Figure 6](#).

So far, the methodological steps a and b exposed in the "Materials and Methods" section have been covered. Once the elements were grouped by clusters, the influences between elements of the same cluster and towards elements of the other clusters were determined. These interdependencies are supported by primary and secondary sources. Then, the correlated elements were evaluated by means of paired comparisons and the experts defined above, using [Saaty's scale \(2012\)](#), determined the greater importance or influence of one element with respect to another and for each matrix, the consistency coefficient CR was calculated. It resulted in a value equal to 0.01548, below the maximum permitted limit ($=1$), and validates the level of precision of the responses of the consulted experts. For all matrices, we followed including the comparison between clusters, the procedure proposed by [Saaty \(1980\)](#) for the AHP method. This step was completed by multiplying the vector of weighted clusters by the original matrix containing all the priority vectors of the items compared with each other.

4.3 Stage 3. Decision -Strategy selection

Paired comparison: Once the multi-criteria analytical model was built in step 2, according to the ANP application algorithm, a paired comparison is carried out subsequently between the related elements by determining the influences determined in section b of the methodology.

Original supermatrix: it is built with all the priority vectors product of the analysis of influences among all the elements identified for the model (step d of the methodology).

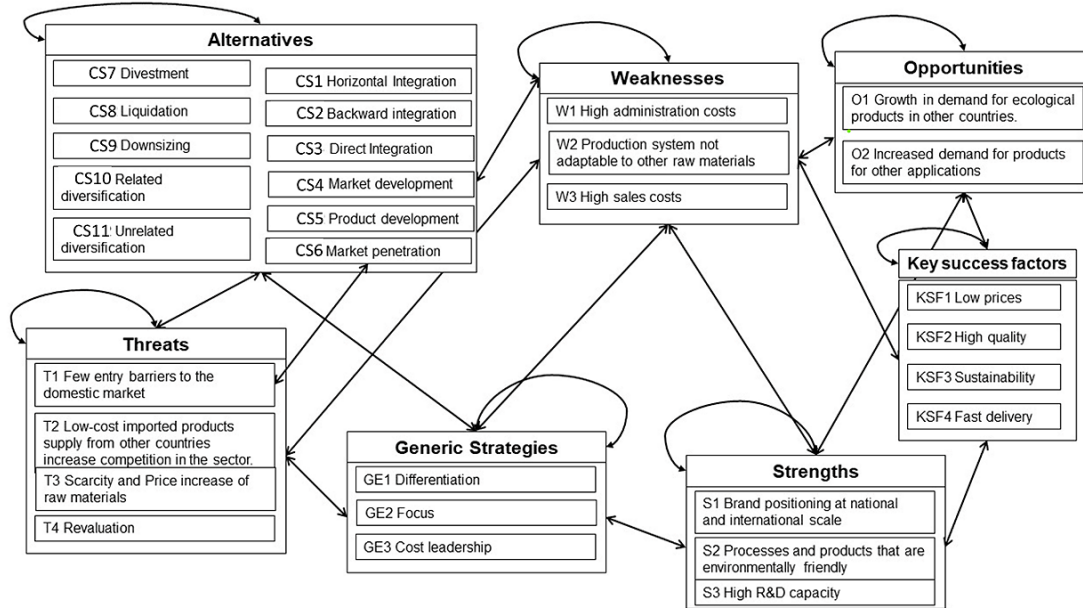


Figure 6. ANP model for selecting the best strategies for the case study. Source: Authors supported by SuperDecisions® software. Source: own elaboration.

Weighted supermatrix: When the original supermatrix is weighted with the values of the importance ranking of the identified clusters, the weighted matrix corresponding to step e of the explained methodology is obtained.

Boundary supermatrix: the weighted matrix is raised to the n -th power until all the results are stabilized to interpret the priorities of all the decision elements (strategies, success factors, stakeholders, among others). The prioritization was not only applied to the generic and competitive strategies, but also for the other elements related to the decision-making process.

Prioritization of alternatives: it is the matrix whose values are stable, having been raised to the n -th power and which allows us to read which of the alternatives has the highest value in the globally calculated ranking. That is, the alternative to choose is the one with the greatest importance among its set of alternatives and among all the elements of the decision model.

5. Interpretation of results and discussion

According to the normalized values of the "Generic Strategies" cluster in the limit matrix provided by the software, their prioritization was obtained, as shown in Figure 7. The cost leadership strategy obtained the highest value (0.539734), followed by the differentiation strategy (0.268087), and the focus strategy (0.192179).

The competitive strategy currently pursued by the production unit is differentiation and aims at developing products that leave a higher profit margin; however, the results of this study suggest that the pursued strategy is cost leadership. This strategy is strongly influenced by the threats defined in the SWOT (Figure 8) and is largely

related to the KSF "Low prices" (Figure 9).

Another result was the prioritization of corporate strategies by families or types presented in Figure 10. It indicates that the organization's situation forces it to formulate intensive strategies with the intention of gaining market share.

Within the intensive strategies, the market penetration strategy is the highest priority (0.162361) within the comprehensive analysis, followed by the product development strategy (0.1452), as shown in Table 5.

The integration strategies ranked second (0.283975), and the backward integration strategy ranked third with respect to the total number of alternatives (0.144910), as shown in Table 5.

Moreover, the results provided by the software allowed us to include an analysis of key influences related to corporate strategies. The influences between the SWOT matrix and the corporate strategies are of special interest because they are a key aspect in the formulation of the strategies. For instance, according to the weighted matrix, the market penetration strategy is strongly influenced by the opportunity (O1) Growth in demand for ecological products in other countries, and by the threat (T2) Low-cost imported product supply from other countries increase competition in the sector. Therefore, the penetration strategy that takes advantage of the opportunity (O1) and reduces the impact of the threat (T2) should be selected. The suggested generic strategy for this corporate strategy is obtained from the original matrix, as shown in Figure 11. It is cost leadership, which had the highest value (0.4579), followed by differentiation (0.4161). Likewise, with respect to the product development strategy, there is a strong influence from (S3) High R&D capacity and (O2) Increased demand for products for other applications. The corresponding generic strategy is cost leadership (0.5213).

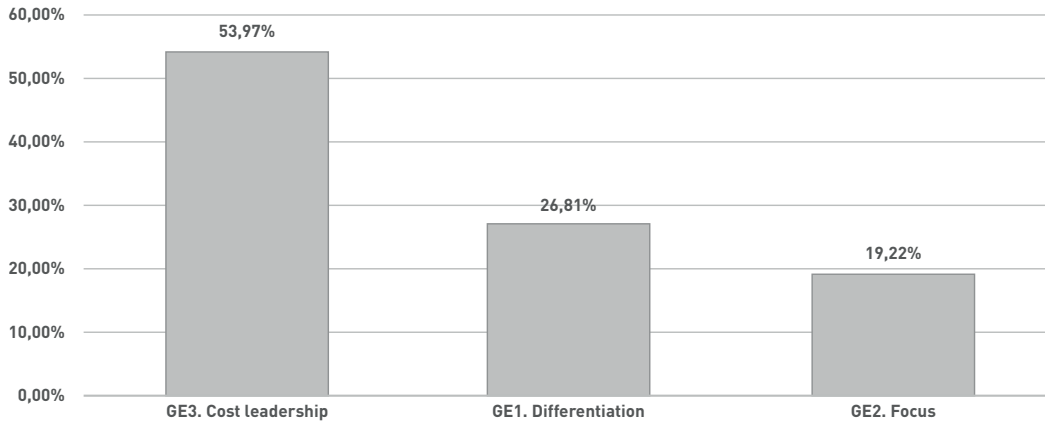


Figure 7. Prioritization of generic strategies.
Source: own elaboration.

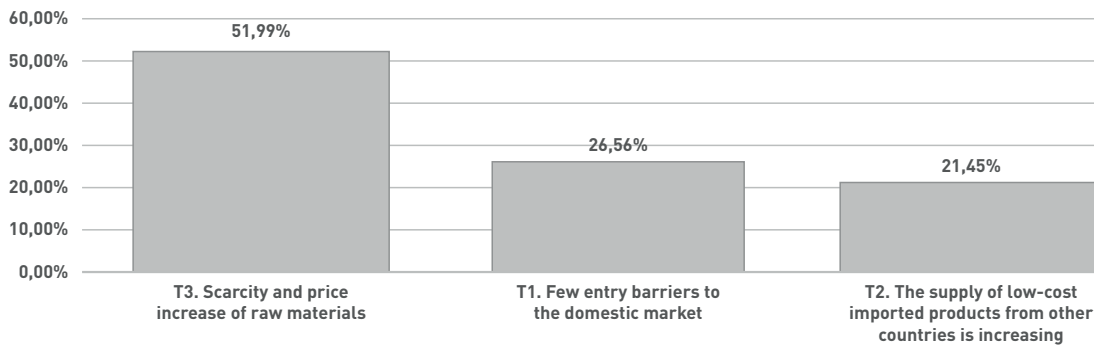


Figure 8. Influence of threats cluster on cost leadership strategy.
Source: own elaboration.

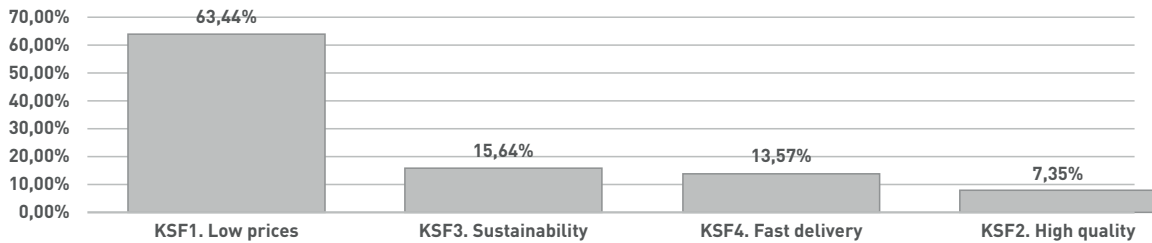


Figure 9. Influence of the KSF cluster on cost leadership strategy.
Source: own elaboration.

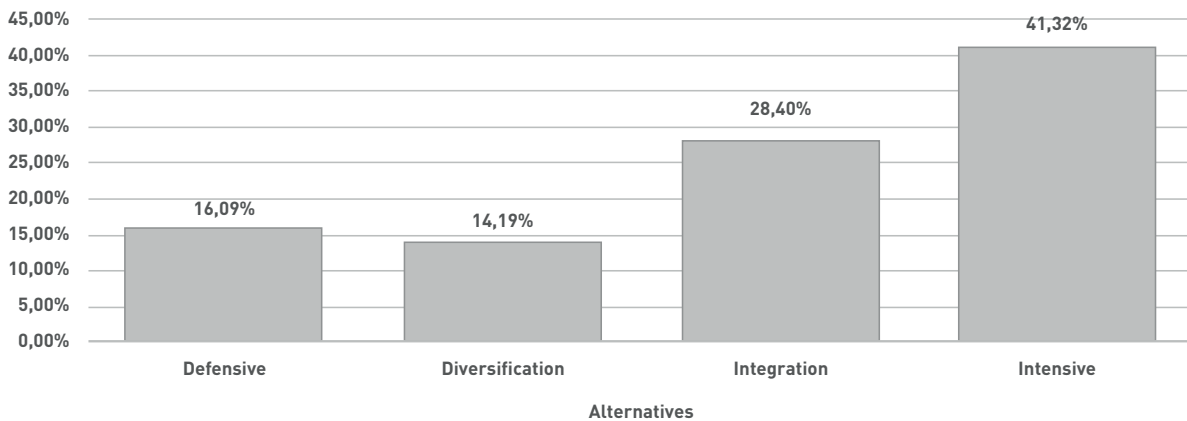


Figure 10. Prioritization of corporate strategies by family or type.
Source: own elaboration.

Table 5. Prioritization of corporate strategies

Family of strategies	Corporate strategies	Weighting (Normalized)	Weighting by Family
Defensive	Disinvestment	4.05%	16.09%
	Liquidation	2.00%	
	Downsizing	10.03%	
Diversification	Related	7.04%	14.19%
	Unrelated	7.15%	
Integration	Horizontal	9.17%	28.40%
	Backward	14.49%	
	Direct	4.73%	
Intensive	Market development	10.57%	41.32%
	Product development	14.52%	
	Market penetration	16.24%	

Source: own elaboration.

Based on these results, the case study organization chose to intensify its participation in the international market through market penetration strategies, product development, and diversification related to the organic product line.

Figure 12 shows the resulting prioritization of the key success factors.

Although all the KSFs are of great relevance to achieve success in the industry, organizations define the priorities of the KSFs with respect to the focus in which they want to stand out. In this case, the factors "Low prices" and "sustainability" obtained the highest weights; therefore, the competitive and corporate strategies should be selected and formulated without affecting the priority with respect to them.

When analyzing the influences of the KSFs and using as a source the Weighted Matrix (the intermediate result of the model), it is evident that both the KSF "Low prices" in Figure 13, and "Sustainability" in Figure 14 are strongly influenced by the generic strategy of cost leadership, this validates that the production unit should follow this competitive strategy to support the intensive strategies. Furthermore, in this type of industry, the demand has been elastic with the consumption of the products, not because of the availability of substitutes—in fact, they were not identified—but because of the large market supply, the variety of presentations, quality, and prices.

		MANAGEMENT STRATEGIES										
		CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8	CS9	CS10	CS11
ALTERNATIVES	CS1	0	0,5857	0	0	0	0,25	0	0	0	0	0
	CS2	0	0	0	0	0	0	0	0	0	0	0
	CS3	1	0,4142	0	0	0	0,75	0	0	0	0	0
	CS4	0	0	0	0	0	0	0,71	0,179	0	0,75	0
	CS5	0	0	0	0	0	0	0,289	0	0	0,25	0
	CS6	0	0	0	1	0	0	0	0	1	0	1
	CS7	0	0	0	0	0	0	0	0	0	0	0
	CS8	0	0	0	0	0	0	0	0	0	0	0
	CS9	0	0	0	0	0	0	0	0	0	0	0
	CS10	0	0	0	0	0	0	0	0	0	0	0
	CS11	0	0	0	0	0	0	0	0,820	0	0	0
THREATS	T1	0	0	0	0,71	0,477	0,775	0,261	1	0,759	0,248	0,205
	T2	0	0	0	0,289	0	0,224	0	0	0,24	0,243	0,794
	T3	0,84	1	1	0	0,522	0	0,738	0	0	0,507	0
	T4	0,15	0	0	0	0	0	0	0	0	0	0
WEAKNESSES	W1	0,31	0,1095	0,4537	0,289	0	0,423	0	1	0	0	0,25
	W2	0,31	0,5328	0,1499	0	0,833	0,387	0,817	0	1	0,414	0
	W3	0,37	0,3576	0,3963	0,710	0,166	0,189	0,182	0	0	0,585	0,75
GENERIC STRATEGIES	GE1	0	0	0	0,502	0,500	0,369	0,140	0,407	0,443	0,293	0,416
	GE2	0	0	0	0,201	0,170	0,128	0,111	0,169	0,190	0,185	0,126
	GE3	1	0	1	0,296	0,328	0,501	0,748	0,422	0,365	0,521	0,457
KSF	KSF1	1	0	0,7387	0,320	0	0,285	0,368	0,324	0,238	0,287	0,404
	KSF2	0	0	0	0,224	0	0,120	0,116	0,102	0,268	0,338	0,136

Figure 11. Original matrix.
Source: own elaboration.

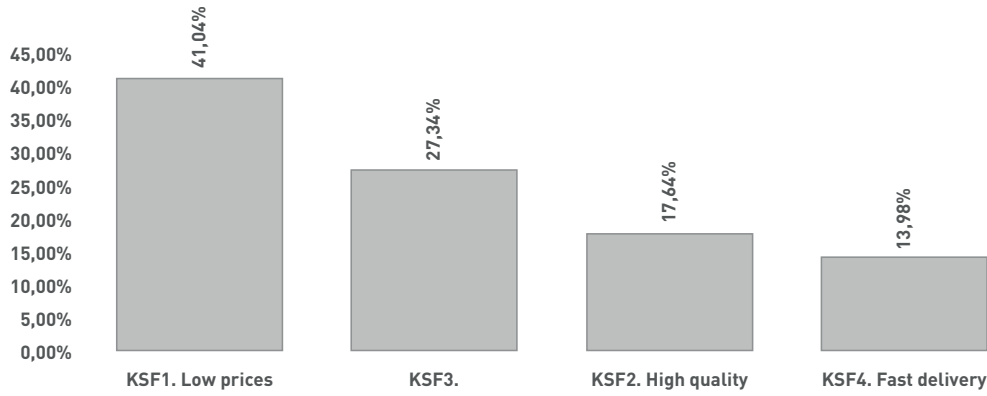


Figure 12. Prioritization of key success factors.
Source: own elaboration.

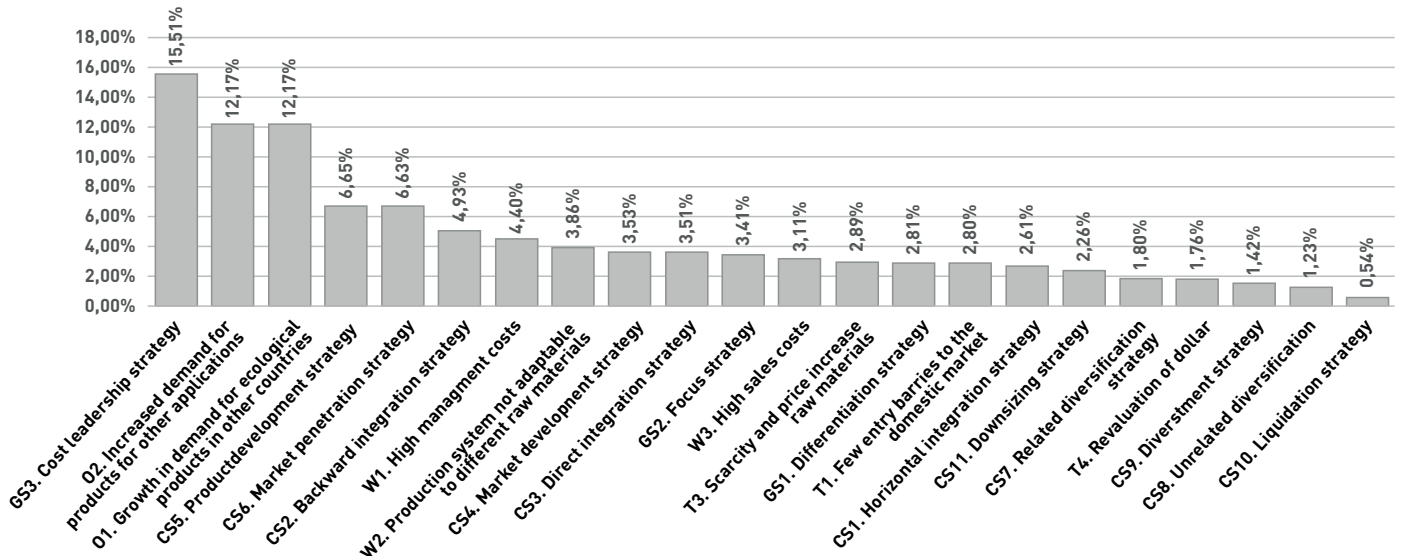


Figure 13. Influence on KSF low prices.
Source: own elaboration.

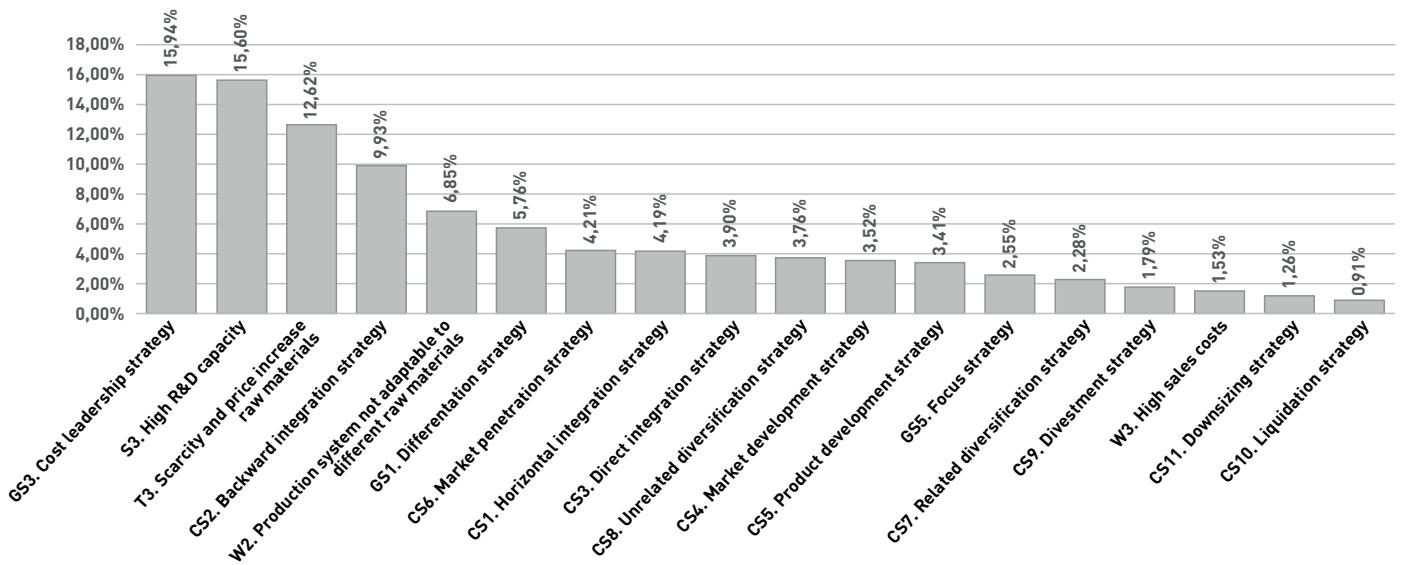


Figure 14. Influence on KSF sustainability.
Source: own elaboration.

6. Conclusions

The proposed methodology makes it possible to delimit the universe of strategic alternatives and, therefore, to focus the analyses and facilitate strategic decision-making for any type of organization.

The implementation of the analytical network process enabled a better use of the SWOT matrix by considering the interrelationships between strategic factors, expanding the decision framework, and ensuring the evaluation of all possible alternatives.

Integrating the two levels of strategies dealt with in strategic planning, corporate and competitive, allows the case study organization to focus on the strategic direction, i.e., how to compete, where to compete, and with what competitive advantage it is going to achieve the key success factors of the industry in which it competes.

The multi-criteria decision tool made it possible to prioritize alternatives from a systemic approach by considering the relationships between all the elements integrated into the methodological proposal. The most important contribution of this work is the study of the interrelationships between the two major types of strategies, generic and corporate, with the key success factors and the SWOT.

The field of study in which this work was developed gets wider research opportunities as markets become more complex. Considering the creation of more robust tools, easy to interpret by managers, is one of the aspects that still need to be analyzed and deepened. The methodology proposed here has an integral condition for the exercise of decision-making, where the strategy, key success factors, and business decisions were analyzed jointly.

Integrating simulation techniques and scenario analysis in highly competitive systems or industries is also an aspect of research because the SWOT analysis is a static evaluation in time, even if it is visualized in the future. When circumstances, capabilities, threats, and strategies change, it is possible that the dynamics of a competitive environment may not be evident in a single matrix.

Conflict of interest

The authors declare no conflict of interest.

References

- Aghasafari, H., Karbasi, A., Mohammadi, H., & Calisti, R. (2020). Determination of the best strategies for development of organic farming: A SWOT-Fuzzy Analytic Network Process approach. *Journal of Cleaner Production*, 277, 124039. <https://doi.org/10.1016/j.jclepro.2020.124039>.
- Agnusdei, L., Krstić, M., Palmi, P., & Miglietta, P. P. (2023). Digitalization as driver to achieve circularity in the agroindustry: A SWOT-ANP-ADAM approach. *Science of The Total Environment*, 882, 163441. <https://doi.org/10.1016/j.scitotenv.2023.163441>.
- Akçaba, S., & Eminer, F. (2022). Evaluation of strategic energy alternatives determined for Northern Cyprus with SWOT based MCDM integrated approach. *Energy Reports*, 8, 11022-11038. <https://doi.org/10.1016/j.egy.2022.08.227>.
- Ali, K. M., & Kassim, S. (2021). Development of waqf forest in Indonesia: The SWOT-ANP analysis of Bogor waqf forest program by Bogor waqf forest foundation. *Journal Manajemen Hutan Tropika*, 27(2), 89-99. <https://doi.org/10.7226/jtfm.27.2.89>.
- Arsić, S., Nikolić, D., & Živković, Z. (2017). Hybrid SWOT - ANP - FANP model for prioritization strategies of sustainable development of ecotourism in National Park Djerdap, Serbia. *Forest Policy and Economics*, 80, 11-26. <https://doi.org/10.1016/j.forpol.2017.02.003>.
- Barati, A. A., Kalantari, K., Nazari, M. R., & Asadi, A. (2018). A hybrid method (ANP-SWOT) to formulate and choose strategic alternatives for development of rural cooperatives in Iran. *Journal of Agricultural Science and Technology*, 19(4), 757 - 769.
- Barbosa, M., Castañeda-Ayarza, J. A., & Ferreira, D. H. L. (2020). Sustainable strategic management (GES): Sustainability in small business. *Journal of Cleaner Production*, 258, 120880. <https://doi.org/10.1016/j.jclepro.2020.120880>.
- Borjoeifar, M., Nabieyan, S., Zare Mehrjerdi, M. R., & Saadatfar, A. (2021). Development of Operational Strategies for Branding Ferula assa-foetida L. Medicinal Plant (Case study: Rangelands of Kerman Province, Iran). *Journal of Rangeland Science*, 11(2), 224-240.
- Dinçer, H., Olgu Akdeniz, O., & Hacıoğlu, U. (2018). Competitive strategy selection in the European banking sector using a hybrid decision-making approach. *Zbornik radova Ekonomskog fakulteta u Rijeci: časopis za ekonomsku teoriju i praksu*, 36(1), 213-242. <https://doi.org/10.18045/zbefri.2018.1.213>.
- Ervural, B. C., Zaim, S., Demirel, O. F., Aydin, Z., & Delen, D. (2018). An ANP and fuzzy TOPSIS-based SWOT analysis for Turkey's energy planning. *Renewable and Sustainable Energy Reviews*, 82, 1538-1550. <https://doi.org/10.1016/j.rser.2017.06.095>.
- Gao, Y., Casasayas, O., Wang, J., & Xu, X. (2022). Factors affecting the blockchain application in construction management in China: an ANP-SWOT hybrid approach. *Architectural Engineering and Design Management*, 1-16. <https://doi.org/10.1080/17452007.2022.2155603>.
- Genç, T., Kabak, M., Özceylan, E., & Çetinkaya, C. (2018). Evaluation of natural gas strategies of Turkey in east Mediterranean region: A strengths-weaknesses-opportunities-threats and analytic network process approach. *Technological and Economic Development of Economy*. <https://doi.org/10.3846/20294913.2016.1253043>.
- Hasiba, F. F., Mahmudah, S. N., Sukmaningrum, P. S., Ajija, S. R., & Zusak, M. (2021). The Strategies for Developing Micro Waqf Bank in Indonesia. *Review of International Geographical Education Online*, 11(4). <https://doi.org/10.33403/rigeo.800644>.
- Hastig, G. M., & Sodhi, M. S. (2020). Blockchain for supply chain traceability: Business requirements and critical success factors. *Production and Operations Management*, 29(4), 935-954. <https://doi.org/10.1111/poms.13147>.
- Hitt, M. A., Ireland, R. D., & Hoskisson, R. E. (2019). *Strategic management: Concepts and cases: Competitiveness and globalization*. Cengage Learning.
- Hu, A. H., Chen, C. H., Lan, Y. C., Hong, M. Y., & Kuo, C. H. (2019). Carbon-labeling implementation in Taiwan by combining strength-weakness-opportunity-threat and analytic network processes. *Environmental Engineering Science*, 36(5), 541-550. <https://doi.org/10.1089/ees.2018.0328>.
- Ilyas, S. Z., Wulandari, T. A., & Sastra, H. Y. (2018). Marketing Strategy Determination by SWOT and ANP Approaches on Aceh Songket Small-Medium Enterprises. *Marketing*, 6(1).
- Islami, I., & Farajollahi, A. (2022). Prioritization of Local Livelihood Promotion Strategies with the Approach of Sustainable Exploitation of Natural Resources Based on SWOT-ANP Model in Bagherabad Village of Kurdistan. *Geography and Territorial Spatial Arrangement*, 12(42), 73-100.

- Kabak, M., Dağdeviren, M., & Burmaoğlu, S. (2016). A hybrid SWOT-FANP model for energy policy making in Turkey. *Energy Sources, Part B: Economics, Planning and Policy*. <https://doi.org/10.1080/15567249.2012.673692>.
- Kabak, M. E. H. M. E. T., DAĞDEVİREN, M., & BURMAOĞLU, S. (2012). A MCDM model for energy policy evaluation. In *Uncertainty Modeling in Knowledge Engineering and Decision Making* (pp. 131-136). https://doi.org/10.1142/9789814417747_0022.
- Karimi, M., Niknamfar, A. H., & Niaki, S. T. A. (2019). An application of fuzzy-logic and grey-relational ANP-based SWOT in the ceramic and tile industry. *Knowledge-Based Systems*, 163, 581-594. <https://doi.org/10.1016/j.knosys.2018.09.020>.
- Kaymaz, Ç. K., Birinci, S., & Kızılkhan, Y. (2022). Sustainable development goals assessment of Erzurum province with SWOT-AHP analysis. *Environment, Development and Sustainability*, 24(3), 2986-3012. <https://doi.org/10.1007/s10668-021-01584-w>.
- Kaytez, F. (2022). Evaluation of priority strategies for the expansion of installed wind power capacity in Turkey using a fuzzy analytic network process analysis. *Renewable Energy*, 196, 1281-1293. <https://doi.org/10.1016/j.renene.2022.07.043>.
- Khan, A. U., & Ali, Y. (2020). Analytical hierarchy process (AHP) and analytic network process methods and their applications: a twenty year review from 2000-2019: AHP & ANP techniques and their applications: Twenty years review from 2000 to 2019. *International Journal of the Analytic Hierarchy Process*, 12(3). <https://doi.org/10.13033/IJAHP.V12I3.822>.
- Khojaste-Sarakhsi, M., Ghodspour, S. H., Fatemi Ghomi, S. M. T., & Dashtaki-Hesari, H. (2019). Energy efficiency of Iran buildings: a SWOT-ANP approach. *International Journal of Energy Sector Management*, 13(3), 726-746. <https://doi.org/10.1108/IJESM-07-2018-0011>.
- Khotimah, B. K., Irhamni, F., & Kustiyahningsih, Y. (2017, August). Integration fuzzy analytic network process (ANP) and SWOT business strategy for the development of small and medium enterprises (SME). In *AIP Conference Proceedings* (Vol. 1867, No. 1, p. 020055). AIP Publishing LLC. <https://doi.org/10.1063/1.4994458>.
- Lak, A., Gheitasi, M., & Timothy, D. J. (2020). Urban regeneration through heritage tourism: cultural policies and strategic management. *Journal of Tourism and Cultural Change*, 18(4), 386-403. <https://doi.org/10.1080/14766825.2019.1668002>.
- Li, C., Negnevitsky, M., & Wang, X. (2020). Prospective assessment of methanol vehicles in China using FANP-SWOT analysis. *Transport Policy*, 96, 60-75. <https://doi.org/10.1016/j.tranpol.2020.06.010>.
- Liu, G., Zheng, S., Xu, P., & Zhuang, T. (2018). An ANP-SWOT approach for ESCOs industry strategies in Chinese building sectors. *Renewable and sustainable energy reviews*, 93, 90-99. <https://doi.org/10.1016/j.rser.2018.03.090>.
- Mohammadi, N., Heidary Dahooie, J., & Khajevand, M. (2021). A hybrid approach for identifying and prioritizing critical success factors in technology transfer projects [case study: diesel locomotive manufacturing]. *Journal of Engineering, Design and Technology*. <https://doi.org/10.1108/JEDT-07-2021-0345>.
- Mohr, J., & Spekman, R. (1994). "Characteristics of Partnership Success: Partnership Attributes, Communication Behavior, and Conflict Resolution Techniques,". *Strategic Management Journal* 15(2), pp 135-152. <https://doi.org/10.1002/smj.4250150205>.
- Mosadeghrad, A. M., Jaafaripooyan, E., & Dehnavi, H. (2022). Critical success factors of hospitals: A qualitative study. *J. Iran. Inst. Health Sci. Res*, 21, 237-253. <https://doi.org/10.52547/payesh.21.3.237>.
- Namin, F. N., Askari, H. R., Ramesh, S., Hassani, S. M. M., Khanmohammadi, E., & Ebrahimi, H. (2019). Application of ANP network analysis process method in SWOT model. *Civil Engineering Journal*, 5(2), 458-465. <https://doi.org/10.28991/cej-2019-03091260>.
- Oktari, R. S., Latuamury, B., Idroes, R., Sofyan, H., & Munadi, K. (2023). Knowledge management strategy for managing disaster and the COVID-19 pandemic in Indonesia: SWOT analysis based on the analytic network process. *International Journal of Disaster Risk Reduction*, 85, 103503. <https://doi.org/10.1016/j.ijdrr.2022.103503>.
- Pongpimol, S., Badir, Y. F., Erik, B. L., & Sukhotu, V. (2020). A multi-criteria assessment of alternative sustainable solid waste management of flexible packaging. *Management of Environmental Quality: An International Journal*, 31(1), 201-222. <https://doi.org/10.1108/MEQ-11-2018-0197>.
- Porter, M.E. (1997). Competitive Strategy. *Measuring Business Excellence*, 1(2), 12-17. <http://dx.doi.org/10.1108/eb025476>.
- Quezada, L. E., Reinao, E. A., Palominos, P. I., & Oddershede, A. M. (2019). Measuring performance using SWOT analysis and balanced scorecard. *Procedia Manufacturing*, 39, 786-793. <https://doi.org/10.1016/j.promfg.2020.01.430>.
- Rockart, J. F. (1982). "The Changing Role of the Information Systems Executive: A Critical Success Factors Perspective,". *Sloan Management Review* 24(1), pp 3-13.
- Saaty, T. (1980). *The Analytic Hierarchy Process*. McGraw-Hill, New York.
- Saaty, T. (2012). Decision Making for Leaders: The Analytic Hierarchy Process for Decisions in a Complex World. *Third Revised Edition*. Pittsburgh: RWS Publications.
- Saaty, R. (2016). *Decision making in complex environments – the analytic network process for decision making with dependence and feedback: Vol. I*.
- Sanny, L., Simamora, B. H., Polla, J. R., & Atipa, J. L. (2018). Business strategy selection using SWOT analysis with ANP and fuzzy TOPSIS for improving competitive advantage. *Pertanika Journal of Social Sciences and Humanities*, 26(2), 1143-1158.
- Seetharaman, A., Sreenivasan, J., & Boon, L. P. (2006). "Critical Success Factors of Total Quality Management,". *Quality and Quantity* 40(5), pp 675-695. <https://doi.org/10.1007/s11135-005-1097-2>.
- Sevim, E., & Önder, E. (2020). Investigation of medical tourism in Turkey through SWOT-ANP. *Hacettepe Sağlık İdaresi Dergisi*, 23(4), 605-622.
- Shahanipour, S., Amindoust, A., Sahraian, K., & Beiranvand, S. (2020). Identification and prioritization of human resource strategies with employees' creativity approach in administrative organizations using SWOT-ANP. *Opsearch*, 57(1), 119-143. <https://doi.org/10.1007/s12597-019-00416-w>.
- Sobhani, P., Veisi, H., Esmaeilzadeh, H., Sadeghi, S. M. M., Marcu, M. V., & Wolf, I. D. (2022). Tracing the Impact Pathways of COVID-19 on Tourism and Developing Strategies for Resilience and Adaptation in Iran. *Sustainability*, 14(9), 5508. <https://doi.org/10.3390/su14095508>.
- Starr, M., Joshi, O., Will, R. E., & Zou, C. B. (2019). Perceptions regarding active management of the Cross-timbers forest resources of Oklahoma, Texas, and Kansas: A SWOT-ANP analysis. *Land Use Policy*, 81, 523-530. <https://doi.org/10.1016/j.landusepol.2018.11.004>.
- Tu, C. Z., Yuan, Y., Archer, N., & Connelly, C. E. (2018). Strategic value alignment for information security management: A critical success factor analysis. *Information & Computer Security*, 26(2), 150-170. <https://doi.org/10.1108/ICS-06-2017-0042>.
- Vedder, J. N. (1992). "How Much Can We Learn from Success?" *The Executive* 6(1), pp 56-66. <https://doi.org/10.2307/4165051>.
- Voronova, I., Shatrevich, V., Gavrillovs, M., & Skvarciany, V. (2018, September). Prioritising competitive strategies based on the ANP approach: a case of the Latvian telecommunication company. In *10th International Scientific Conference, Business and Management 2018*". <https://doi.org/10.3846/bm.2018.10>
- Wahyono, A., Brilliantina, A., & Novitasari, E. K. (2020). SWOT and Analytical Network Process (ANP) Analysis for Robusta Coffee Bean Development Strategy in Panti District, Jember Regency. In *IOP Conference Series: Earth and Environmental Science* (Vol. 411, No. 1, p. 012019). IOP Publishing. <https://doi.org/10.1088/1755-1315/411/1/012019>.
- Wang, B., Pei, X. Q., Zhang, Y. J., Hou, Y. B., & Hu, G. P. (2021). Small step, great rewards: rethinking mining sustainability from old perspectives to new frames. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 1-16. <https://doi.org/10.1080/15567036.2021.1977429>
- Wheelen, T. L., Hunger, J. D., Hoffman, A. N., & Bamford, C. E. (2015). *Concepts Instructor's Manual*.

- Wibowo, N., Piton, J. K., Nurcahyo, R., Gabriel, D. S., Farizal, F., & Madsuha, A. F. (2021). Strategies for improving the e-waste management supply chain sustainability in Indonesia [Jakarta]. *Sustainability*, 13(24), 13955. <https://doi.org/10.3390/su132413955>
- Yontar, E., & Derse, O. (2022). Evaluation of sustainable energy action plan strategies with a SWOT/TWOS-based AHP/ANP approach: a case study. *Environment, Development and Sustainability*, 25, 5691–5715. <https://doi.org/10.1007/s10668-022-02804-7>
- Yüksel, I. (2012). An integrated approach with group decision-making for strategy selection in SWOT analysis. *International Journal of Academic Research in Business and Social Sciences*, 2(11), 134.
- Zakeri, S., Yang, Y., & Hashemi, M. (2019). Grey strategies interaction model. *Journal of strategy and management*, 12(1), 30-60. <https://doi.org/10.1108/JSMA-06-2018-0055>
- Zarei, M., Fatemi, S. M. R., Mortazavi, M. S., Pour Ebrahim, S. H., & Ghoddousi, J. (2020). Strategic planning for optimal development of aquaculture in coastal areas of Qeshm Island. *Iranian Journal of Fisheries Sciences*, 19(4), 1728-1748.
- Zhang, Z., & Paudel, K. P. (2021). Small-Scale Forest Cooperative Management of the Grain for Green Program in Xinjiang, China: A SWOT-ANP Analysis. *Small-Scale Forestry*, 20(2), 221-233. <https://doi.org/10.1007/s11842-020-09465-2>
- Zhang, Z., & Rao, W. (2021). Key Risks and Development Strategies for China's High-End Medical Equipment Innovations. *Risk Management and Healthcare Policy*, 3037-3056. <https://doi.org/10.2147/RMHP.S306907>
- Živković, Ž., Nikolić, Đ., Đorđević, P., Mihajlović, I., & Savić, M. (2015). Analytical network process in the framework of SWOT analysis for strategic decision making [Case study: Technical faculty in Bor, University of Belgrade, Serbia]. *Acta Polytechnica Hungarica*, 12(7), 199-216. <https://doi.org/10.12700/APH.12.7.2015.7.12>

Behavioral Beliefs about Acts of Academic Dishonesty: A study with Brazilian accounting students

Jonatas Dutra Sallaberry* Professor, Department of Accounting Sciences, Federal University of Parana, Curitiba, Brazil.
jonatas.sallaberry@ufpr.brEdicreia Andrade dos Santos Professor, Department of Accounting Sciences, Federal University of Parana, Curitiba, Brazil.
edicreiaandrade@yahoo.com.brLeonardo Flach Professor, Department of accounting, Federal University of Santa Catarina, Florianópolis, Brazil.
leonardo.flach@gmail.com

Abstract

This study seeks to identify, with the support of the Theory of Planned Behavior (TPB), individual behavioral beliefs that determine academic dishonesty behaviors. Qualitative research was conducted with Brazilian students and revealed their perceptions on academic dishonesty behaviors. According to the results, students perceive that fraud can lead to a better academic performance and less effort or time spent on academic tasks, but it can also result in punishment and embarrassment when it's perceived by faculty, as well as impair learning and concerns about their future professional performance. The research contributes to the construction of an instrument for collecting and measuring beliefs, which can be considered as a relevant contribution to the literature and to understanding fraudulent behaviors.

Keywords: academic fraud; dishonest behavior; students.

Creencias conductuales sobre actos de deshonestidad académica: un estudio con estudiantes brasileños de contabilidad

Resumen

Este estudio buscó identificar, bajo el apoyo de la Teoría del Comportamiento Planificado, las creencias conductuales individuales que determinan las conductas de deshonestidad académica. Se realizó una investigación cualitativa, con estudiantes brasileños. Entre los resultados se observó que los estudiantes perciben que el fraude académico puede resultar mejor rendimiento académico, menor esfuerzo y tiempo a las tareas académicas. Sin embargo, también se dan cuenta de que puede resultar en punición y vergüenza cuando es percibido por la facultad, además de perjudicar el aprendizaje y el desempeño profesional futuro. La investigación contribuye en la construcción de un instrumento de recolección y medición de creencias, lo que puede ser considerado como un aporte relevante para literatura y comprensión de las conductas fraudulentas.

Palabras clave: fraude académico; comportamientos deshonestos; estudiantes.

Creanças comportamentais sobre atos de desonestidade acadêmica: um estudo com estudantes brasileiros de contabilidade

Resumo

Este estudo buscou identificar, sob o apoio da teoria do comportamento planejado, as creanças comportamentais individuais que determinam os comportamentos de desonestidade acadêmica. Foi realizada uma pesquisa qualitativa com estudantes brasileiros. Dentre os resultados, observou-se que os estudantes percebem que a fraude acadêmica pode resultar em melhor desempenho acadêmico, menor esforço e tempo gasto em tarefas acadêmicas. Porém, também percebem que isso pode resultar em punições e sanção social quando for identificado pela faculdade, além de prejudicar o aprendizado e o desempenho profissional futuro. A pesquisa contribui para a construção de um instrumento de coleta e mensuração de creanças, que pode ser considerado uma contribuição relevante para a literatura e compreensão do comportamento fraudulento.

Palavras-chave: fraude acadêmica; comportamentos desonestos; alunos.

* Corresponding author.

JEL classification: A22; M49; M53

How to cite: Dutra Sallaberry, J., Andrade dos Santos, E. & Flach, L. (2023). Behavioral Beliefs about Acts of Academic Dishonesty: A study with Brazilian accounting students. *Estudios Gerenciales*, 39(168), 357-367. <https://doi.org/10.18046/j.estger.2023.167.5925>

DOI: <https://doi.org/10.18046/j.estger.2023.167.5925>

Received: 13-01-2023

Accepted: 26-05-2023

Available on line: 30-09-2023

1. Introduction

Within the academic context, academic dishonesty—which contemplates fraud as one of its modalities (Sousa et al., 2016)—is a major concern for individuals' education in diverse fields of knowledge (Maranhão et al., 2017), both nationally and internationally (Gama et al., 2013; Sohrabi et al., 2018). Fraud, in general, is characterized as an act of bad faith with the intention to lure someone (Michaelis, 2020), or as a harmful deed that causes malice (Priberam, 2020).

In higher education, fraudulent practices are synonymous: deceiving and falsifying information to circumvent mechanisms for evaluating individual and collective production (Fróes, & Silva, 2021). According to the literature, there are several types of fraudulent practices in the academic world, such as the electronic commerce of works, where monographs are sold and purchased; plagiarism, which involves copying ideas without giving proper credit to the author; collaboration in activities designed to be developed individually; taking credit or profit from work done by others; falsification of sentences and paragraphs by authors of books and/or articles; and cheating in tests, which can be committed with or without the permission of other colleagues (Fróes, & Silva, 2021).

Several studies have been conducted to discuss and understand more about fraudulent practices in higher education institutions (Sentleng & King, 2012; Lin, 2013; Maranhão et al., 2017). Sentleng and King (2012) verified the level of awareness of students who committed it and found that 41% of a total sample of 139 respondents believed that plagiarism is a very serious issue, but it is still commonly practiced. They also found that 71.9% of students admitted using the internet to compile their assignments. Lin (2013) identified three factors related to fraud: lack of severe punishment in the evaluation system, excessive pursuit of personal profits, and lack of scientific ethics. On the other hand, Maranhão et al. (2017) focused on a critical reflection on the real meanings of the persistence of fraud in higher education institutions: they highlighted that academic fraud indicates that something is wrong with the education provided by universities and that only pedagogical changes can transform the education path in a capitalist society.

In this regard, it is necessary to understand what leads people to dishonest behaviors, such as academic fraud. Identifying the context where it takes place is the first step in taking actions to curb these behaviors. Consequently, understanding what students think about displaying this type of behavior, whether themselves and/or others, can change this context (Sanchez & Innarelli, 2012). To deepen the understanding of that issue, this study proposes a better comprehension of students' behavioral beliefs related to academic dishonesty. Students who display dishonest behaviors diminish their education and knowledge, and by doing so, they can

even normalize it as an adequate behavior to continue practicing in their professional lives.

The Theory of Planned Behavior (TPB), which has been validated for different types of behavior, was developed to include attitude beliefs, normative beliefs, and control beliefs as determinants (Ajzen, 2020). However, TPB's operability in measuring the explanatory capacity or propensity to commit academic fraud, lacks a more detailed investigation of the subcategories of individualized beliefs. Therefore, this study seeks to answer the following question: what behavioral beliefs influence dishonest academic behaviors? Faced with this question, this research, based on the TPB, aims to identify individuals' behavioral beliefs that determine academic dishonest behaviors, such as fraud.

Knowing and understanding the determinants of fraudulent behaviors is crucial to prevent it. Moreover, this knowledge can improve the teaching-learning process in various higher education courses, especially in accounting. Since the latter is a training tangent to all business areas and involves managing other people's assets, this misbehavior can harm many people and companies. Hence, it is essential that these behaviors are known and fought.

Based on TPB (Ajzen, 2017), a detailed identification of behavioral beliefs contributes to the construction of a data collection instrument on behavioral perceptions of academic fraud, which has not yet been found in developing countries. The existence of internally validated collection instruments, according to the theory, presupposes the possibility of collecting, measuring, and predicting the behavior of groups of individuals.

By this means, this study aims to contribute to the discussion on students' commitment to their education, courses, and educational institution, as well as to their colleagues, especially, with themselves, since choosing academic dishonesty implies giving up on learning. Although academic dishonesty is understood as a minor form of deviant conduct, it remains a major concern for those responsible for the educational system. This behavior can compromise the evaluation process and negatively affect the entire pedagogical activity of teachers, especially by preventing an objective analysis of the effectiveness of their pedagogical practices (Fonseca, 2009).

2. Theoretical Review

2.1 Academic Dishonesty

Academic dishonesty is defined as a set of inappropriate and/or dishonest behaviors displayed by individuals and includes different types of fraudulent practices (Silva et al., 2022). Therefore, academic dishonesty can be influenced by several aspects related to behavior, and by variables that precede such an act.

Fraud applied to the academic context, one of the examples of academic dishonesty behavior, is commonly

known as cheating, fishing or queuing (Pimenta & Pimenta, 2016). More specifically, academic fraud could be copying answers in assessments, copying full or partial excerpts during writing (without proper referencing), trading academic papers (Maranhão et al., 2017) among other examples.

From a wider perspective of academic fraud, Sousa et al. (2016) list thirteen modalities: (i) cheating in active attitude; (ii) cheating in a passive attitude; (iii) plagiarism; (iv) data tampering or invention; (v) multiple submissions; (vi) deception and tampering; (vii) forge group membership; (viii) group work with segmented realization; (ix) dishonesty for unauthorized computer access; (x) concealment; (xi) lying and manipulation; (xii) double standards (case-by-case application of certain rules for one's own benefit); and (xiii) selfish use of academic material. Among these categories, it is possible to highlight four as the most common: deception and adulteration are the alteration of signatures and spellings in works; the forge of group participation or partial group work; the tampering or invention of research data and dissimulation, explained as the lack of notice when something benefits the student, for example, the submission by the teacher of a grade that is higher than the properly grade (Sousa et al., 2016).

There are many types of dishonest academic practices, and many reasons and/or factors that motivate students to undertake them or to get involved. For instance, the difficulty of certain subjects, intense competition for the best classifications, need for professional success, lack of time to prepare the subjects, cynicism, lack of self-organization, great sensitivity to criticism, and pressure from colleagues or adults, among others (Fonseca, 2009). In addition to the described items, Fonseca (2009) highlights that there are other factors referred to the family (attachment to parents, supervision), the school and/or university (school pedagogical orientation, relationship with teachers, school ethos), and the community level (work, cultural resources).

Due to this context, several efforts have been made to intervene and mitigate these situations in the academic environment. Examples include programs that focus on the distribution of students into small classes, on greater involvement of students in school activities during classes, on student participation in defining clear policies regarding academic dishonesty, on closer monitoring and surveillance by teachers and school/university authorities, or the use of more appropriate teaching and classroom management techniques, and awareness-raising actions (Fonseca, 2009). In addition to these examples, there are others related to exams/activities implementing alternatives to reduce dishonest practices (Fonseca, 2009), and seeking to understand the profile of students who are more prone to them to verify what are the beliefs (behavioral, normative, and control) that most affect this type of behavior.

2.2 Behavioral Beliefs

From the assumptions that beliefs are the cognitive bases of attitudes and behavioral intentions, Fishbein and Ajzen (1975) developed a model to predict human behavior (Behavioral Intentions Model), known as the Theory of Rational Action (TRA) (Santos & Almeida, 2018; Santos et al., 2018; Ajzen, 2020; Santos et al., 2021). After the completion of several studies on TRA, it evolved to TPB (Ajzen, 1991), also having behavioral, normative, and control beliefs as the focus of study. According to TRA and TPB, to predict the specific intentions to act (for example, buy or use a product, take action), precede the behaviors and are associated with the probability of showing them, rather than just knowing someone's attitudes and beliefs (Ajzen, 2020).

TRA indicates that the individual inclined to take a certain action may abstain if she/he decides so, indicating that keeping a behavioral pattern is due to a function of behavioral intentions. Intentions are determined by the attitude towards behavior and subjective norms, that is, the individual is able to assess the available information and, therefore, act as a rational being (Santos et al., 2018). The TPB was based on the inclusion of a third variable in the model proposed by the TRA, which is the perceived behavioral control, described as the individual's perception of their ability to perform a certain task (Ajzen, 2020). TPB proved to be able to provide a better understanding of the determinants of behavior and appears as a better capacity of the individual to design interventions at different social levels. Ajzen and Kruglanski (2019) cite the change in habits and/or beliefs related to health, traffic congestion and the fight against terrorism. Recent research has also applied the concept of TPB in relation to the influence of religious beliefs on entrepreneurial intention, the influence of using communication applications while driving, and segregate waste at home (Qu et al., 2020).

In summary, TPB—as well as other theories that predict human behavior—is focused on behavioral intention because it precedes real behavior. It has three variables and their respective beliefs (Ajzen, 2002; Santos et al., 2018; Ajzen, 2020), namely: (i) attitude, based on beliefs in likely consequences of a behavior (behavioral beliefs), (ii) subjective norms, based on beliefs in the normative expectations of others (normative beliefs), and (iii) perceived behavioral control, which is supported by beliefs about factors that can prevent or facilitate displaying a behavior (control beliefs). For Ajzen (2002), behavioral beliefs produce favorable or unfavorable attitude towards behavior; normative beliefs result in noticeable social pressure or subjective norms; and control beliefs can facilitate or prevent to display a behavior. Therefore, the more favorable the attitude and the subjective norms and the greater the perceived

control, the greater the personal intention to display the behavior (Ajzen, 2020).

Ajzen (2002) argues that to modify an individual's behavior, interventions can be targeted at one or more of its three determining variables. Consequently, new behavioral intentions can be produced and converted into real behavior, as long as individuals have real control over it (Ajzen, 2002). Thus, it is healthy to know which are the most salient beliefs in the individual's memory, so their strength and valence can be measured. Studies applying TRA and TPB have been conducted internationally and nationally to explain and predict the social behavior of individuals in society and within universities and/or higher education. As an example of general behaviors, there is the evaluation of beliefs and attitudes towards moderate consumption of alcoholic beverages (Murgraff et al., 2001) and the evaluation of consumers' intention to buy eco-friendly products (Kalafatis et al., 1999). As for the behavior of students, the intention of those graduating from accounting courses is to pursue a career in the accounting area (Santos & Almeida, 2018); factors that influence the behavioral intention of accounting students (Santos et al., 2018); effects of personality traits on the entrepreneurial intentions of graduate students from accounting courses (Santos et al., 2021); in addition to dishonest behavior and the intention to violate academic integrity (Cronan et al., 2018), and self-control combined with behavioral control perceived as predictors of plagiarism (Curtis et al., 2018).

3. Materials and Methods

The research adopted a qualitative approach, which is the most suitable for identifying and recognizing individual beliefs based on in-depth interviews and the categorization of Ajzen (2017), and according to the strategy of Winckler et al. (2022). The interviews refer to the data collection stage while the content analysis refers to the data analysis stage.

3.1 Sample selection

This descriptive research, with a qualitative approach, was carried out by applying a questionnaire. The research population consisted of undergraduate students from the accounting course of two federal universities from Brazil located in Paraná and Santa Catarina, duly enrolled in 2020, and whose Latin culture is attributed a higher incidence of school misbehavior (Chang et al., 2021).

Students of accounting courses prove to be a relevant sample because their training is linked to the business environment, where commercial practices effectively take place and can be concealed. This is why there are many financial incentives for unethical or illegal practices, as is the case of money laundering crimes (Sá & Hoog, 2015). In addition to the exposure and risk

to criminal conduct, accounting activity is considered critical due to its responsibility to demonstrate the economic, financial, and patrimonial position of all public and private companies to society and the State, with emphasis on financial markets open to all citizens (Ramos et al., 2018).

To the detriment of the importance of accounting activity for society and its susceptibility to unethical practices, evidence from the literature demonstrates that students of accounting sciences in Brazil receive little training on unethical practices in academic banks (Lubas et al., 2021). Evidence from the accounting profession in Brazil reinforces concerns about the ethical behavior of accounting students, as after assuming professional functions, few report the existence of suspected illicit practices (Sallaberry & Flach, 2021).

For sample selection, students from the 5th and 6th semesters of the course were chosen; they know the culture of the environment but will still have time to perceive other relevant influences during the course. It was important to merge students from these two institutions because the ethics course in one institution is taught at the beginning of the curriculum and in the other it is at the end of academic training. We intend to reach students with different understandings of ethics in business, and naturally in academic behavior. For students at the university in Santa Catarina, data were collected through structured and presential questionnaires.

Twelve out of 35 students delivered the completed questionnaire, and from Paraná, 16 students answered the questionnaire until reaching the saturation of responses, when the answers of an individual do not add new dimensions. Thus, the sample consisted of 28 responses, the researchers considered it sufficient to obtain a diversity of beliefs in the environment of federal educational institutions and in courses in the business area, and not necessarily identify which are more or less recurrent.

3.2 Research Instrument

The applied research instrument was elaborated from four variables previously established for analysis categories (attitude, subjective norms, controls, and definition) due to the perspectives established in the theoretical lens of the TPB (Ajzen & Kruglanski, 2019). The instrument sought to capture the characteristics of respondents for subjective sampling control and the elements of behavioral beliefs that determine academic dishonesty behaviors.

This data collection strategy allows obtaining data through broader narratives to illustrate the context of research objects. Such in-depth interviews with a semi-structured script allow exploring more options, alternatives, and perceptions based on personal representations of definitions, beliefs, perspectives and expectations (Jehn & Jonsen, 2010).

According to the Ajzen protocol (2017), three questions were established for each of the three explanatory variables (attitude, subjective norms, and controls) and the definitions of the behavior under analysis to control the bias of understanding the issue, necessary to validate the instrument. Before applying the research instrument, the protocol and the reference instrument were translated into the local language, with validation by back-translation procedure (Brislin, 1980) and analysis by two teaching experts, in addition to a pre-test with three students for external validation of the instrument (Yin, 2017).

Thus, accounting undergraduate students were interviewed about the perceptions of their behavioral determinants, assigning symbols of positive, negative, and diverse perceptions to them. The interviewees were asked to respond with immediate thoughts and restricted to personal opinions, whose statements are established in Table 1.

3.3 Data analysis procedures

The content analysis technique allows a phenomenological perspective for the collection and interpretative analysis of data (Bardin, 2016). The application of the method presupposes the organization, categorization, and systematization procedures of the findings for disclosing the results.

After obtaining the interview data, the answers were digitized to facilitate handling and location of data; for the analysis, procedures of the content analysis technique

were followed (Bardin, 2016). It was performed according to the three steps recommended by Bardin (2016), which comprehend pre-analysis, followed by exploration of the material, and, the treatment of results.

In the pre-analysis stage, the answers to each question were evaluated as to their relevance in the definition of that category (Context, Attitude, Subjective Norm, and Controls), and exclusion or reallocation when not relevant. In the categorization process, under the premise of deriving from a single classification principle, the set of categories must be exhaustive and mutually exclusive (Bardin, 2016) in the sets of beliefs.

In the material exploration stage, the identification of the codification, extraction and classification of beliefs is carried out. This analysis of the interviews yielded the subcategories that make up beliefs about perceptions of results, referents and related factors, by codifications developed from the responses.

The content analysis of the responses to the instrument results in lists of salient modal results, referring to the various relevant positive and negative aspects. Next, the categorical comparison analysis examines the identified definitions and typologies (Jehn & Jonsen, 2010).

To this purpose, we used the categorizations previously raised in the literature review presented in Table 2.

Reading and organizing the data, a pre-analysis step made the analysis and knowledge of the text possible, according to the guidelines in Table 2. In the sequence, the material was coded according to the highlighted categories, and then, the findings and interpretations obtained in the analyses were outlined.

Table 1. Research instrument

Variable	Item
Definition (Ajzen, 2017)	Do you know the concepts of misbehavior in the academic environment, such as plagiarism, as well as other behaviors, properly distinguishing between fraudulent behavior, unethical attitude, and normal behavior.
Attitude (Ajzen, 2017)	For you, what are the advantages of cheating (e.g., cheating, plagiarism) in the academic setting?
	For you, what are the disadvantages of cheating (e.g., cheating, plagiarism) in the academic setting?
	What else comes to mind when you think of misbehavior (e.g., plagiarism) in the academic environment?
Subjective Norms (Ajzen, 2017)	List the individuals or groups who would approve or think you should cheat in an academic setting (e.g., cheating, plagiarism).
	List individuals or groups who disapprove or think you should not cheat in an academic setting (e.g., cheating, plagiarism).
	Sometimes, when we're not sure what to do, we look to see what others are doing. Please list individuals or groups of students who were misbehavior in the academic environment (e.g., plagiarism).
	List individuals or groups of students who are likely to commit cheating in the academic environment (e.g., cheating, plagiarism).
Controls (Ajzen, 2017)	List any factor or circumstance that facilitate or allow you to commit misbehavior in the academic environment (e.g., plagiarism).
	List any factor or circumstance that would make it difficult or impossible for you to misbehavior in the academic environment (e.g., plagiarism).

Source: own elaboration.

Table 2. Elements of Categorization/Content Analysis.

Category	Subcategory	Definition	Codes
Definition	-	Do you know the concepts of misbehavior in the academic environment, such as cheating, plagiarism, as well as other behaviors	Fraudulent behavior, unethical attitude, normal behavior
Behavioral Beliefs Concept			
Attitude	Advantages	Elements that constitute advantages or benefits resulting from the practice of the behavior	Status, performance, time
	Disadvantages	Elements that constitute disadvantages or problems resulting from the practice of the behavior	Punishments, social criticism
Normative Beliefs Concept			
Subjective Norms	Approval	Affective, professional, relational category or degree of kinship of individuals who would practice, value or encourage displaying or knowing that you you behaved in a certain way	People, Groups
	Disapproval	Affective, professional, relational category or degree of kinship of individuals who would not show, discourage or get frustrated when showing or if they knew that you behaved in a certain way.	Roles, Relationships
Control Beliefs Concept			
Controls	Positive	Represent factors or circumstances that facilitate, allow or enable the possibility of the individual to display a certain behavior	Environment, Pressures
	Negative	Represent factors or circumstances that hinder or limit the ability of the individual to display a certain behavior	Controls, Mechanisms

Source: own elaboration.

4. Data Analysis and Discussion

The analysis had as a starting point the evaluation of the respondents' perception of the concepts and typologies, which mostly highlighted the recognition of concepts related to dishonest academic behavior, such as cheating and plagiarism, distinguishing them from unethical attitudes and normally approved behaviors. They also recognized that academic fraud would include actions of improperly copying answers in the tests, copying work from colleagues and the internet, as well as circumventing pre-established recommendations and norms. Thus, starting from the research objective, delimited from the point of view of TPB, the categories were established as attitude beliefs, normative beliefs and control beliefs (Ajzen, 1991), then, divided into positive or favorable behavior, and negative or unfavorable behavior, following the protocol established by Ajzen (2017).

4.1 Attitude Beliefs

Attitude beliefs link behavior to results (Ajzen, 1991). This belief represents the subjective probability of an outcome or experience; therefore, a favorable or unfavorable feeling towards showing the expected behavior (Ajzen, 2011). Beliefs about the possible outcomes of behavior and assessments about the expected scenario are called attitude or behavioral beliefs (Chang et al., 2017), inducing behavior in class (Bru et al., 2002).

Ajzen (1991) highlights that although people have many behavioral beliefs, only a few are readily accessible

at any time. The latter, integrated into the assessment of each outcome or experience, contribute to the attitude in direct proportion to the subjective probability that the behavior produces an outcome or experience (Ajzen, 2020).

The attitude about a behavior represents how much showing a behavior is valued positively or negatively, how much someone agree or disagree with a certain behavior (Tarjo et al., 2019). To measure an attitude regarding a complaint, it is necessary to measure the individual assessment of the potential results of showing a dishonest behavior. For example, the plagiarism of an academic work may result in the failure of a subject, or plagiarism would be the only alternative for submitting a work in a set deadline. In both cases, confidence in the result, weighed by the relevance of that result, will determine the behavior, at least in the dimension of attitude beliefs.

The analysis demanded questioning the expected results for the academic fraud behavior. The questions classified respondents into the subcategories of analysis of favorable and unfavorable results, detailed in Table 3.

Table 3. Expected results by behavior.

Favorable	Unfavorable
Grade increase / Higher performance	Lack of learning
Facility to accomplish obligations or reducing efforts	Being caught
Agility to accomplish obligations	Social rejection (from peers)
Higher status	Punishment

Source: own elaboration.

Committing fraud leads to unfavorable results for the author, but under the utilitarian aspect, it also allows understanding favorable results. Among these, understanding that displaying a fraudulent behavior can result in greater academic performance in terms of the evaluation result, i.e., the grade. This reinforces the belief that students do not recognize the importance of course content for their lives (Johnson et al., 2019).

In addition, respondents indicated that such behavior also has the advantage of reducing effort and time spent in performing academic tasks, as highlighted in the following responses from the respondent E10: "Gain time. Being able to do other activities that are judged to be of greater importance instead of studying for a particular subject" and respondent E27: "By copying or pasting, the person considerably reduces the 'work' [effort] to complete [the task]". These findings in the sample confirm what Kapoor et al. (2022) reported: the lack of time management generates the need for gain sometimes by adopting inappropriate behaviors.

The possibility that this behavior is commonplace or widespread among students is highlighted, as some answers indicate that fraudulent behavior implies greater status. The appreciation of dishonest behavior among students' attitudes can be explained by Menon and Sharland (2011) as a behavioral trait related to narcissism, as it favors personal gains (Campbell et al., 2005). This consideration is problematic for students, especially for those who will work in the business area in the future, where there are significant financial incentives for unethical professional practices (Sallaberry & Flach, 2022).

Students also indicated negative perceptions of academic fraud, whose emphasis is on the lack of learning resulting from the use of methods that replace the study with discreditable alternatives. These perceptions are illustrated in the responses of respondents E14 "For example, not actually learning the content needed to take a test" and respondent E23 "This reflects that the student is not dedicated to studies, therefore, he will not learn anything".

In addition to these consequences implicit to the individual, which can harm them throughout their professional practice, respondents are also concerned with explicit consequences to their social group. Respondents highlighted the possible punitive consequence that can result in academic disapproval and also embarrassment in front of colleagues, which can generate rejection by these peers. From the perspective of the TPB, which indicates that behaviors are determined by their beliefs about the outcome, it is important that positive or favorable beliefs about the results of ethical behavior are discouraged by teachers and the school, while unfavorable beliefs to such behavior are widely reinforced to make the environment more inclusive, and to reduce academic misbehavior.

4.2 Subjective Norms

Normative beliefs represent the expectations perceived by the individual from important reference groups about a given behavior (Ajzen, 1991). In summary, the individual's behavior also depends on the process of identifying and internalizing the opinions of people that, to a given individual, are considered important (Lewis et al., 2014). These beliefs presuppose that the perceptions of referents—in combination with the motivation of this individual to meet people's expectations—determine the prevailing subjective norms. This motivation to meet expectations determines the subjective norms in direct proportion to the expectation of the reference person contributing to displaying a behavior or not (Ajzen & Kruglanski, 2019).

Subjective norms can also be considered social pressure to show a behavior (Park & Blenkinsopp, 2009). They represent the strength and importance of the interest in being accepted by the reference group (Tarjo et al., 2019). The subjective norms represent the strength of the normative belief weighed by the motivation to comply with the referents, measured by the aggregation of the calculated products.

Individuals trust important family members and community members (Trongmateerut & Sweeney, 2013). Moan and Rise (2006) examined three types of normative influences, namely injunctive norms (social approval and disapproval of other individuals' behavior), descriptive norms (behavior that others are displaying) and moral norms (behavior considered right or wrong).

The academic environment also has its cultures, social and administrative structures. In the academic activity, professors, technicians, and managers influence the daily perceptions of students and other people who share the living environment, especially for behaviors displayed in this environment. Therefore, the students were asked about the reference people who could influence their perceptions, addressing the subcategories of approval or rejection of this behavior, as detailed in Table 4.

Table 4. Relevant references for behavior.

Approval	Rejection
Peers (University Colleagues)	Parents (family)
Friends	Professors
	Peers (University Colleagues)
	Friends

Source: own elaboration.

Fraud behavior tends to be shown individually, in secret, due to the characteristics of social disapproval; although Bru et al. (2002) indicate that the way the teacher manages the class influences their bad behavior. Still, the students indicated that such behavior can be approved by university colleagues and friends.

Unlike Vallade and Kaufmann (2021), students did not report the teacher's bad behavior as a motivator of dishonest behavior. Respondents highlighted a larger group of individuals who could reject such behavior: family, professors, colleagues and friends predominated, as reported by respondent E15: "Professors, family, friends, college and work colleagues", partially corroborating what Bru et al. (2002) report, restricted to family members or external agents in the academic environment (Johnson et al., 2019).

The TPB as a theoretical lens for analyzing this group of beliefs reveals the fight against academic dishonesty as a very big challenge. The individual tends to behave according to the behavior of people relevant to him or what they encourage (Ajzen, 1991), and in the case of students, their closest referents are those in their academic environment, therefore, an unethical example can contaminate an entire group. In another way of thinking, this confrontation could be facilitated as these friends and colleagues also receive positive feedback on ethical conduct not only in academia, but in society.

4.3 Perceived behavioral controls

Control beliefs represent the perception of factors that can facilitate or prevent a behavior from showing up (Santos & Almeida, 2018). Perceived behavioral control refers to people's perception of their ability to display a certain behavior, regulating the influence on it (Chiu, 2003).

The control belief represents the aggregate product of the strength of the control belief weighted by the perceived intensity of control (Ajzen, 1991). To the extent that this belief is an accurate reflection of actual behavioral control, perceived behavioral control can, along with intention, be used to explain a behavior (Santos & Almeida, 2018).

For Ajzen (2020), displaying a behavior depends on a sufficient level of behavioral control, which also implies in the behavior's volitional (of your personal interest). Actual behavioral control represents the individual's availability of skills, resources, and other prerequisites necessary to display the behavior. Perceived behavioral control is seen as a proxy for real control, moderating the effect of intention, with a favorable intention leading to a behavior when perceived behavioral control is strong (Ajzen, 2011).

Academic activities, as they result from the learning assessment process, can generate their own perceptions on the control mechanisms. Following the theoretical proposition (Ajzen, 1991), respondents were asked about their beliefs about categories of control, the subcategories of facilitation, and limitation of fraudulent behavior. Results are detailed in Table 5.

The results of the interviews with students revealed a greater number of indications in the subcategory of facilitating controls. Among the facilitating beliefs, mainly situations in the academic environment that would

motivate individuals are observed, such as boring or outdated teaching sessions, excessive academic papers, complex or short-term tasks. These elements were previously reported by Bru et al. (2002), in addition to the availability of copies of previous activities, exemplified by respondent E19 who speaks about motivators for "many works requested in the course, lack of understanding of teachers to request specific work and not just 'complete' the workload".

Table 5. Control Beliefs.

Facilitation	Limitation
Lack of time	Surveillance in evaluations / Inspection
Inappropriate classes (boring, outdated)	Well taught content/ classes
Personal problems	Dynamic classes
Work overload	Strict punishments
Academic overload (too many tasks, complex tasks, short deadline)	Updated ratings
Emotional Pressure	Conscience
Information sharing, previous tests	

Source: own elaboration.

However, some of the facilitating factors are inherent to the individual's non-academic context, such as lack of time, personal problems, professional overload and emotional pressure, as described by respondent E04 "Professional overload, complex subject content or subject not so well taught, sloppiness in relation to studies for personal reasons". These indications reinforce environmental factors that, but since they not require inappropriate behavior, affirm pressures that lead to academic misconduct (Kapoor et al., 2022).

Academic frauds would limit the perception of moral conscience in addition to academic control mechanisms. Among the latter, the quality of explanation in classes was described, which reinforces moral conscience and a reduction in the need to take more aggressive action, such as academic fraud. In addition, supervision in assessments, innovative and up-to-date tasks, and strict punishments exert a negative influence on fraudulent behavior, as described by respondent E14 who indicates the cause as "increased supervision; more interesting classes; better professors" and E24 which attributes the negative effect to "Updating the teaching material and assessments". These contributing factors for poor academic behavior are partially similar to results in other cultures, such as Asia (Jian et al., 2020).

Control beliefs from the perspective of the theory of planned behavior, as a set of factors that facilitate or hinder behavior (Ajzen, 1991), in this case of academic dishonesty, are constantly changing due to the evolution of the individual's perception of the social context or even emerging technologies. In this scenario, the ability of professors to continually reinforce the mechanisms to detect academic fraud is relevant, whether through

an environmental culture ethical and pressure-free, technological resources, or the application of different teaching and assessment strategies, as facilitation to the user in general are constantly evolving, even facilitating academic misconduct.

5. Conclusions and Recommendations

The research sought to identify the behavioral beliefs of individuals that determine academic dishonesty behaviors, such as academic fraud, within the framework of the TPB. Knowing and understanding the determinants of fraudulent behavior helps to prevent it and to improve the teaching-learning process in different higher education courses, especially in accounting. However, the theoretical proposition lacked in the development and explanation of behaviors, thus creating a gap that is now filled by the results of this research, which contribute to greater integrity in the academic environment.

The research adopted belief categories from the TPB—attitude, normative and control beliefs—following the protocol established in the literature (Ajzen, 2017). The analysis of the respondents' answers allowed us to record these beliefs based on an individual's sense of appreciation, which was detailed in the analysis process. Identifying and recognizing them can help teachers promote knowledge and reflections to build an ethical conscience in their students, who are also future business professionals and, in the Brazilian context, are subject to significant financial incentives for practicing unethical behaviors.

The interviewees classified the attitudinal beliefs that represent the results or experiences of a certain behavior as favorable or unfavorable. Undoubtedly, individuals perceive that academic fraud has positive results, for instance, better academic performance and less effort or time spent. However, students also recognize that it can result in punishment and embarrassment when professors find out, in addition to impaired learning, which poses many risks to their future professional performance.

Exposure to other individuals and their beliefs also affect the possibility of participating in fraudulent acts within the academic environment. These normative beliefs represent the expectations of reference groups for a behavior. Corroborating with the findings of Santos and Almeida (2018), family and friends are often considered relevant and influential to a behavior that may be highlighted, while the academic environment has its own set of referents in its structure, such as professors, advisors and colleagues. Only part of these colleagues could be considered positive referents, while the others were considered as disapproving the fraudulent act.

Finally, from the perspective of TPB, control beliefs represent mechanisms and conditions that can either facilitate or prevent the result of a behavior (Ajzen, 1991). In this research, they were referred to as aspects of

the teaching-learning process and the development of pedagogical strategies, which persuade the practices of academic dishonesty or not. Various factors were found to facilitate or encourage fraudulent behavior, including excessive academic work, complex topics or deadlines, boring or outdated classes, lack of time, professional overload, and emotional pressure. In contrast, greater supervision in evaluations, innovative and updated tasks, as well as strict punishments, exerted negative influences on fraudulent behaviors.

Knowing these beliefs related to academic dishonesty allows us to understand the possible motives underlying the students' behaviors and allows educators to create more meaningful and enriching experiences by carefully addressing these problematic behaviors and the conditions that promote them (Johnson et al., 2019). In the limited context from the perspective of the TPB, which underlies the analysis of attitudinal, normative, and control beliefs, it is possible to identify which actions motivate ethical behaviors.

By identifying the beliefs that directly affect academic misbehavior, actions can be taken to emphasize the bad outcomes of academic dishonesty, such as a decrease in students' knowledge and potential punishment. It can also be reinforced with the severity of punishments. Regarding the social group in the academic field, it is also essential to highlight that dishonesty is an unacceptable conduct that can inflict great damage on the whole community. Regarding the controls, innovative solutions that value the construction of knowledge can minimize dishonest behaviors due to the students' interest and their difficulty in seeking ready-made fraudulent solutions.

This synthesis details the behavioral beliefs of accounting students, whose interpretation enables the construction of an instrument to collect and measure group beliefs. This can be considered a relevant contribution to literature. Nevertheless, it is necessary to expand the research and build descriptors and statistical validations of the instruments. A consequent interpretation of the relationships between each belief and behavior of individuals is also necessary. It is expected to be developed in further research. Moreover, the results and its findings, that present the motivations and alternative behaviors, contribute to the design of behaviors in the light of the recent theory of rational goal pursuit (Ajzen & Kruglanski, 2019). The research has some limitations, the main one is the sampling bias, whose results were initially limited to accounting students. It is noticeable that the problem of academic dishonesty is not a subject limited to specific situations in higher education courses, as it permeates the entire extent of the individual's education, that is, it also covers other levels. Thus, future research may explore the possibilities of applying the methodology to samples from different academic backgrounds, to larger samples, or to other levels of education.

Conflict of interest

The authors declare no conflict of interest.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and Human Decision Processes*, 50(2), 179-211. [http://dx.doi.org/10.1016/0749-5978\(91\)90020-T](http://dx.doi.org/10.1016/0749-5978(91)90020-T)
- Ajzen, I. (2002). Residual effects of past on later behavior: Habituation and reasoned action perspectives. *Personality and Social Psychology Review*, 6(2), 107-122. https://doi.org/10.1207/S15327957PSPR0602_02
- Ajzen, I. (2011). The theory of planned behaviour: reactions and reflections. *Psychology and Health*, 26(9), 1113-1127. <http://dx.doi.org/10.1080/08870446.2011.613995>
- Ajzen, I. (2017). *Constructing a theory of planned behavior questionnaire*. Available in <http://people.umass.edu/ajzen/pdf/tpb.measurement.pdf>. Access on 20 Apr. 2021.
- Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human Behavior & Emerging Technologies*, 1-11. <https://doi.org/10.1002/hbe2.195>
- Ajzen, I., & Kruglanski, A. W. (2019). Reasoned action in the service of goal pursuit. *Psychological Review*, 126(5), 774-786. <http://dx.doi.org/10.1037/rev0000155>
- Bardin, L. (2016). *Análise de conteúdo*. Lisboa: Edições 70.
- Brislin, R. W. (1980). *Cross-cultural research methods*. In Environment and culture (pp. 47-82). Springer, Boston, MA.
- Bru, E., Stephens, P., & Torsheim, T. (2002). Students' perceptions of class management and reports of their own misbehavior. *Journal of School Psychology*, 40(4), 287-307. [https://doi.org/10.1016/S0022-4405\(02\)00104-8](https://doi.org/10.1016/S0022-4405(02)00104-8)
- Campbell, W. K., Bush, C. P., Brunell, A. B. and Shelton, J. (2005). Understanding the social costs of narcissism: The case of the tragedy of the commons. *Personality and Social Psychology Bulletin*, 31: 1358-1364. <https://doi.org/10.1177/0146167205274855>
- Chang, M., Bang, H., Kim, S., & Nam-Speers, J. (2021). Do sports help students stay away from misbehavior, suspension, or dropout? *Studies in Educational Evaluation*, 70, 101066. <https://doi.org/10.1016/j.stueduc.2021.101066>
- Chang, Y., Wilding, M., & Shin, M. C. (2017). Determinants of whistle-blowing intention: Evidence from the South Korean Government. *Public Performance and Management Review*, 40(4), 676-700. <https://doi.org/10.1080/15309576.2017.1318761>
- Chiu, R. K. (2003). Ethical judgment and whistle-blowing intention: Examining the moderating role of locus of control. *Journal of Business Ethics*, 43(1-2), 65-74. <http://dx.doi.org/10.1023/A:1022911215204>
- Cronan, T. P., Mullins, J. K., & Douglas, D. E. (2018). Further understanding factors that explain freshman business students' academic integrity intention and behavior: Plagiarism and sharing homework. *Journal of Business Ethics*, 147(1), 197-220. <https://doi.org/10.1007/s10551-015-2988-3>
- Curtis, G. J., Cowcher, E., Greene, B. R., Rundle, K., Paull, M., & Davis, M. C. (2018). Self-control, injunctive norms, and descriptive norms predict engagement in plagiarism in a theory of planned behavior model. *Journal of Academic Ethics*, 16(3), 225-239. <https://doi.org/10.1007/s10805-018-9309-2>
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Fonseca, A. C. (2009). Desonestidade nos trabalhos escolares: dados de um estudo português. *Revista portuguesa de pedagogia*, 107-124. https://doi.org/10.14195/1647-8614_43-2_7
- Fróes, R. C., & Silva, D. M. D. (2021). Desonestidade acadêmica nos programas de pós-graduação stricto sensu em ciências contábeis. *Revista Contabilidade & Finanças*, 32, 541-559. <https://doi.org/10.1590/1808-057x202113260>
- Gama, P., Peixoto, P., Seixas, A. M., Almeida, F., & Esteves, D. (2013). A ética dos alunos de Administração e de Economia no ensino superior. *Revista de Administração Contemporânea*, 17(5), 620-641. <https://doi.org/10.1590/S1415-65552013000500007>
- Jehn, K. A., & Jonsen, K. (2010). A multimethod approach to the study of sensitive organizational issues. *Journal of Mixed Methods Research*, 4(4), 313-341. <https://doi.org/10.1177/1558689810380920>
- Jian, H., Li, G., & Wang, W. (2020). Perceptions, contexts, attitudes, and academic dishonesty in Chinese senior college students: A qualitative content-based analysis. *Ethics & Behavior*, 30(7), 543-555. <https://doi.org/10.1080/10508422.2020.1711758>
- Johnson, Z. D., Goldman, Z. W., & Claus, C. J. (2019). Why do students misbehave? An initial examination of antecedents to student misbehavior. *Communication Quarterly*, 67(1), 1-20. <https://doi.org/10.1080/01463373.2018.1483958>
- Kalafatis, S. P., Pollard, M., East, R., & Tsogas, M. H. (1999). Green marketing and Ajzen's theory of planned behaviour: a cross-market examination. *Journal of consumer marketing*, 16 (5), p. 441-460. <https://doi.org/10.1108/07363769910289550>
- Kapoor, H., Inamdar, V., & Kaufman, J. C. (2022). I didn't have time! A qualitative exploration of misbehaviors in academic contexts. *Journal of Academic Ethics*, 20(2), 191-208. <https://doi.org/10.1007/s10805-021-09407-3>
- Lewis, W., Agarwal, R., & Sambamurthy, V. (2014). Sources of influence on beliefs about information technology use: An empirical study of knowledge workers. *MIS Quarterly*, 24(4), 665-694. <https://doi.org/10.2307/3250951>
- Lin, S. (2013). Why serious academic fraud occurs in China. *Learned Publishing*, 26(1), 24-27.
- Lubas K. M., Marques, D. A. R., Sallaberry, J. D., & Santos, E. A. (2021). Discussões Conceituais e Éticas sobre Lavagem de Dinheiro nos Cursos de Ciências Contábeis. *Revista Brasileira de Contabilidade*, L, 65-79
- Maranhão, C. M. S. D. A., Santos, F. C. P. D., & Ferreira, P. T. M. (2017). Banalização da fraude acadêmica: reflexões à luz da teoria da semicultura de Adorno. *Educação & Sociedade*, 38(138), 249-263. <https://doi.org/10.1590/es0101-73302016158799>
- Menon, M. K., & Sharland, A. (2011). Narcissism, exploitative attitudes, and academic dishonesty: An exploratory investigation of reality versus myth. *Journal of Education for Business*, 86(1), 50-55. <https://doi.org/10.1080/08832321003774772>
- Michaelis. (2020). *Fraude*. Available in <https://michaelis.uol.com.br/moderno-portugues/busca/portugues-brasileiro/fraude>. Access on 20 Apr. 2021.
- Moan, I. S. V., & Rise, J. (2006). Predicting smoking reduction among adolescents using an extended version of the theory of planned behaviour. *Psychology and Health*, 21(6), 717-738. <http://dx.doi.org/10.1080/14768320600603448>
- Murgraff, V., McDermott, M. R., & Walsh, J. (2001). Exploring attitude and belief correlates of adhering to the new guidelines for low-risk single-occasion drinking: an application of the theory of planned behaviour. *Alcohol and Alcoholism*, 36(2), 135-140. <https://doi.org/10.1093/alcac/36.2.135>
- Park, H., & Blenkinsopp, J. (2009). Whistle-blowing as planned behavior - a survey of South Korean police officers. *Journal of Business Ethics*, 85, 545-556. <http://dx.doi.org/10.1007/s10551-008-9788-y>
- Pimenta, M. A. D. A., & Pimenta, S. D. A. (2016). Fraude em avaliações no ensino superior do Brasil: aproximações com uma pesquisa de Portugal. *Avaliação: Revista da Avaliação da Educação Superior*, 21(3), 953-974. <https://doi.org/10.1590/S1414-40772016000300014>
- Priberam. (2020). *Fraude*. Available in <https://dicionario.priberam.org/fraude>. Access on 20 Apr. 2021.
- Qu, W., Ge, Y., Guo, Y., Sun, X., & Zhang, K. (2020). The influence of WeChat use on driving behavior in China: a study based on the theory of planned behavior. *Accident Analysis & Prevention*, 144, 105641. <https://doi.org/10.1016/j.aap.2020.105641>

- Ramos, M. O., Gomes, H. O., & Silva, M. V. D. D. C. (2018). A contabilidade do crime no Brasil: Avanços e desafios. *Revista Evidenciação Contábil & Finanças*, 6(2), 81-94.
- Sá, A. L. & Hoog, W. A. Z. (2015). *Corrupção, Fraude e Contabilidade*, Curitiba, Juruá.
- Sallaberry, J. D., & Flach, L. (2021). Percepción del profesional contable brasileño sobre operaciones sospechosas de lavado de dinero. *Contabilidad y Negocios*, 16(31), 7-24. <https://doi.org/10.18800/contabilidad.202101.001>
- Sallaberry, J. D., & Flach, L. (2022). Analysis of whistleblower beliefs in Latin America. *Revista Criminalidad*, 64(1), 133-153. <https://doi.org/10.47741/17943108.336>.
- Sanchez, O. P., & Innarelli, P. B. (2012). Desonestidade acadêmica, plágio e ética. *GV Executivo*, 11(1), 46-49.
- Santos, E. A., Moura, I. V., & Almeida, L. B. (2018). Intenção dos Alunos em seguir carreira na área de Contabilidade sob a Perspectiva da Teoria do Comportamento Planejado. *Revista de Educação e Pesquisa em Contabilidade*, 12(1). <https://doi.org/10.17524/repec.v12i1.1635>
- Santos, E. A., Xavier, G. L., Moura, C. A. S., & Santos, L. M. R. (2021). Traços de personalidade e variáveis do comportamento planejado do indivíduo: um estudo de seus efeitos nas intenções empreendedoras. *Revista Ambiente Contábil*, 13(1), 343-358. <https://doi.org/10.21680/2176-9036.2021v13n1ID19637>
- Santos, E. A., & Almeida, L. B. (2018). To pursue a career in accounting or not: a study based on the Theory of Planned Behavior. *Revista Contabilidade & Finanças*, 29(76), 114-128. <https://doi.org/10.1590/1808-057x201804890>
- Sentleng, M. P., & King, L. (2012). Plagiarism among undergraduate students in the Faculty of Applied Science at a South African higher education institution. *South African Journal of Libraries and Information Science*, 78(1), 57-67.
- Silva, A. S., Valdevino, R. Q. S., de Oliveira, A. M., & Diniz, S. M. (2022). Desonestidade acadêmica: um estudo com discentes do curso de Ciências Contábeis. *REUNIR Revista de Administração Contabilidade e Sustentabilidade*, 12(4), 44-56. <https://doi.org/10.18696/reunir.v12i4.1453>
- Sohrabi, Z., Ghasemzadeh, M., & Salehi, L. (2018). Psychometric Analysis Scale of Attitude toward Plagiarism Based on the Theory of Planned Behavior in the Students of Iran University of Medical Sciences. *Journal of Medical Education Development*, 10(28), 53-64.
- Sousa, R. N., Conti, V. K., Salles, A. A., & Mussel, I. C. R. (2016). Desonestidade acadêmica: reflexos na formação ética dos profissionais de saúde. *Revista Bioética*, 24(3), 459-468. <https://doi.org/10.1590/1983-80422016243145>
- Tarjo, T., Suwito, A., Aprillia, I. D., & Ramadan, G. R. (2019). Theory of planned behavior and whistle-blowing intention. *Jurnal Keuangan dan Perbankan*, 23(1), 43-57. <https://doi.org/10.26905/jkdp.v23i1.2714>
- Trongmateerut, P., & Sweeney J. T. (2013). The influence of subjective norms on whistle-blowing: A cross-cultural investigation. *Journal of Business Ethics*, 112(3), 437-451. <https://doi.org/10.1007/s10551-012-1270-1>
- Vallade, J. I., & Kaufmann, R. (2021). Instructor misbehavior and student outcomes: Replication and extension in the online classroom. *Journal of Research on Technology in Education*, 53(2), 206-222. <https://doi.org/10.1080/15391523.2020.1766389>
- Winckler, N. C., Zen, A. C., & Prevot, F. (2022). Recursos da firma para internacionalização de PMEs de países emergentes: Estudo multimétodo. *Revista de Administração Mackenzie*, 23(1), 1-32. <https://doi.org/10.1590/1678-6971/eRAMR220165>.
- Yin, R. K. (2017). *Case study research, and applications: Design and Methods*. Beverly Hills: Sage Publications.

Efeitos da Justiça Organizacional na relação entre Consistência na Gestão de Desempenho e Engajamento no Trabalho

Duanne Emanuel Leal Guimarães* 

Mestre em Contabilidade, Universidade Federal de Santa Maria, Santa María, Brasil.

emanuelduanneaguimaraes@gmail.com

Cristiano Sausen Soares 

Professor, Programa de Pós-graduação em Ciências Contábeis, Universidade Federal de Santa Maria, Santa María, Brasil.

cristianocontador@hotmail.com

Vinícius Costa da Silva Zonatto 

Professor, Programa de Pós-graduação em Ciências Contábeis, Universidade Federal de Santa Maria, Santa María, Brasil.

viniciuszonatto@gmail.com

Edicreia Andrade dos Santos 

Professora, Programa de Pós-graduação em Contabilidade, Universidade Federal do Paraná, Curitiba, Brasil.

edicreiaandrade@yahoo.com.br

Rosimeire Pimentel Gonzaga 

Professora, Programa de Pós-graduação em Ciências Contábeis, Universidade Federal do Espírito Santo, Vitória, Brasil.

rosimeire.gonzaga@ufes.br

Resumo

O objetivo do estudo é analisar as relações da consistência do sistema de gestão de desempenho de recursos humanos, no engajamento no trabalho, mediado pela justiça organizacional, em uma Autarquia Pública Federal Brasileira. A pesquisa foi realizada por meio de uma *survey single Entity*. Os achados evidenciam que a consistência do sistema e a justiça organizacional são preditores do engajamento no trabalho. Existe um efeito mediador da justiça organizacional, que influencia a relação entre a consistência do sistema e o engajamento no trabalho. Os resultados oferecem a percepção da importância da consistência do sistema no setor público, e contribuem ao reafirmar que fatores comportamentais de servidores públicos são parte significativa na busca por melhores resultados organizacionais.

Palabras clave: avaliação de desempenho; gestão de pessoas; atividades meio e atividades fim; setor público.

Effects of Organizational Justice on the Relationship between Performance Management Consistency and Work Engagement

Abstract

The purpose of this study is to analyze the relationship between the consistency of the human resources performance management and engagement at work, mediated by organizational justice, in a Brazilian Federal Public Autarchy. The research was carried out through a survey applied to a single Entity. The findings show that system consistency and organizational justice are predictors of work engagement. Organizational fairness plays a mediating role, which influences the relationship between system consistency and work engagement. The results show the importance of system consistency in the public sector and confirms that official's behavioral factors have a significant part in the search for better organizational results.

Keywords: performance evaluation; people management; non-core activities and core activities; public sector.

Efectos de la justicia organizacional en la relación entre la consistencia en la gestión del desempeño y el compromiso laboral

Resumen

El objetivo del estudio es analizar la relación entre la consistencia del sistema de gestión del desempeño de recursos humanos y el compromiso en el trabajo, mediada por la justicia organizacional, en una Autarquía Pública Federal brasileña. La investigación se llevó a cabo a través de una encuesta en una sola Entidad. Los hallazgos muestran que la consistencia del sistema y la justicia organizacional predicen del compromiso laboral. Hay un efecto mediador de la equidad organizacional que influye en la relación entre la consistencia del sistema y el compromiso laboral. Los resultados muestran la importancia de la consistencia del sistema en el sector público y reafirman que los factores de comportamiento de los servidores públicos son parte significativa de la búsqueda de mejores resultados organizacionales.

Palabras-chave: evaluación del desempeño; gestión humana; actividades secundarias y principales; sector público.

* Autor para dirigir correspondência.

Classificações JEL: H83.

Como citar: Leal Guimarães, D. E., Sausen Soares, C., Costa da Silva Zonatto, V., Andrade dos Santos y Pimentel Gonzaga, R. (2023). Efeitos da Justiça Organizacional na relação entre Consistência na Gestão de Desempenho e Engajamento no Trabalho. *Estudios Gerenciales*, 39(168), 368-378. <https://doi.org/10.18046/j.estger.2023.167.5951>

DOI: <https://doi.org/10.18046/j.estger.2023.167.5951>

Recebido: 28-01-2023

Aceito: 26-05-23

Publicado: 30-09-2023

1. Introduction

O setor público utiliza ferramentas de gestão do setor privado para aumentar a responsabilidade e a eficiência do Estado, promovendo mudanças de paradigmas que desafiam as estruturas burocráticas e mecanicistas institucionalizadas (Guesser, Ensslin & Petri, 2020). A gestão de desempenho de recursos humanos é uma dessas ferramentas (Audenaert et al., 2019; Guesser et al., 2020), cuja consistência do sistema de gestão de desempenho de recursos humanos (CSGDRH), torna-se recurso de trabalho que aumenta o capital psicológico e favorece a mudança de comportamento dos funcionários em prol da organização (Kakkar et al., 2020). Estudos anteriores sugerem uma maior atenção à CSGDRH, visto que as inconsistências podem causar frustrações, comprometendo o bem-estar dos funcionários (Audenaert et al., 2019; Bauwens, Audenaert & Decramer, 2019).

A manutenção da eficácia da gestão de desempenho de recursos humanos, requer um exercício comportamental, no qual a consistência é um fator relevante, que pode afetar o engajamento no trabalho, mediante percepções positivas de justiça organizacional (Chen, Uen & Chen, 2016; Guesser et al., 2020; Kakkar & Vohra, 2021). O desafio de implementar uma gestão de desempenho de recursos humanos eficaz, pode perpassar pela análise das relações entre CSGDRH, justiça organizacional e engajamento no trabalho (Awan, Habib, Akhtar & Naveed, 2020; Kakkar & Vohra, 2021). Awan et al. (2020) sugerem analisar, em conjunto, os sistemas de gestão de desempenho de recursos humanos e o engajamento no trabalho; incluindo, como mediadora, a percepção de justiça organizacional. Kakkar e Vohra (2021) relacionaram, no setor privado, a CSGDRH com o engajamento no trabalho, sugerindo a replicação do estudo, no âmbito governamental.

A gestão de desempenho de recursos humanos no setor público é repleta de desafios, suscitando a adoção de abordagens estratégicas para superá-los (Guesser et al., 2020). A relação entre CSGDRH e o engajamento no trabalho, mediado pela justiça organizacional, apresenta-se como uma lacuna capaz de favorecer a implementação de estratégias positivas para gestão de desempenho de recursos humanos. Desta lacuna, emerge a questão: quais os efeitos da consistência do sistema gestão de desempenho de recursos humanos (CSGDRH) no engajamento no trabalho, mediado pela justiça organizacional no setor público? Para tanto, busca-se analisar os efeitos da CSGDRH no engajamento no trabalho, mediado pela justiça organizacional, em uma Autarquia Pública Federal Brasileira.

Essa investigação justifica-se sob diferentes perspectivas (teórica, empírica e social) e está em congruência com várias chamadas anteriores. Contribui de forma teórica ao analisar a CSGDRH a nível organizacional, integrando-a, empiricamente, ao engajamento no trabalho, a nível individual, mediado pela percepção de

justiça organizacional. Estudos anteriores analisaram esses constructos de forma independente (Bauwens et al., 2019; Chen et al., 2016; Kakkar & Vohra, 2021), sem considerar os efeitos mediadores e a integração entre os diferentes níveis de análise; sobretudo, no setor privado (Audenaert et al., 2019; Chen et al., 2016). No aspecto prático, o estudo da CSGDRH apresenta uma abordagem positiva em meio à criticidade da agenda negativa da gestão de desempenho de recursos humanos (Brunetto & Beattie, 2020).

Os resultados contribuirão aos gestores públicos para a compreensão da CSGDRH. Funcionalmente, ao incumbir-se da definição de metas e prioridades coerentes aos funcionários, pode favorecer a percepção de justiça organizacional, refletindo-se no engajamento no trabalho, por meio da concentração dos esforços dos servidores nas reais necessidades do Estado (Audenaert et al., 2019; Chen et al., 2016). No campo social, os sistemas de gestão de desempenho de recursos humanos, quando caracterizados inconsistentes, podem resultar em perdas de rendimento, retraimentos psicológicos e intenções de rotatividade entre funcionários (Kakkar et al., 2020). Mitigar aspectos negativos associados à inconsistência repercute no bem-estar dos servidores e, conseqüentemente, no desempenho individual e organizacional (Bauwens et al., 2019; Decramer, Smolders & Vanderstraeten, 2013), com implicações na prestação de serviços à sociedade (Guesser et al., 2020); além de refletir, de forma indireta na qualidade de vida dos indivíduos (Nader, Peña Bernate, & Santa-Bárbara, 2014).

A próxima seção apresenta a contextualização acerca da CSGDRH, da justiça organizacional, do engajamento no trabalho, e o modelo teórico de análise. Já a terceira seção, descreve os procedimentos metodológicos utilizados, e identifica os construtos da pesquisa, a forma de coleta dos dados, seu tratamento e sua análise. Por fim, na quarta seção apresenta-se a análise dos resultados, enquanto que, a quinta, sintetiza as principais considerações finais.

2. Fundamentação teórica

2.1. Consistência do Sistema de Gestão de Desempenho de Recursos Humanos (CSGDRH)

A CSGDRH refere-se à conjugação entre o estabelecimento de metas, o feedback e o apoio organizacional (Audenaert et al., 2019; Bauwens et al., 2019). Durante o processo de avaliação de desempenho, a CSGDRH aponta para comportamentos, atitudes e valores análogos, que devem ser definidos, monitorados e avaliados de forma congruente, livre de contradições, independentemente do momento ou situação (Audenaert et al., 2019; Kakkar & Vohra, 2021; Van Thielen et al., 2018). O interesse pela CSGDRH surgiu a partir de estudos de gestão estratégica de recursos humanos, com abordagens voltadas à complementaridade e

ao alinhamento (Chen et al., 2016; Decramer et al., 2013; Kehoe & Wright, 2013), bem como aos conceitos relacionados aos ajustes vertical e horizontal (Kakkar et al., 2020; Van Waeyenberg et al., 2017).

O ajuste vertical, vincula a avaliação de desempenho individual dos funcionários às metas corporativas, propondo um alinhamento que reflete a conexão dos objetivos dos funcionários aos propósitos estratégicos organizacionais (Kakkar et al., 2020; Van Waeyenberg et al., 2017), contribuindo para a consistência. Já o ajuste horizontal, dispõe que o estabelecimento de metas, monitoramento e avaliação, devem ser incorporados de forma unificada, promovendo apoio mútuo à consistência interna (Kakkar et al., 2020; Van Waeyenberg et al., 2017). Estes ajustes não significam a soma de componentes, mas, sim, a interação entre práticas e sistemas de gestão de desempenho (Han, Kang, Oh, Kehoe & Lepak, 2019; Kakkar et al., 2020). Combinados e alinhados a outros aspectos, os ajustes vertical e horizontal compõem um conceito mais amplo: o de consistência de gestão de desempenho (Audenaert et al., 2019; Van Thielen et al., 2018; Decramer et al., 2013).

A literatura de gestão de desempenho de recursos humanos, expõe a relevância da consistência como fonte de apoio e orientação, para que as ações dos funcionários ocorram de forma inequívoca em relação aos comportamentos desejados pela organização (Audenaert et al., 2019; Kakkar & Vohra, 2021; Van Thielen et al., 2018). Com um impacto substancial na expectativa dos funcionários, a CSGDRH tende a melhorar a comunicação organizacional, e definir como a organização pretende apoiar seus esforços (Kakkar & Vohra, 2021). Quanto mais conexões consistentes, maior robustez do sistema, fomentando resultados individuais e organizacionais positivos, visto que elevam a percepção de como o sistema de gestão de desempenho incentiva, verdadeiramente, os fatores comportamentais dos funcionários, a exemplo da justiça organizacional e o engajamento (Chen et al., 2016; Kakkar & Vohra, 2021).

2.2. Justiça Organizacional.

A justiça organizacional pode ser definida como o tratamento justo e ético dentro de uma organização (Oubrich et al., 2021; Santos, Venturini, Sallaberry, Klein & Flach, 2023). Representa um evento afetivo com consequências comportamentais aos funcionários que, ao perceberem procedimentos justos, distribuições imparciais e interações neutras, realizam maiores esforços para atingir os objetivos organizacionais (Dai, Chen & Wu, 2013; Khan et al., 2021). Esse construto contempla a percepção de justiça em relação à distribuição de recursos, processos decisórios e comportamentos interpessoais (Stankevičiūtė & Savanevičienė, 2021), a partir de três dimensões: a distributiva; a processual e; a interacional, subdividida em justiça informacional e

justiça interpessoal (Khan et al., 2021; Lee, 2019; Lee & Wei, 2017; Holtz & Hu, 2017).

A dimensão da justiça distributiva diz respeito à percepção construída pelos subordinados em relação aos *inputs e outputs* no âmbito organizacional (Lee & Wei, 2017; Oubrich et al., 2021). Surgiu com a Teoria da Equidade (Arango, 2009), em que há uma tendência de comparação dos *inputs e outputs* percebidos pelo indivíduo, em relação a uma referência, que geralmente são os pares (Lee, 2019; Lee & Wei, 2017). A proporção adequada entre essas relações de entrada e saída, determinam o nível de justiça apreendido pelos colaboradores (Arango, 2009; Lee, 2019). No contexto específico da gestão de desempenho, os colaboradores avaliam a justiça distributiva em relação à organização, aos indivíduos que a compõem e aos superiores hierárquicos (Stankevičiūtė & Savanevičienė, 2021).

A justiça processual representa os padrões e métodos de tomada de decisão respaldados na equidade dos processos, ou seja, refere-se às políticas e procedimentos decisórios (Arango, 2009; Dai et al., 2013; Lee & Wei, 2017). Nessa dimensão, há uma mudança do eixo dos resultados para os processos que os geram, centrando-se em critérios e formas decisórias que promovem a gestão da incerteza em relação aos processos (Lee & Wei, 2017; Oubrich et al., 2021; Santos et al., 2023). Na gestão de desempenho, as percepções de justiça processual estão relacionadas aos sistemas de gestão de desempenho (Stankevičiūtė & Savanevičienė, 2021) e outros fatores ligados ao atributo da consistência, tais como: aplicação concisa de regras para todos os colaboradores; informações claras e exatas; e intervenção do subordinado em relação ao seu processo de avaliação (Decramer et al., 2013).

Já a justiça interacional é uma abordagem avaliada durante o planejamento do processo, quando os procedimentos são adotados, e na tomada de decisão após sua implementação (Stankevičiūtė & Savanevičienė, 2021; Santos et al., 2023). Foca sua atenção na qualidade do tratamento interpessoal (Lee & Wei, 2017; Oubrich et al., 2021), integrando valores e características, tais como: respeito, dignidade, sinceridade, imparcialidade, sensibilidade nas relações interpessoais e fornecimento de feedback; utilizando informações claras, tempestivas e fidedignas. As percepções de justiça interacional promovem, nos indivíduos, reações à figura do líder (Lee & Wei, 2017), estando subdividida em outras duas dimensões: informacional e interpessoal (Holtz & Hu, 2017; Stankevičiūtė & Savanevičienė, 2021).

Por fim, a dimensão da justiça informacional abrange a qualidade da informação (Holtz & Hu, 2017; Stankevičiūtė & Savanevičienė, 2021), à medida que os colaboradores percebem informações adequadas no que concerne aos procedimentos usados, e aos resultados distribuídos na organização (Holtz & Hu, 2017; Stankevičiūtė & Savanevičienė, 2021). Em outras palavras, consiste em

informar aos funcionários os porquês de certos procedimentos e tomadas de decisão pela gestão. Já a justiça interpessoal relaciona-se ao tratamento dado aos funcionários quanto aos aspectos da dignidade, polidez e respeito (Stankevičiūtė & Savanevičienė, 2021). Todas as dimensões de justiça organizacional aqui expostas, refletem no engajamento no trabalho dos indivíduos.

2.3. Engajamento no Trabalho.

O engajamento no trabalho é definido como uma forte identificação emocional, cognitiva e física do colaborador para com as atividades que desempenha (Santos et al., 2020). É um construto multifatorial representado por três elementos principais: vigor, dedicação e absorção (Ancarani et al., 2021; Maake, Harmse & Schultz, 2021; Stankevičiūtė & Savanevičienė, 2021; Strom, Sears & Kelly, 2014). O vigor é caracterizado por elevados níveis de energia e resiliência mental durante o trabalho, que promovem o esforço e persistência dos funcionários diante de entraves nas relações laborais (Ancarani et al., 2021; Maake et al., 2021; Strom et al., 2014). A dedicação vale-se do entusiasmo, inspiração, orgulho de pertencimento ao trabalho, significado como senso de importância e do desafio, como características impulsionadoras do engajamento (Ancarani et al., 2021; Maake et al., 2021). Por fim, a absorção, refere-se à perpetuação do foco e concentração no trabalho.

Ao apropriar-se desses elementos, o conceito de engajamento no trabalho apresenta um estado comportamental assertivo, caracterizado pela dedicação, absorção, resiliência, comprometimento e satisfação no trabalho (Awan et al., 2020; Stankevičiūtė & Savanevičienė, 2021; Strom et al., 2014), capaz de desenvolver, nos funcionários, esforços discricionários extras para o alcance dos objetivos organizacionais (Awan et al., 2020; Kumar & Padhi, 2021). O engajamento no trabalho funciona como um termômetro do bem-estar ocupacional (Santos et al., 2020), considerado ponto focal da gestão de desempenho de recursos humanos (Lee, 2019), desejável para melhorar o desempenho individual e organizacional (Santos et al., 2020).

As organizações contemporâneas necessitam se concentrar em resultados proximais, como o engajamento no trabalho (Awan et al., 2020), especialmente no setor público, uma vez que, nesse ambiente, são percebidos menores níveis dessa característica comportamental se comparado ao setor privado (Stankevičiūtė & Savanevičienė, 2021). Na seara pública, funcionários desengajados podem representar custo ao Estado e influenciar negativamente a prestação de serviços à sociedade (Ancarani et al., 2021; Stankevičiūtė & Savanevičienė, 2021). O sucesso desse setor depende das relações construídas entre a gestão de desempenho e o engajamento no trabalho (Maake et al., 2021).

2.4. Modelo Teórico de Análise.

Os sistemas de gestão de desempenho de recursos humanos com disposições e regras inconsistentes, podem gerar expectativas desalinhadas com os objetivos organizacionais, promover sentimentos negativos, criar tensão entre funcionários, reduzindo a percepção de bem-estar, justiça organizacional e engajamento no trabalho (Bauwens et al., 2019; Chen et al., 2016). Questões de justiça e equidade são fundamentais à eficácia dos sistemas de gestão de desempenho de recursos humanos, sendo a consistência um dos aspectos considerados pelos colaboradores no alcance de tais sentidos (Lee & Wei, 2017). A consistência produz um clima de integração, transmitindo uma mensagem clara e justa dos resultados desejados, ao desenvolver canais de comunicação que ajudam os funcionários a identificar recursos uniformes de interpretação das informações prestadas pela organização (Chen et al., 2016).

Os colaboradores percebem melhor os efeitos positivos dos sistemas de gestão de desempenho de recursos humanos quando recebem tratamentos adequados e justos (Oubrich et al., 2021). Inicialmente, são construídos contratos psicológicos nas relações laborais que, analisados sob o prisma da justiça organizacional, afetam o desempenho dos funcionários (Lee & Wei, 2017; Chen et al., 2016). A apreensão individual do contrato psicológico é influenciada pela natureza da CSGDRH, que sustenta um consenso de legitimidade, aumentando a percepção de justiça pelos funcionários (Harrington & Lee, 2015).

Estudos anteriores (Decramer et al., 2013; Chen et al., 2016; Lee, 2019; Stankevičiūtė & Savanevičienė, 2021) sugerem efeitos positivos da CSGDRH na justiça, considerando que altos níveis de consistência interna afetam a satisfação; Decramer et al. (2013) avaliaram a percepção de justiça por meio de uma escala de comunicação bidirecional, concluindo que a CSGDRH eleva os níveis de desempenho no trabalho. Já Chen et al. (2016) examinaram a CSGDRH e sua influência no desempenho individual, por meio da justiça processual e da percepção do contrato psicológico. Os pesquisadores exploraram como a consistência afeta as percepções compartilhadas de justiça processual e o desempenho dos funcionários, em empresas de Taiwan, concluindo que a CSGDRH afeta positivamente o desempenho individual mediado pela justiça processual.

Ao estudar o setor público, Lee (2019) examinou como qualidade do processo de implementação do sistema de gestão de desempenho de recursos humanos relaciona-se com a motivação intrínseca e com o esforço no trabalho. Os resultados evidenciaram efeito motivacional e esforços maiores para aqueles funcionários que apreenderam sensações de justiça em relação à consistência (Lee, 2019). Já Stankevičiūtė

e Savanevičienė (2021) investigaram a relação entre comportamento dos líderes na gestão de desempenho, engajamento no trabalho e justiça organizacional no setor público da Lituânia, indicando que o estabelecimento de metas e feedback - componentes associados à consistência - impactaram positivamente no engajamento no trabalho.

A partir dessas pesquisas, percebe-se que uma gestão de desempenho consistente, favorece o sentimento de justiça no trabalho, tornando os funcionários mais engajados (Stankevičiūtė & Savanevičienė, 2021). Quando os objetivos são ambíguos e inconsistentes, torna-se mais difícil essa interpretação para os colaboradores (Kakkar & Vohra, 2021). Assim, os funcionários são menos propensos a demonstrar engajamento no trabalho, pois não visualizam relação positiva entre esforço e resultado (Stankevičiūtė & Savanevičienė, 2021). Quando percebida de forma injusta e inconsistente, aumenta a sensação de incerteza, reduzindo o engajamento no trabalho (Lee, 2019; Maake et al., 2021; Sharma et al., 2016). Assim, a hipótese elaborada nesta pesquisa estabelece que:

H. A justiça organizacional medeia a relação entre CSGDRH e engajamento no trabalho.

Em termos de resultados organizacionais positivos, o envolvimento dos funcionários na gestão desses sistemas torna-se imperativo às organizações (Maake et al., 2021; Kumar & Padhi, 2021). A CSGDRH propõe o alinhamento do estabelecimento de metas com o fornecimento de feedback e avaliação (Audenaert et al., 2019; Kakkar & Vohra, 2021; Van Thielen et al., 2018). Dessa forma, reiterar os valores, os comportamentos e as atitudes, oferece uma percepção de consistência que implica em uma compreensão abrangente da avaliação, e desenvolve padrões de desempenho adequados, refletindo-se no engajamento no trabalho (Chen et al., 2016; Decramer et al., 2013; Van Thielen et al., 2018).

Ao utilizar objetivos claros e específicos, a consistência conduz as relações interorganizacionais com foco na segurança, no consenso e na legitimidade, propondo um ambiente mais justo, razoável e estável em relação às regras de gestão de desempenho de recursos humanos (Chen et al., 2016).

3. Procedimentos metodológicos

A pesquisa caracteriza-se como quantitativa, descritiva e de levantamento, realizada por meio de uma *survey single Entity* (Mucci, Frezatti & Dieng, 2016), junto aos servidores de diferentes cargos de uma organização pública federal brasileira. O corte populacional deu-se pela escolha de uma Autarquia vinculada ao Ministério da Infraestrutura (MInfra), que utiliza um sistema de gestão de desempenho de recursos humanos, com avaliação anual e servidores participantes de no mínimo 8 ciclos.

Os construtos CSGDRH, *engajamento no trabalho* e *justiça organizacional* foram mensurados por meio de itens múltiplos, com escala *Likert* de sete pontos. Para a CSGDRH, foi utilizado um instrumento de pesquisa com 12 itens (Sharma, Sharma & Agarwal, 2016). Para engajamento no trabalho, utilizou-se a *Utrecht Work Engagement Scale* (UWES), em versão reduzida (Schaufeli, Bakker & Salanova, 2006), com nove itens. *Justiça organizacional* foi avaliada pela Escala de Percepção de Justiça de Colquitt (2001), com 13 itens. A Tabela 1 apresenta as definições operacionais dos construtos.

A coleta de dados foi realizada a partir de um recorte transversal; o contato com os servidores foi realizado pelo aplicativo *WhatsApp*® em maio de 2022, cuja escolha se deu por acessibilidade. Os grupos de contato abrangeram àqueles cargos das áreas de atividades meio (com competências voltadas às atividades de natureza administrativa) e áreas de atividades fim (com competências relacionadas ao produto a ser entregue à sociedade).

Tabela 1. Construtos da pesquisa.

Construtos/Variáveis	Definições Operacionais
CSGDRH	Um sistema de gestão de desempenho é consistente quando os objetivos dos empregados estão vinculados aos organizacionais; o <i>feedback</i> fornecido está concatenado aos objetivos definidos; a avaliação retrata o feedback com acurácia; e as recompensas são proporcionais a toda avaliação processada (Sharma, Sharma & Agarwal, 2016).
Engajamento no Trabalho (ENG)	Diz respeito a comportamentos positivos no ambiente de trabalho, caracterizado pelo comprometimento (Schaufeli, Bakker & Salanova, 2006).
Justiça organizacional (JUST_ORG)	Refere-se à percepção dos colaboradores sobre justiça nas relações laborais que ocorrem dentro da organização (Colquitt, 2001).
	Justiça Distributiva (JDIS)
	Justiça Processual (JPRO)
	Justiça Informacional (JINF)
	Justiça Interpessoal (JINT)

Fonte: elaboração própria.

Todos os servidores, de diferentes estratos sociais, foram contemplados como potenciais respondentes, dado que o processo legalmente estabelecido de gestão de desempenho de recursos humanos, ocorre de forma indistinta entre os servidores da Autarquia, a exceção dos servidores em situação de cedidos, afastados e aos ocupantes exclusivos de cargos em comissão, que não compuseram a amostra. Avulta-se que os cargos de gestão da Autarquia são ocupados quase que exclusivamente por servidores efetivos do quadro. Ao final da coleta de dados, a amostra reuniu 132 servidores, de uma população de 2.197 potenciais respondentes.

Os dados foram analisados por meio de estatísticas descritiva e de equações estruturais (Hair Jr., Black, Anderson & Tatham, 2009). A análise no SmartPLS® compreendeu a estatística descritiva dos indicadores de cada construto de mensuração. Na sequência, foi realizado o teste de viés de método, utilizando-se da análise de componentes principais e, por conseguinte, avaliou-se o ajuste, a validade e a confiabilidade dos modelos pela análise fatorial confirmatória (Hair Jr et al., 2009). A avaliação da qualidade do modelo seguiu os critérios definidos para medidas do ajuste global (Ringle, Silva & Bido, 2014). Após a análise confirmatória, foi realizada a avaliação dos modelos estruturais de mensuração, cujos resultados são mostrados no próximo tópico.

4. Resultados e discussões

4.1. Características dos respondentes.

A amostra desta pesquisa é composta de 132 servidores públicos, dentre gestores e não gestores. Os respondentes do gênero masculino prevaleceram na amostra (58%). Em relação à faixa etária dos participantes, a predominante foi entre 31 e 40 anos, totalizando 44,69% dos respondentes. Referente à área de atuação na entidade pública em análise, 62,9% dos respondentes pertencem à área meio. Verificou-se que, dentre o total de respondentes, 97,7% possuem no mínimo Ensino Superior Completo, contemplando os graus de Mestrado (7,6%) e Doutorado (2,3%).

Em relação ao exercício de cargo de gestão, 62,1% responderam que não exercem função de chefia na entidade pública, enquanto 37,9% afirmaram exercer alguma função de gestão. Esses resultados vão ao encontro da estrutura organizacional enxuta do ente público, com poucos cargos de gestão nas unidades descentralizadas. Ademais, percebe-se que os respondentes estão concentrados, em sua maioria, na faixa de período de experiência de 8 a 10 anos (com 81 respondentes). Sublinha-se que grande parte dos participantes, passou por, no mínimo, oito ciclos de avaliação de desempenho, submetendo-se a uma avaliação 360 graus. Caracteriza-se como uma amostra experiente quanto à avaliação de desempenho,

que proporciona maior robustez e confiabilidade dos resultados deste estudo.

4.2. Análise Descritiva dos Dados.

A análise descritiva consistiu na avaliação dos intervalos reais de mínimo e máximo, mediana, moda, média e desvio padrão. Os resultados da CSGDRH revelam que nem todos os respondentes percebem a consistência. As variáveis que buscam verificar se “o plano de desempenho baseado no sistema de gestão de desempenho de recursos humanos proporciona uma ideia de clareza das metas organizacionais a serem atingidas”, e se “o plano de desempenho ajuda a focar os esforços na identificação de metas, comportamentos ou habilidades relevantes para atingir os objetivos organizacionais” apresentaram maiores médias (respectivamente 4,96 e 4,94), menores desvios padrão (respectivamente 1,75 e 1,71) e moda e mediana entre 6 e 7. Esses achados indicam uma tendência dos participantes de compreenderem os planos de desempenho, e associarem às suas respectivas metas.

A variável “os comportamentos e habilidades dos respondentes são avaliadas com precisão em um processo de revisão” apresentou menor média (3,92). Esse resultado aponta para uma menor percepção do processo de revisão e *feedback*, em relação à CSGDRH, com o agravante de que maioria dos participantes assinalou a menor escala nessa variável. Tal achado sugere uma maior ação da entidade pública nas fases iniciais do ciclo de vida dos sistemas de gestão de desempenho de recursos humanos (Guesser et al., 2020). Para Audenaert et al. (2019), a consistência dos CSGDRH reivindica um ciclo contínuo de subpráticas. A menor percepção do processo de revisão e *feedback* sugere quebra da continuidade das subpráticas que compõem o ciclo de vida dos sistemas de gestão de desempenho de recursos humanos, reduzindo a satisfação no trabalho (Bauwens et al., 2019). Mitigar essa percepção pode repercutir positivamente no bem-estar e no desempenho individual e organizacional (Decramer et al., 2013). Tais achados indicam que, em média, servidores da área meio tem melhor percepção da CSGDRH que os da área fim; o gênero feminino percebe a consistência melhor que o masculino, enquanto gestores e não-gestores apresentam percepção bem semelhante. Este último corrobora os resultados de Decramer et al. (2013) que, ao contrário do esperado, cargos de gestão, comparados aos operacionais não percebem melhor consistência interna das práticas de gestão de desempenho.

A análise da justiça organizacional alude que nem todos os respondentes estão satisfeitos com a avaliação de desempenho. A dimensão *justiça interpessoal* foi melhor avaliada, considerando que as chefias tratam os participantes da pesquisa de forma respeitosa, educada e com dignidade (média de 6,22, moda e mediana 7). A dimensão *justiça informacional* apresentou média de 4,68

e mediana 5, o que pode influenciar na concordância da política de comunicação da entidade em termos de promover a transparência ativa e passiva dos seus atos. Todavia, as *justiças distributiva e processual* apresentam as menores médias, indicando que alguns dos servidores consideram o não atingimento do padrão de equidade estabelecido, nem os métodos decisórios respaldados na equidade dos processos (Dai et al., 2013; Holtz & Hu, 2017; Lee & Wei, 2017; Stankevičiūtė & Savanevičienė, 2021). Nesse ponto, há indivíduos com percepções de inconsistência em relação ao processo de avaliação, com destaque à variável “consigo expressar minhas opiniões e sentimentos durante os procedimentos de avaliação de desempenho” (moda igual a 1), sugerindo que os respondentes têm participação passiva na avaliação. Esse resultado vai de encontro à ideia de avaliação 360 graus, alvitando o real poder ativo da ferramenta em relação à participação do servidor na avaliação de desempenho, não refletindo, de forma efetiva, o seu desejo.

Em relação às dimensões que apresentam menores percepções de justiça organizacional, a variável “as recompensas são justas ao considerar os demais salários recebidos na instituição” apresentou menor média (3,77), permitindo perceber que a maioria dos servidores se manifestou negativamente quanto a justiça distributiva em relação aos salários recebidos. Esse achado está intrinsecamente ligado à tendência de comparação dos *inputs e outputs* percebidos, em que os indivíduos podem não considerar justas suas remunerações ao nível de produção, engajamento e comprometimento em comparação com seus pares (Lee & Wei, 2017; Lee, 2019; Stankevičiūtė & Savanevičienė, 2021).

Os achados indicam que, em média, servidores da área *meio* tem melhor percepção da justiça organizacional que os da área *fim*; que o gênero feminino tem melhor percepção que o masculino, enquanto gestores apresentam percepção mais positiva da justiça organizacional que os não-gestores. Chen et al. (2016) não constataram diferenças entre percepções de justiça no mesmo ambiente organizacional. Tal apontamento convergiu com o encontrado nesta pesquisa apenas para os grupos compostos pelos gêneros feminino e masculino, enquanto as diferenças de percepção de justiça organizacional entre áreas *meio* e *fim* e, gestores e não-gestores, apresentaram dissimilaridades mais acentuadas.

A análise do engajamento no trabalho expõe que, nem todos os participantes do estudo sentem-se engajados. As variáveis “estou orgulhoso com o trabalho que faço” e “estou imerso em meu trabalho” obtiveram maiores médias (5,53 e 5,48, respectivamente) e menores desvios padrão (1,51 e 1,50, respectivamente). Tal achado representa que os participantes têm maior nível de concordância em relação ao elemento *dedicação*, componente do engajamento no trabalho, posto que o servidor está envolto em um clima de orgulho e pertencimento (Ancarani et al., 2021; Maake et al., 2021;

Strom et al., 2014). Esse construto apresentou menores médias nas variáveis “quando me levanto pela manhã, tenho vontade de ir trabalhar” e “deixo-me levar pelo meu trabalho”. O primeiro relacionado ao elemento *vigor*, assinalado por elevados níveis de energia. Já o segundo, refere-se ao elemento *absorção*, no qual os servidores se apresentam apreendidos pelo trabalho (Ancarani et al., 2021; Maake et al., 2021; Stankevičiūtė & Savanevičienė, 2021; Strom et al., 2014). Esses resultados denotam que alguns servidores não tendem a empregar esforços extras para o alcance dos objetivos organizacionais (Awan et al., 2020; Kumar & Padhi, 2021).

O engajamento no trabalho assinala que, em média, servidores da área *meio* estão mais engajados que os da área *fim*; que o gênero feminino sente-se mais engajado que o masculino; e que gestores apresentam maior engajamento que os não-gestores. Esse achado pode estar relacionado à diferença de percepção da justiça organizacional entre os dois grupos, pois os não-gestores apresentaram menor percepção de justiça organizacional em relação aos gestores. A percepção positiva da justiça organizacional pode moldar o comportamento dos servidores, impactando no engajamento no trabalho de modo a potencializá-lo (Harrington & Lee, 2014; Lee & Wei, 2017; Stankevičiūtė & Savanevičienė, 2021).

4.3. Equações Estruturais

Para verificar o efeito da relação mediadora da justiça organizacional entre CSGDRH e engajamento no trabalho, utiliza-se a modelagem de equações estruturais. Iniciando-se pela avaliação do modelo estrutural, observa-se que as cargas padronizadas apresentam-se superiores a 0,5, fator mínimo para confirmação da presença de todas as variáveis no modelo (Hair Jr. et al., 2009). Percebe-se que os índices de ajuste e confiabilidade do modelo estão entre os valores aceitáveis de ajustamento, confirmando sua validade preditiva. Os valores das raízes quadradas das *Average Variance Extracted* (AVEs) foram superiores às correlações dos construtos.

A Tabela 2 evidencia valores acima de 0,5 para AVE (Henseler et al., 2009), tendo a justiça organizacional AVE de 0,576, o menor valor do critério. Ao analisar a multicolinearidade entre os fatores (VIF), os resultados obtidos são definidos como aceitáveis (Hair Jr. et al., 2016). Os valores para confiabilidade composta estão acima de 0,919, superior ao valor de 0,70; considerado aceitável (Hair Jr. et al., 2016). O Alfa de Cronbach mostraram-se adequados aos construtos e variáveis (Hair Jr. et al., 2016), conferindo confiabilidade e adequação ao modelo testado.

Ao avaliar a porção da variância das variáveis endógenas, por meio da verificação dos coeficientes de determinação de Pearson (R^2), observa-se que a relação com menor poder de influência ocorreu entre CSGDRH e JINT (0,322), seguida pela relação entre CSGDRH e

engajamento no trabalho (0,363). A relevância preditiva do modelo, mensurada pelo indicador de *Stone-Geisser* (Q^2), denotou menor valor registrado, condizente com [Hair Jr. et al. \(2016\)](#). O menor valor encontrado de f^2 foi de 0,514, construído da justiça organizacional, superior a 0,35 definido como satisfatório para o ajuste do modelo estrutural ([Hair Jr. et al., 2016](#)). A [Tabela 3](#) apresenta os resultados dos coeficientes estruturais e significância das relações testadas.

Observa-se que os efeitos diretos da CSGDRH sobre o engajamento no trabalho não foram suportados. O caminho (path) CSGDRH→ENG não se mostrou estatisticamente significativo (β : 0,155; $p < 0,170$). O teste t para esta relação também não foi aceitável, segundo [Hair Jr. et al. \(2009\)](#). Tais fatos reforçam o ensejo de analisar variáveis intervenientes como recursos que determinam as habilitações capazes de promover a relação na qual uma maior CSGDRH resulta em melhor engajamento no trabalho. Todas as demais relações foram significativas ($p > 0,001$).

A relação CSGDRH→JUST_ORG revelou os melhores indicadores, sugerindo efeitos diretos e positivos. O R^2 da relação CSGDRH→JUST_ORG mostra que 60,4% da variância é explicada por suas variáveis independentes. O teste t é satisfatório, de acordo com [Hair Jr. et al. \(2009\)](#). O modelo aborda ainda a relação JUST_ORG→ENG, que se apresentou como positiva e significativa, a partir dos resultados do teste t (3,783), superior ao recomendado por [Hair Jr. et al. \(2009\)](#).

4.4. Discussões

Os resultados do modelo testado revelam uma influência indireta da CSGDRH→ENG, por meio da justiça organizacional, ao passo que o coeficiente de caminho, que mede relação direta entre CSGDRH e o engajamento no trabalho, revela um valor de β de 0,155. O caminho indireto da CSGDRH no engajamento no trabalho, influenciado pela justiça organizacional, reflete um valor de 0,368. O produto dos coeficientes perfaz um efeito total de 0,523. A percepção da justiça organizacional nesta relação permite uma melhor compreensão dos efeitos da CSGDRH no engajamento no trabalho, considerando que o coeficiente de explicação do modelo mediador é maior que aquele vinculado à relação direta entre CSGDRH→ENG. Os resultados permitem confirmar a hipótese de que a justiça organizacional medeia a relação entre a CSGDRH e o engajamento no trabalho.

Os resultados seguem o preconizado na pesquisa de [Awan et al. \(2020\)](#), que sugeriram a inclusão da percepção da justiça organizacional como variável mediadora entre a eficácia do sistema de gestão de desempenho e o engajamento no trabalho. [Sharma et al. \(2016\)](#) também haviam declarado que atributos da eficácia de um sistema de gestão de desempenho podem potencializar o engajamento, considerando a justiça organizacional como aspecto imbricado à eficácia, termo que engloba aspectos da consistência do sistema de gestão de desempenho.

Tabela 2. Validade discriminante e indicadores de confiabilidade do modelo

Validade Discriminante	CSGDRH	ENG	JDIS	JINF	JINT	JPRO
CSGDRH	0.844					
ENG	0.523	0.863				
JDIS	0.654	0.489	0.933			
JINF	0.733	0.544	0.638	0.948		
JINT	0.250	0.276	0.278	0.438	0.979	
JPRO	0.790	0.579	0.710	0.748	0.383	0.890
CollinearityStatistic (VIF)	ENG	JDIS	JINF	JINT	JPRO	JUST_ORG
CSGDRH	2.523					1.000
JUST_ORG	2.523	1.000	1.000	1.000	1.000	
Indicadores de Confiabilidade	AVE	CC	Alfa de Cronbach	R Square	Relevância Preditiva (Q^2)	Tamanho do Efeito (f^2)
CSGDRH	0.712	0.967	0.963	-	-	0.658
ENG	0.745	0.963	0.957	0.363	0.266	0.683
JUST_ORG	0.576	0.945	0.937	0.604	0.339	0.514
JDIS	0.870	0.964	0.950	0.744	0.638	0.760
JINF	0.898	0.964	0.943	0.779	0.694	0.740
JINT	0.958	0.986	0.978	0.319	0.298	0.844
JPRO	0.791	0.919	0.868	0.796	0.625	0.552

Fonte: elaboração própria.

Tabela 3. Coeficientes estruturais

Caminhos estruturais	β	t-value	p-value	R2
CSGDRH → ENG	0.155	1.375	0.170 _{ns}	0.363
CSGDRH → JUST ORG	0.777	19.961	0.000	0.604
JUST ORG → ENG	0.474	3.783	0.000	0.363

Fonte: elaboração própria.

Por conseguinte, os resultados desta pesquisa são congruentes com aqueles apresentados por Stankevičiūtė e Savanevičienė (2021), que encontraram relação mediadora da justiça organizacional entre clareza de metas e feedback (atributos da consistência) e o engajamento no trabalho, impactando-os de forma positiva. Corroboram Chen et al. (2016) que, ao analisarem a consistência das práticas de GRH, alviraram em seus achados que o clima de justiça processual tem efeitos de mediação significativos entre a consistência de práticas de gestão de recursos humanos e o desempenho dos funcionários. Percebe-se na literatura anterior, que a CSGDRH é um construto preditor da justiça organizacional e do engajamento no trabalho (Chen et al., 2016; Kakkar & Vohra, 2021; Stankevičiūtė & Savanevičienė, 2021).

Como mediadora, a justiça organizacional estabelece que a influência da CSGDRH no engajamento no trabalho pode ser entregue pela formação de um clima organizacional de consistência e percepção individual de justiça, no desempenho atitudinal do funcionário. A CSGDRH contribui na construção de um modelo de causa e efeito no ambiente de trabalho, com impactos positivos na justiça e na percepção do funcionário em relação ao pactuado com a organização, na forma de contrato psicológico (Chen et al., 2016). A CSGDRH impacta psicologicamente os funcionários por meio da justiça organizacional como um mecanismo de engajamento no trabalho (Kakkar & Vohra, 2021). À medida que os funcionários tendem a julgar mais as decisões organizacionais como justas ou não, a justiça organizacional ganha furor para explicar uma ampla gama de comportamentos, como o engajamento no trabalho (Stankevičiūtė & Savanevičienė, 2021).

Como fator organizacional da avaliação de desempenho, a CSGDRH funciona como meio de integração entre as necessidades organizacionais e individuais (Kakkar et al., 2020; Maake et al., 2021; Stankevičiūtė & Savanevičienė, 2021), representando mais um recurso que apoia o crescimento, aprendizado e autonomia do funcionário, elevando, assim, a sensação de pertencimento à organização, e de justiça organizacional, com impacto em melhores níveis de engajamento no trabalho (Ancarani et al., 2021; Kakkar & Vohra, 2021; Chen et al., 2016). Assim, a CSGDRH promove apoio organizacional aos servidores públicos, seja pelo estabelecimento de metas e feedbacks objetivos e coerentes, seja pela adoção de atitudes análogas, livres de contradições, durante todo o processo de gestão de desempenho de recursos humanos, ao fomentar a

percepção de justiça organizacional e direcionar esforços aos objetivos estratégicos, visando melhor desempenho individual e organizacional.

5. Conclusões

Com objetivo de analisar os efeitos da CSGDRH no engajamento no trabalho, mediado pela justiça organizacional em uma Autarquia Pública Federal Brasileira, procedeu-se um estudo quantitativo, descritivo, utilizando-se de uma survey single Entity. A amostra foi composta por 132 servidores públicos, sendo 50 gestores e 82 não-gestores, com participação mínima em oito ciclos de avaliação de desempenho de recursos humanos. Os dados foram analisados por meio da modelagem de equações estruturais.

Os achados do modelo indicam que os efeitos comportamentais da justiça organizacional são capazes de melhorar os fatores de influência da CSGDRH no engajamento no trabalho. Os efeitos positivos da CSGDRH podem agir de tal forma a sustentar a legitimidade dos sistemas de gestão de desempenho de recursos humanos, aumentando as percepções de justiça dos servidores em relação aos contratos psicológicos firmados com a organização, fomentando, assim, o engajamento e desempenho no trabalho. A consistência e o clima positivo de justiça fortalecem os canais de comunicação intraorganizacionais e ajudam os servidores públicos na compreensão das mensagens e foco nos objetivos da organização. A partir da condição preditora da CSGDRH para com construtos comportamentais, sobreleva-se a sua capacidade de influenciar a gestão de desempenho de recursos humanos de forma positiva, integrando o nível organizacional ao individual.

Os resultados da pesquisa permitiram concluir que a CSGDRH é preditora da justiça organizacional e do engajamento no trabalho. O atributo da consistência tem o potencial de reforçar o alcance dos objetivos propostos pelo sistema de gestão de desempenho de recursos humanos, e de superar os entraves percebidos na gestão de desempenho de recursos humanos do setor público por meio de uma comunicação clara. De acordo com Stankevičiūtė e Savanevičienė (2021), são percebidos menores níveis de engajamento no trabalho no setor público em relação ao setor privado. Dessemelhança que pode ser suavizada a partir da utilização de sistemas de gestão de desempenho de recursos humanos consistentes, visto que esta pesquisa denotou, assim como na seara privada, que a Administração Pública pode valer-se da CSGDRH como fator capaz de influenciar os comportamentos dos funcionários, e impactar seu nível de engajamento no trabalho (Awan et al., 2020; Maake et al., 2021).

Os resultados apontados fornecem subsídios aos gestores quanto aos fatores sensíveis ao engajamento no trabalho de servidores públicos. A percepção dos servidores públicos acerca dos construtos analisados

pode ser utilizada para melhorar a compreensão da gestão de desempenho individual. Ao verificar a relevância das relações e as diferentes percepções dos servidores em relação à CSGDRH, o engajamento no trabalho e a justiça organizacional, principalmente entre áreas meio e fim, e gestores e não-gestores, reforça-se os aspectos da consistência entre grupos com percepções mais negativas. A compreensão dos motivos desses resultados deve ser o gatilho para elevar os níveis de percepção de justiça organizacional e, conseqüentemente, engajamento no trabalho, pois, quando o sistema de gestão de desempenho de recursos humanos é inconsistente, tende a promover efeitos negativos no comportamento dos indivíduos. Ademais, compreender a CSGDRH pode favorecer a implementação e institucionalização de novos sistemas de gestão de desempenho de recursos humanos.

Algumas limitações do estudo podem ser referenciadas: a transversalidade da análise que não permite estabelecer relações de causalidade. Os resultados da pesquisa estão sujeitos ao viés de confirmação, cujas percepções dos construtos em análise são subjetivas e abertas à interpretação. A definição da análise apenas em uma entidade pública não permite, também, a generalização dos resultados para todo o setor público.

Nesse sentido, o estudo de mais organizações pode potencializar os resultados. Entretanto, outra limitação deve ser considerada: a necessidade de utilização de um sistema de gestão de desempenho de recursos humanos, critério que justificou a pesquisa na entidade pública em questão. O número de respondentes e a amostra, também podem representar uma limitação. Ao utilizar uma amostra por acessibilidade, pode ocorrer comprometimento da representatividade. Apesar das limitações, o rigor metodológico aplicado na pesquisa minimiza tais efeitos, corroborando a conformidade do desenvolvimento do estudo.

Os achados da pesquisa contribuem com a literatura acerca do tema e convidam gestores a perceberem a importância da CSGDRH à iniciativa pública e aos impactos sociais da ausência desse atributo na gestão de desempenho de recursos humanos. Com isso, a organização pública em estudo pode direcionar recursos à manutenção de fatores que favoreçam a CSGDRH e eficácia dos sistemas. Ao apontar a relevância da CSGDRH para o engajamento no trabalho e o papel mediador da justiça organizacional, há um imperioso estímulo de análise de outros fatores comportamentais que possam influenciar essa relação, tais como satisfação no trabalho, empoderamento, impacto social percebido, quebra do contrato psicológico, rotatividade, dentre outros.

Pesquisas futuras podem abranger a avaliação da consistência nas fases do ciclo de vida dos sistemas de gestão de desempenho de recursos humanos, ou abranger períodos longitudinais e serem replicadas em outros entes públicos, contribuindo para consolidação

da área comportamental da contabilidade, ainda considerado tema emergente.

Conflict of interest

The authors declare no conflict of interest.

Referências

- Anarani, A., Arcidiacono, F., Mauro, C. D., & Giammanco, M. D. (2021). Promoting work engagement in public administrations: the role of middle managers' leadership. *Public Management Review*, 23(8), 1234-1263. <https://doi.org/10.1080/14719037.2020.1763072>.
- Arango, A. M. A. (2009). La actitud del consumidor según la percepción de justicia organizacional. *Estudios Gerenciais*, 25(113), 99-122. [https://doi.org/10.1016/S0123-5923\(09\)70091-9](https://doi.org/10.1016/S0123-5923(09)70091-9)
- Audenaert, M., Decramer, A., George, B., Verschuere, B., & Van Waeyenberg, T. (2019). When employee performance management affects individual innovation in public organizations: The role of consistency and LMX. *The International Journal of Human Resource Management*, 30(5), 815-834.
- Awan, S. H., Habib, N., Shoaib Akhtar, C., & Naveed, S. (2020). Effectiveness of performance management system for employee performance through engagement. *SAGE open*, 10(4), 2158244020969383. DOI: <https://doi.org/10.1177/2158244020969383>.
- Bauwens, R., Audenaert, M., & Decramer, A. (2019). Fostering societal impact and job satisfaction: the role of performance management and leader-member exchange. *Public Management Review*, 21(10), 1486-1515. <https://doi.org/10.1080/14719037.2018.1561928>.
- Brunetto, Y., & Beattie, R. (2020). Changing role of HRM in the public sector. *Public Management Review*, 22(1), 1-5. <https://doi.org/10.1080/14719037.2019.1645876>.
- Chen, S. Y., Uen, J. F., & Chen, C. C. (2016). Implementing high performance HR practices in Asia: HR practice consistency, employee roles, and performance. *Asia Pacific Journal of Management*, 33(4), 937-958. <https://doi.org/10.1007/s10490-016-9466-z>.
- Colquitt, J. A. (2001). On the dimensionality of organizational justice: a construct validation of a measure. *Journal of applied psychology*, 86(3), 386.
- Dai, Y. D., Dai, Y. Y., Chen, K. Y., & Wu, H. C. (2013). Transformational vs transactional leadership: which is better? A study on employees of international tourist hotels in Taipei City. *International Journal of Contemporary Hospitality Management*, 25(5), p. 760-778. <https://doi.org/10.1108/IJCHM-Dec-2011-0223>.
- Decramer, A., Smolders, C., & Vanderstraeten, A. (2013). Employee performance management culture and system features in higher education: relationship with employee performance management satisfaction. *The International Journal of Human Resource Management*, 24(2), 352-371. <https://doi.org/10.1080/09585192.2012.680602>.
- Guesser, P. C. L., Ensslin, S. R., & Petri, S. M. (2020). Avaliação de Desempenho de Gestão de Recursos Humanos no Setor Público. *Sociedade, Contabilidade e Gestão*, 15(4), 42-67. https://doi.org/10.21446/scg_ufrj.v0i0.19644.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2009). *Análise multivariada de dados*. Bookman editora.
- Hair Jr., J. F.; Hult, T. M.; Ringle, C. M.; Sarstedt, M. (2016). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Los Angeles: SAGE Publications.
- Han, J. H., Kang, S., Oh, I. S., Kehoe, R. R., & Lepak, D. P. (2019). The goldilocks effect of strategic human resource management? Optimizing the benefits of a high-performance work system through the dual alignment of vertical and horizontal fit. *Academy of Management Journal*, 62(5), 1388-1412. <https://doi.org/10.5465/amj.2016.1187>.

- Harrington, J. R., & Lee, J. H. (2015). What drives perceived fairness of performance appraisal? Exploring the effects of psychological contract fulfillment on employee's perceived fairness of performance appraisal in US federal agencies. *Public Personnel Management, 44*(2), 214-238. <https://doi.org/10.1177/0091026014564071>.
- Henseler, J., Ringle, C. M. & Sinkovics, R. R. (2009). The use of Partial Least Squares Path Modeling in international marketing. In: R. R. Sinkovics & P. N. Ghauri (Ed.), *New Challenges to International Marketing* (pp. 277-320). Bingley: Emerald
- Holtz, B. C., & Hu, B. (2017). Passive leadership: Relationships with trust and justice perceptions. *Journal of Managerial Psychology, 32*(1), 119-130. <https://doi.org/10.1108/JMP-02-2016-0029>.
- Kakkar, S., & Vohra, N. (2021). Self-Regulatory Effects of Performance Management System Consistency on Employee Engagement: A Moderated Mediation Model. *American Business Review, 24*(1), 11. <https://doi.org/10.37625/abr.24.1.225-248>.
- Kakkar, S., Dash, S., Vohra, N., & Saha, S. (2020). Engaging employees through effective performance management: an empirical examination. *Benchmarking: An International Journal, 27*(5), 1843-1860. <https://doi.org/10.1108/BIJ-10-2019-0440>.
- Kehoe, R. R., & Wright, P. M. (2013). The impact of high-performance human resource practices on employee's attitudes and behaviors. *Journal of management, 39*(2), 366-391. <https://doi.org/10.1177/0149206310365901>.
- Khan, I. U., Idris, M., & Amin, R. U. (2021). Leadership style and performance in higher education: the role of organizational justice. *International Journal of Leadership in Education, 1-15*. <https://doi.org/10.1080/13603124.2020.1854868>.
- Kumar, P., & Padhi, N. (2021). Development and validation of multi-factor employee engagement measuring instrument: a formative measurement model. *Personnel Review, 41*(1), 1-15. <https://doi.org/10.1108/PR-01-2021-0014>.
- Lee, H. W. (2019). Performance-based human resource management and federal employee's motivation: moderating roles of goal-clarifying intervention, appraisal fairness, and feedback satisfaction. *Review of Public Personnel Administration, 39*(3), 323-348. <https://doi.org/10.1177/0734371X17721300>.
- Lee, J., & Wei, F. (2017). The moderating effect of leadership on perceived organizational justice and affective commitment: a study in China. *The International Journal of Human Resource Management, 28*(5), 679-702. <https://doi.org/10.1080/09585192.2015.1109533>.
- Maake, G., Harmse, C. P., & Schultz, C. M. (2021). Performance management as a mediator for work engagement and employment relationships in the public sector in South Africa. *SA Journal of Human Resource Management, 19*, 12. <https://doi.org/10.4102/sajhrm.v19i0.1507>.
- Mucci, D. M., Frezatti, F., & Dieng, M. (2016). As múltiplas funções do orçamento empresarial. *Revista de Administração Contemporânea, 20*, 283-304. <http://dx.doi.org/10.1590/1982-7849rac2016140121>.
- Nader, M., Peña Bernate, S. P., & Santa-Bárbara, E. S. (2014). Prediction of satisfaction and well-being at work: Towards a model of healthy organization in Colombia. *Estudios Gerenciales, 30*(130), 31-39. <https://doi.org/10.1016/j.estger.2014.02.006>
- Oubrich, M., Hakmaoui, A., Benhayoun, L., Söilen, K. S., & Abdulkader, B. (2021). Impacts of leadership style, organizational design and HRM practices on knowledge hiding: The indirect roles of organizational justice and competitive work environment. *Journal of Business Research, 137*, 488-499. <https://doi.org/10.1016/j.jbusres.2021.08.045>.
- Ringle, C. M., Silva, D., & Bido, D. S. (2014). Modelagem de equações estruturais com utilização do Smart PLS. *Revista brasileira de marketing, 13*(2), 56-73. <https://doi.org/10.5585/remark.v13i2.2717>.
- Santos, E. A., Sallaberry, J. D., Gonzaga, C. A. M., & Soares, S. (2020). Responsabilidade social corporativa e identificação organizacional: influência no engajamento dos funcionários. *Revista Universo Contábil, 15*(4), 147-161. <http://dx.doi.org/10.4270/ruc.2019432>.
- Santos, E. A., Venturini, L. D. B., Sallaberry, J. D., Klein, L., & Flach, L. (2023). Organizational fairness and task performance: a study between different activities and positions in the justice sector. *Revista de Administração da UFSM, 16*(1), e10-e10. <https://doi.org/10.5902/1983465972136>
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and psychological measurement, 66*(4), 701-716. <https://doi.org/10.1177/0013164405282471>.
- Sharma, N. P., Sharma, T., & Agarwal, M. N. (2016). Measuring employee perception of performance management system effectiveness: Conceptualization and scale development. *Employee Relations, 38*(2), 224-247. <https://doi.org/10.1108/ER-01-2015-0006>.
- Stankevičiūtė, Ž., & Savanevičienė, A. (2021). Linkage between leader's behavior in performance management, organizational justice and work engagement in public sector. *Economies, 9*(1), 15. <https://doi.org/10.3390/economies9010015>.
- Strom, D. L., Sears, K. L., & Kelly, K. M. (2014). Work engagement: The roles of organizational justice and leadership style in predicting engagement among employees. *Journal of leadership & organizational studies, 21*(1), 71-82. <https://doi.org/10.1177/1548051813485437>.
- Van Thienen, T., Decramer, A., Vanderstraeten, A., & Audenaert, M. (2018). When does performance management foster team effectiveness? A mixed-method field study on the influence of environmental extremity. *Journal of Organizational Behavior, 39*(6), 766-782. <https://doi.org/10.1002/job.2297>.
- Van Waeyenberg, T., Decramer, A., Desmidt, S., & Audenaert, M. (2017). The relationship between employee performance management and civil servants' turnover intentions: A test of the mediating roles of system satisfaction and affective commitment. *Public Management Review, 19*(6), 747-764. <https://doi.org/10.1080/14719037.2016.1209230>.

The effect of moral hazard on the SMEs credit portfolio guaranteed by Colombia's National Guarantee Fund

José A. Castillo* Profesor investigador, Facultad de Ciencias Económicas y Administrativas, Pontificia Universidad Javeriana, Cali, Colombia.
jacastillo@javerianacali.edu.coAndrés Mora-Valencia Profesor investigador, Facultad de Administración, Universidad de los Andes, Bogotá, Colombia.
a.mora262@uniandes.edu.co

Abstract

This article determines the effect of moral hazard on the probability of default of the credit portfolio of small and medium-sized companies guaranteed by Colombia's National Guarantee Fund. A copula methodology with two logit models with traditional and moral hazard financial ratios was used. The results show that the probabilities of default have the same pattern, evidencing that by incorporating the ratios of moral hazard, no significant variations are shown in the results. Thus, the moral hazard categories become an important tool not only at the calculation level of individual default probability but also in a portfolio.

Keywords: moral hazard ratios; credit risk; national guarantee fund; credit portfolio; copula.

Efecto del riesgo moral en la cartera de crédito de las PYME garantizadas por el Fondo Nacional de Garantías de Colombia

Resumen

Este artículo determina el efecto del riesgo moral en la probabilidad de incumplimiento de la cartera de crédito de las pequeñas y medianas empresas garantizadas por el Fondo Nacional de Garantías de Colombia. Para ello, se emplean dos modelos logit con indicadores financieros tradicionales y de riesgo moral en una metodología de cópula. Los resultados muestran que las probabilidades de incumplimiento tienen el mismo patrón y que al incorporar los indicadores del riesgo moral no hay variaciones significativas en los resultados, por ende, las categorías de riesgo moral se convierten en una herramienta idónea no solo a nivel del cálculo de probabilidad de incumplimiento individual, sino también en una cartera.

Palabras claves: indicadores de riesgo moral; riesgo de crédito; fondo nacional de garantías; cartera de crédito; cópulas.

O efeito do risco moral na carteira de crédito das PME garantidas pelo Fundo Nacional de Garantias da Colômbia

Resumo

Este artigo determina o efeito do risco moral sobre a probabilidade de inadimplência da carteira de crédito de pequenas e médias empresas garantidas pelo Fundo Nacional de Garantias da Colômbia. Para isso, são usados dois modelos logit com indicadores financeiros tradicionais e de risco moral em uma metodologia de cópula. Os resultados mostram que as probabilidades de inadimplência têm o mesmo padrão e que, ao incorporar indicadores de risco moral, não há variações significativas nos resultados; portanto, as categorias de risco moral tornam-se uma ferramenta adequada não apenas para calcular a probabilidade de inadimplência individual, mas também para uma carteira.

Palavras-chave: indicadores de risco moral; risco de crédito; fundo nacional de garantias; carteira de crédito; cópulas.

* Corresponding author.

JEL Classification: G18; G20.

How to cite: Castillo, J. A. & Mora-Valencia, A. (2023). The effect of moral hazard on the SMEs credit portfolio guaranteed by Colombia's National Guarantee Fund. *Estudios Gerenciales*, 39(168), 379-386. <https://doi.org/10.18046/j.estger.2023.167.5961>

DOI: <https://doi.org/10.18046/j.estger.2023.167.5961>

Received: 01-02-2023

Accepted: 26-05-2023

Available on line: 30-09-2023

1. Introduction

Moral hazard may appear in the corporate credit contract base on four categories: asset substitution, inadequate effort supply, underinvestment, and alternative use of the credit granted. These serve as the basis for building moral hazard ratios (Castillo et al., 2018). They can be used to measure the effect of moral hazard on credit risk by considering the positive coefficients of the logistic regression on the probability of default (Castillo et al., 2021). However, such ratios have not been used yet on the probability of default of a credit portfolio. Thus, the base models of the authors mentioned above will be used in the present paper. This research topic is relevant since the guarantee, when granted by a third party, acts as collateral that does not solve moral hazard problems (Menkhoff et al., 2011); and this has been the role of Colombia's National Guarantee Fund (Fondo Nacional de Garantías de Colombia – FNG), which has been fundamental in the mobilization of credits to SMEs (Castillo & Girón, 2014). The effect of moral hazard in the SME credit portfolio, guaranteed by the FNG, could be appreciated comparatively considering the probabilities of default with and without the moral hazard ratios within the logistic model and from there within the copula.

In this paper, three sections follow the introduction. Section 2 presents the related literature on collateral and moral hazard, and copulas. Section 3 presents the empirical work to compare the probabilities of default in a portfolio calculated with and without the moral hazard ratios, and finally, Section 4 presents the conclusions.

2. Theoretical background

2.1 Collateral and moral hazard

Collateral is the bank's right over the borrower's assets in case of bankruptcy. It is an alternative resource for paying the debt beyond the cash flows (Tirole, 2005). One of the main reasons why banks use guarantees is that they reduce the risk of credit loss in default situations (Godlewski & Weill, 2011). It also prevents companies from accessing financing while others do not (credit rationing) (Besanko & Thakor, 1987).

Credit rationing occurs because the lender is imperfectly informed of the characteristics and behavior of the borrower when accessing credit, known as asymmetric information. Under a scenario of asymmetric information, the collateral, prior to the signing of the credit agreement, serves as a differentiator (screening) between good and bad borrowers, mitigating adverse selection problems and, once the credit is granted, can act as a driver of the effort needed in activities that require financing, that is, to reduce moral hazard problems. (Agarwal et al., 2015).

Moral hazard refers to conflicts of interest that arise in the development of a contractual relationship where one of the parties (Agent) may engage in conduct that goes

against the benefit of the other (Principal). An example of this can be found in the insurance field, where someone ensures an asset and, therefore, has less incentive to maintain it properly. The insurance company usually cannot monitor or verify the behavior of the insured (Lee & Shin, 2008), which means that moral hazard has retrospective effects (Mirrlees, 1999).

Regarding the issue of moral hazard in credit, there is a body of theoretical work, as in Csóka et al. (2015) and empirical works, such as Uesugi et al. (2010) and Castillo et al. (2018), among others. These last authors incorporate variables to measure moral hazard within the framework of credit risk. These variables are defined with a positive sign and within four categories: i) asset substitution, aimed at seeking investments with higher risk and better returns; ii) low effort, characterized by high costs and expenses; iii) underinvestment, characterized by the use of financial resources for non-operating expenses; and iv) different use of the invested capital, when the financing resource is used for activities other than those established in the credit agreement. Similarly, Castillo et al. (2021) established an index to measure and monitor the influence of moral hazard on short-term credit performance for SMEs. However, the moral hazard variable within the calculation of the probability of default of a credit portfolio has not been used yet. This is the situation in which the National Guarantee Fund of Colombia is immersed in its role of SME credit guarantor when it needs to calculate the probability of default of its portfolio, given that the institution works as a guarantee provided by a third party, and this type of guarantee does not solve moral hazard problems (Menkhoff et al., 2011). Thus, the calculation of the probability of default of said portfolio corresponds to the objective of this work.

On the other hand, when analyzing the credit risk of a portfolio, the individual effect of each element of the portfolio overall must be considered, and this is where the issue of copulas becomes relevant.

2.2 Copulas

A copula is a multivariate distribution such that its marginal distributions are uniform and describes how the distributions are jointly related to determine the multivariate distribution (Bluhm et al., 2010).

There is a large body of literature on copulas, including Fredheim (2008) and Rank (2006). An enlightening literature review on copula applications to financial and economic time series can be found in Patton (2012) and, more recently, in Dewick and Liu (2022). In particular, for the credit risk case, the remarkable work of Frey and McNeil (2003), the authors present recommendations on credit risk model choice. Moreover, the financial literature presents applications of Gaussian (Bourgey et al., 2020) and non-Gaussian copula models on portfolio credit risk, such as the t-copula (Chan and Kroese, 2010), composite Bernstein copula (Guo et al., 2017), and Archimedean copulas (Fenech et al., 2015; Cui et al., 2022).

A related work to our paper is Liu et al. (2019), where the authors employ an Archimedean copula to examine the credit risk of Chinese SMEs loans. To understand the usefulness of a copula, the Vasicek model is considered, which is based on the Gaussian, and it is still used for credit risk modeling (e.g., García-Céspedes and Moreno, 2022). In order to calculate the default probability of a portfolio, the probability of default for each credit is initially considered in the model. Then, the joint probability is calculated, considering the individual impact on the whole credit portfolio (Hull, 2015).

3. Methodology

The objective of this section is to visualize the moral hazard in a credit portfolio for which the following procedure is used: i) the default probabilities of each of the SME credits guaranteed by the FNG are calculated using two logit models. Model 1 uses traditional financial ratios, while Model 2 adds moral hazard ratios. ii) The default probabilities of the credit portfolio are calculated, with and without the moral hazard ratios, through copulas, and iii) The previously calculated default probabilities are compared.

3.1 Data

The data for calculating the default probabilities come from crossing two sources of information: the FNG and the Colombian Superintendency of Corporations. Based on this, the financial ratios are calculated for traditional and moral hazard ratios of the companies that have obtained loans under the FNG's guarantee.

The data is described below, which is based on the article by Castillo et al. (2021), where the descriptive analysis of the variables used in the modeling can be observed.

From the FNG source, companies short term credit information (working capital loan) is taken for a period less than or equal to 12 months. This is because the database does not allow identifying the dates on which a customer may have defaulted on loan payments, such default occurs when the collateral is paid to the financial intermediary by the FNG. Therefore, with data for the period indicated above, the company's financial information for the year in which the collateral became effective and the completion of the credit term will not be significantly different, unless the company entered bankruptcy, which was verified. This organizes the work into annual cohorts, which provides an instant and complete picture of the SMEs' credit performance (guaranteed by the FNG) for each year. Balance sheets and income statements for these same companies with FNG credit guarantees were obtained from the Colombian Superintendency of Corporations.

The number of records obtained (filtered by company size)¹ regarding the number of SMEs in Colombia was 2,234, 2,451, 3,469, 3,498, 3,896, 3,760, 3,615, and 3228 for the years 2007-2014, respectively. These records consist of two groups. The first corresponds to companies for which the collateral was paid to the financial intermediary by the FNG; these companies defaulted. There were: 8, 5, 10, 6, 9, 17, 17 and 20 companies that defaulted in each of the years examined, respectively. The second group consists of the remaining companies for which the collateral was terminated without a claim; that is, the borrower paid back the entire loan.

In the modeling, the focus is on the behavior of the company at the end of the collateral period because either the company defaulted or it did not. Additionally, given that a company can have multiple loans, the company's response regarding the entire credit package was considered; that is, whether it complied or not. A single loan default was enough to consider the entire credit package to be in breach of contract.

In the two logit models used, the dependent variable, in all cases, corresponded to the state of compliance with the terms of the credit package (failure or not). In the first model, the independent variables were the traditional financial ratios and the number of loans; a one (1) was assigned when there was a single loan, otherwise a zero (0) was assigned for all other cases. In the second model, the moral hazard ratios were added. (p. 314)

Figure 1 shows the variables for the logit models, corresponding to the traditional financial ratios, the moral hazard ratios, and the dummy variable (A-NUMBER-C) associated with the number of SME loans

3.2 Method

Based on the probabilities of default obtained from the logit models shown in Figure 1, the probabilities of default in the portfolio from 2007 to 2014 are calculated using copulas, using the Vasicek model, as described in Hull (2015):

1. "An arbitrary value is chosen for PD (joint default probability, portfolio) and for ρ (the portfolio joint dependence coefficient) in the interval [0,1].
2. The logarithm of the probability density is calculated for each of the observations considering the probability of individual noncompliance (DR) by means of the equation:

$$g(DR) = \sqrt{\frac{1-\rho}{\rho}} \exp \left\{ \frac{1}{2} \left[(N^1(DR))^2 - \left(\frac{\sqrt{1-\rho} N^1(DR) - N^1(PD)}{\sqrt{\rho}} \right)^2 \right] \right\}, \quad [1]$$

¹ For this purpose, in addition to the size classification of Colombian SMEs established by Law 905 in 2004, the amount of the legal monthly minimum wage was used. The amounts were: 2007 (COP 433,700), 2008 (COP 461,500), 2009 (COP 496,900), 2010 (COP 515,000), 2011 (COP 535,600), 2012 (COP 566,700), 2013 (COP 589,500) and 2014 (COP 616,000).

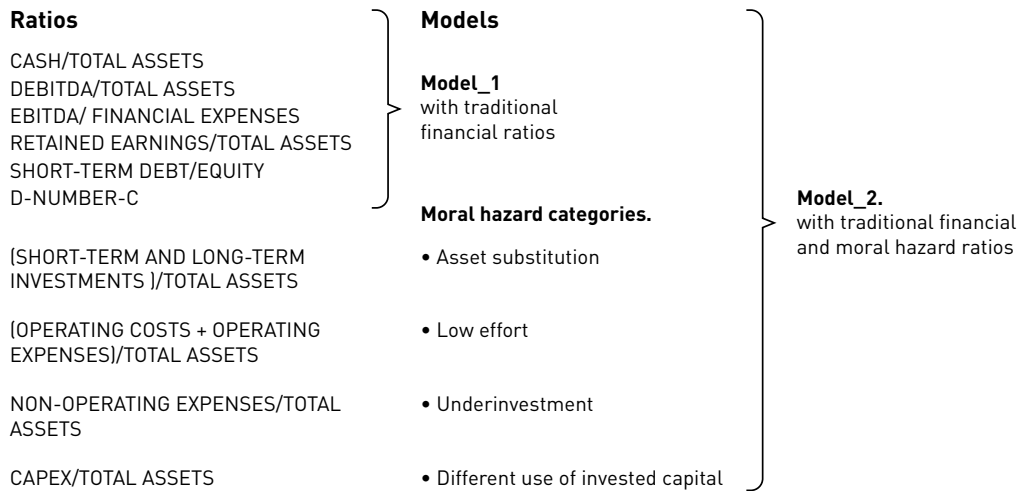


Figure 1. Logit models variables.
Source: own elaboration.

where:

$g(DR)$ = probability density function, DR = probability of individual default, PD = probability of joint (portfolio) default, ρ = joint (portfolio) dependence coefficient, and $N^{-1}(\cdot)$ is the quantile function of a standard normal distribution.

3. An optimization solver alternative is employed to find the PD and ρ that maximize the sum of the values in point 2. (p. 248)"

4. Results

Table 1 shows the calculation of the default probabilities in the SME portfolio guaranteed by the FNG based on model 1 (PD:I) and model 2 (PD:II).

The two groups of probabilities present the same behavior over time (Figure 2), where PD:II adjusts to lower values, except for 2014. That is, the two models (models 1 and 2) determine the same pattern of behavior for this probability. Since the -2log likelihood criterion establishes logit Model 2 as the best model (see Table 3, Table 4), PD:II shows a better technique forecast.

To determine if the two probabilities are statistically different, a chi-squared test is performed where PD:II is the observed data and PD:I is the expected result. The test statistic is 0.0011, and the critical value (with 7 degrees of freedom) is 14.0671. The null hypothesis is not rejected. Thus, we can infer that there is no statistical difference between the default probabilities assessed by Models 1 and 2 (Table 2).

On the other hand, comparing the trajectory followed by the PD:II with the FNG's default rate between 2007 and 2014, Figure 3, a similar pattern is observed, with

a correlation coefficient of 0.62. This shows that the projections are significantly close to reality.

Table 1. Default probabilities of the SME portfolio guaranteed under the FNG.

Year	PD:I	PD:II
2007	0.0008	0.0004
2008	0.0010	0.0005
2009	0.0015	0.0013
2010	0.0086	0.0082
2011	0.0018	0.0011
2012	0.0016	0.0012
2013	0.0035	0.0026
2014	0.0019	0.0022

Source: own elaboration.

Table 2. Chi-squared test between PD:II (observed data) and PD:I (expected result).

Years	PD:I (expected result)	PD:II (observed data)	(PD:II - PD:I)²/PD:I
2007	0.0008	0.0004	0.0002
2008	0.0010	0.0005	0.00025
2009	0.0015	0.0013	2.66667E-05
2010	0.0086	0.0082	1.86047E-05
2011	0.0018	0.0011	0.000272222
2012	0.0016	0.0012	0.0001
2013	0.0035	0.0026	0.000231429
2014	0.0019	0.0022	4.73684E-05
Test statistic			0.001146291
crit vl			14.06714045
n-1	7.0000	d.f.	
p-value	1.00000		
Decision: Ho is not rejected			

Source: own elaboration.

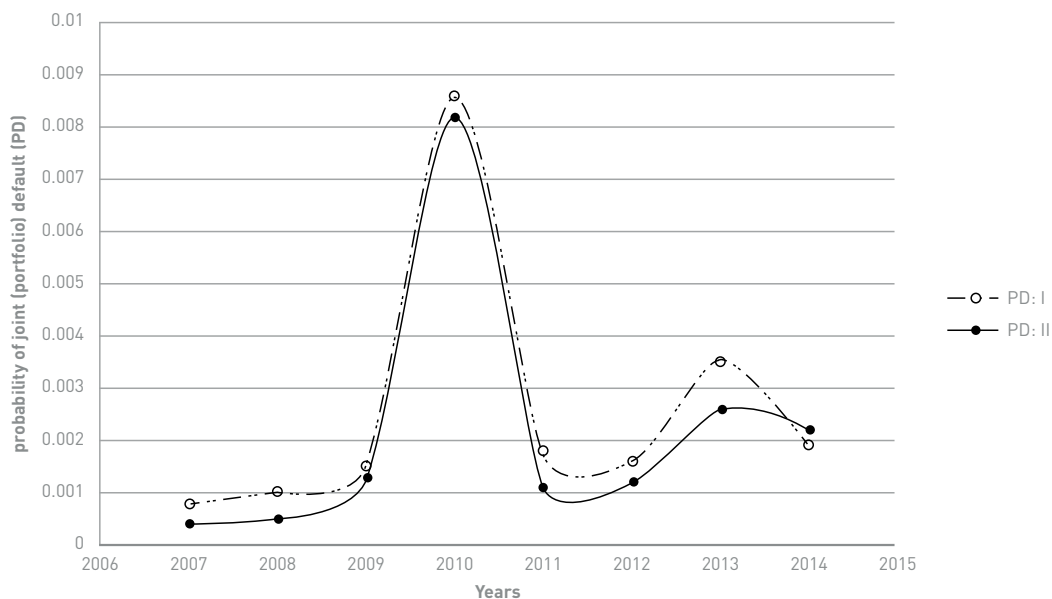


Figure 2. Default probabilities of the SME portfolio guaranteed under the FNG (2007-2014) with and without moral hazard ratios. Source: own elaboration.

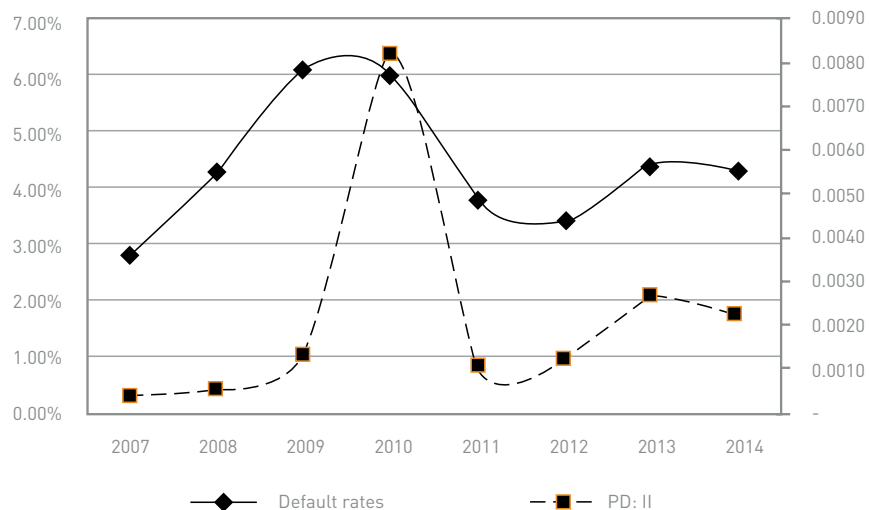


Figure 3. Default probabilities (PD:II) and default rates (left axis) of the portfolio of FNG. Source: own elaboration.

Table 3. Model 1- Logit with traditional financial ratios.

COEFFICIENTS	2007	2008*	2009	2010	2011*	2012	2013	2014
Traditional financial ratios								
CASH/TOTAL ASSETS	9.949 (0.028)	5.043 (0.438)	7.234 (0.000)	-163.389 (0.403)		-33.284 (0.068)	4.248 (0.161)	-0.716 (0.925)
EBITDA/TOTAL ASSETS	0.718 (0.856)		-1.232 (0.050)	-0.961 (0.593)		-1.451 (0.037)	-1.075 (0.133)	-3.117 (0.064)
EBITDA/FINANCIAL EXPENSES	-0.011 (0.481)		-0.006 (0.587)	-0.013 (0.560)		-0.004 (0.705)	0.000 (0.955)	0.003 (0.879)
RETAINED EARNINGS /TOTAL ASSETS	1.609 (0.664)		-11.362 (0.077)	-19.341 (0.167)	4.341 (0.279)	-1.316 (0.616)	-2.664 (0.376)	0.763 (0.294)
SHORT-TERM DEBT/EQUITY	-0.374 (0.255)	0.124 (0.530)	0.003 (0.874)	0.044 (0.146)		0.035 (0.834)	0.110 (0.344)	0.199 (0.216)
D-NUMBER-C	-3.272 (0.010)	-2.722 (0.018)	-1.081 (0.107)	15.006 (0.988)	-1.156 (0.086)	-2.554 (0.002)	-1.254 (0.037)	-2.310 (0.004)
Constant	-4.618 (0.000)	-5.039 (0.000)	-4.627 (0.000)	-19.728 (0.984)	-4.935 (0.000)	-3.392 (0.000)	-4.455 (0.000)	-4.375 (0.000)

Table 3. Model 1- Logit with traditional financial ratios (Continued).

Tests								
-2log likelihood	57.386	63.222	117.925	60.856	122.498	128.762	145.072	124.578
R2 Nagelkerke	0.178	0.116	0.134	0.190	0.038	0.176	0.055	0.175
Omnibus: x2	12.206	8.205	17.844	14.071	4.750	26.731	8.238	25.581
	(0.058)	(0.042)	(0.007)	(0.029)	(0.093)	(0.000)	(0.221)	(0.000)
Hosmer and Lemeshow: x2	10.523	1.248	4.088	0.718	5.912	2.620	6.622	3.600
	(0.230)	(0.996)	(0.849)	(0.999)	(0.657)	(0.956)	(0.578)	(0.891)

Notes: In these years, the model did not fit the Omnibus test. Therefore, the backward stepwise method (Wald) was applied.

Source: own elaboration based on [Castillo et al. \(2021\)](#).

Table 4. Model 2 – Logit with traditional financial ratios and moral hazard ratios.

CEFFICIENTS	2007	2008	2009	2010	2011	2012	2013	2014
Traditional financial ratios								
CASH/TOTAL ASSETS	9.356	8.106	8.173	-179.958		-43.444	3.645	1.294
	(0.062)	(0.193)	(0.000)	(0.342)		(0.047)	(0.232)	(0.853)
EBITDA/TOTAL ASSET	-2.646		-1.668	-1.138		-0.709	-2.378	-3.194
	(0.450)		(0.292)	(0.470)		(0.569)	(0.042)	(0.084)
EBITDA/FINANCIAL EXPENSES	-0.001		-0.005	-0.013		-0.005	0.000	-0.002
	(0.660)		(0.644)	(0.591)		(0.567)	(0.953)	(0.908)
RETAINED EARNINGS/TOTAL ASSETS	1.420		-11.793	-21.575	-4.335	-1.463	-2.782	1.064
	(0.648)		(0.066)	(0.141)	(0.277)	(0.611)	(0.349)	(0.133)
SHORT-TERM DEBT/EQUITY	0.435	0.209	0.004	0.053		0.033	0.067	0.238
	(0.287)	(0.262)	(0.834)	(0.098)		(0.856)	(0.490)	(0.136)
D-NUMBER-C	-3.179	-2.999	-1.199	15.073	-1.234	-2.660	-1.321	-2.368
	(0.015)	(0.013)	(0.083)	(0.988)	(0.071)	(0.002)	(0.030)	(0.003)
Moral Hazard ratios (+ sign)								
(SHORT AND LONG TERM INVESTMENTS)/TOTAL ASSETS	-3.179	0.125	-1.127	-6.891	-40.362	1.764	-681.296	0.702
	(0.015)	(0.986)	(0.882)	(0.685)	(0.362)	(0.689)	(0.235)	(0.871)
(OPERATING COSTS + OPERATING EXPENSES)/TOTAL ASSETS	-1.594	-2.098	-0.086	-0.091	-1.359	-0.237	-1.161	-0.904
	(0.142)	(0.059)	(0.648)	(0.728)	(0.039)	(0.402)	(0.028)	(0.114)
NON-OPERATING EXPENSES/ TOTAL ASSETS	8.887	5.210	-0.834	4.342	0.958	4.065	2.913	0.869
	(0.034)	(0.186)	(0.836)	(0.057)	(0.209)	(0.001)	(0.253)	(0.801)
CAPEX/TOTAL ASSETS	0.960	2.499	2.352	2.738	-0.744	0.257	-1.638	0.574
	(0.706)	(0.230)	(0.144)	(0.195)	(0.710)	(0.888)	(0.414)	(0.742)
Constant	-3.763	-3.871	-4.810	-20.531	-3.005	-3.420	-2.369	-3.601
	(0.012)	(0.002)	(0.000)	(0.984)	(0.001)	(0.000)	(0.007)	(0.000)
Tests								
-2log likelihood	44.811	55.402	115.459	57.629	113.420	121.909	127.313	120.966
R2 Nagelkerke	0.360	0.227	0.152	0.233	0.110	0.221	0.174	0.200
Omnibus: x2	24.781	16.025	20.309	17.298	13.828	33.585	25.997	29.193
	(0.006)	(0.025)	(0.026)	(0.068)	(0.032)	(0.000)	(0.004)	(0.001)
Hosmer and Lemeshow: x2	5.144	3.111	5.235	0.533	5.326	2.963	3.778	11.891
	(0.742)	(0.927)	(0.732)	(1.00)	(0.722)	(0.937)	(0.877)	(0.156)

Notes: A detailed explanation of the expected signs for all variables can be found in said article. This can be summarized by saying that the moral hazard ratios produce an adverse effect on the event being measured. For the case in question, they increase the probability of default of the credit; therefore, its expected sign is positive.

Source: own elaboration based on [Castillo et al. \(2021\)](#).

Based on the results shown in Tables and figures, it can be concluded that:

- According to the literature, in the presence of moral hazard, the variables associated with said risk have a positive sign in the calculation of the probability of default. Therefore, the NON-OPERATING EXPENSES

/ TOTAL ASSETS variable corresponding to the Underinvestment category is the one that evidences the conflict of interest between the SME and the financial institution within the compliance of the credit in the portfolio, that is, the use of resources directed to cover expenses not related to the operation of the company is evident ([Table 3](#)).

- The positive sign of the Cash/Total Assets variable is considered a reflection of moral hazard in SME credit, which is associated with a greater perception of risk by the borrower and a greater preference for maintaining liquidity (Castillo et al., 2021). Therefore, the conflict of interest in the portfolio guaranteed by the FNG is being determined not only by the moral hazard ratios but also by some liquidity.
- The peak in the probability of default of the credit portfolio guaranteed by the FNG in 2010 (Figure 2) was determined by moral hazard problems associated with the Underinvestment category, and it was also the more important of said ratios in the different periods (Table 3).
- The default probabilities of the SME portfolio guaranteed by the FNG presented the same pattern over time when calculated with traditional financial ratios compared to the one that adds the moral hazard ratios. These probabilities present a correlation coefficient of 0.99. Furthermore, they are not statistically different. However, the probabilities calculated with the moral hazard ratios were adjusted to lower values (optimistic forecast) except for the last year.
- The default probabilities calculated with the traditional financial and moral hazard ratios present a similar pattern to the default rates of the FNG with a correlation coefficient of 0.62.
- During the different years of analysis, there is not the same independent variable with statistical significance. This shows that the probabilities of default in the portfolio guaranteed by the FNG are determined by different factors of the firms, ranging from their liquidity status, their debt levels, efficiency in the management of resources, capacity to generate benefits, and even the conflict of interest between SMEs and financial institutions (years: 2007, 2009, 2010 and 2012).
- The D-NUMBER-C variable has statistical significance for almost all the years except for 2010, and its sign was negative, indicating that the probability of portfolio default decreases to the extent that SMEs have a single loan. Therefore, a policy aimed at guaranteeing one credit per company could be reasonable, not only for the sake of greater coverage of the guarantee program but also in the hypothetical case that it could be necessary to restrict the credit due to undesirable behavior of the portfolio.

5. Conclusions

The probability of default on loans in the SME portfolio guaranteed by Colombia's National Guarantee Fund presents the same pattern when calculated both by traditional financial ratios and by incorporating the moral hazard ratios but adjusted to lower values. This shows that such categories become an important tool for calculating default probabilities not only at the individual level but also at the portfolio level.

The theoretical framework of the probability of default of the SME portfolio guaranteed by the FNG is immersed in asymmetric information problems (moral hazard). However, when calculating the probabilities of default in the traditional way (without the moral hazard ratios), the results are not statistically different.

When calculating the probabilities of default of the SME portfolio guaranteed by Colombia's National Guarantee Fund, it should be done based on the presence of moral hazard since it is a guarantee provided by a third party. Considering this, the probabilities of default are adjusted to a lower value than that calculated outside of said theoretical framework. Thus, if the institution calculated the probabilities of default based on the moral hazard ratios, it would have the possibility of making lower provisions for expected losses and thereby increase the availability of resources for guarantees.

The pattern of the probability of default in the portfolio guaranteed by the FNG calculated with the traditional financial ratios together with those of moral hazard is similar to the default rate that the FNG presented in the periods under analysis.

The already demonstrated importance of Colombia's National Guarantee Fund in mobilizing resources for SMEs is further enhanced by the fact that, despite not mitigating moral hazard problems, its portfolio presents low probabilities of default and its values, under moral hazard theory, are lower than if it were calculated traditionally, that is, without the ratios that show conflicts of interest.

The portfolio guaranteed by the FNG is constituted under asymmetric information (moral hazard issues). In this sense, it must be considered that a positive sign in the moral hazard ratios indicates the presence of the event, while a negative sign indicates the absence of said problem and not an atypical behavior of the ratios' sign. In relation to traditional financial ratios, an unexpected behavior of the sign, different from what is traditionally expected, could reflect a conflict of interest. However, an economic analysis of the meaning of the variable in relation to the event being measured is essential to reach that conclusion.

Conflict of interest

The authors declare no conflict of interest.

References

- Agarwal, S., Green, R. K., Rosenblatt, E., & Yao, V. (2015). Collateral pledge, sunk-cost fallacy and mortgage default. *Journal of Financial Intermediation*, 24(4), 636-652. <http://dx.doi.org/10.1016/j.jfi.2014.10.001>
- Besanko, D., & Thakor, A. V. (1987). Collateral and Rationing: Sorting Equilibria in Monopolistic and Competitive Credit Markets. *International Economic Review*, 28(3), 671-689. <https://doi.org/10.2307/2526573>
- Bluhm, C., Overbeck, L., & Wagner, C. (2010). *Introduction to Credit Risk Modeling* (2nd ed.). Chapman & Hall/CRC Financial Mathematics Series.

- Bourgey, F., Gobet, E., & Rey, C. (2020). Metamodel of a large credit risk portfolio in the Gaussian copula model. *SIAM Journal on Financial Mathematics*, 11(4), 1098-1136. <https://hal.science/hal-02291548v2/document>
- Castillo Bonilla, J. A., & Girón, L. E. (2014). Cuantificación de la importancia del Fondo Nacional de Garantías en la movilización de créditos a las pymes. *Estudios Gerenciales*, 30(130), 18-24. <https://doi.org/10.1016/j.estger.2014.02.011>
- Castillo, J. A., Mora-Valencia, A., & Perote, J. (2018). Moral hazard and default risk of SMEs with collateralized loans. *Finance Research Letters*, 26, 95-99. <https://doi.org/10.1016/j.frl.2017.12.010>
- Castillo, J. A., Mora-Valencia, A., & Perote, J. (2021). Moral hazard index for credit risk to SMEs. *International Economics*, 172, 311-323. <https://doi.org/10.1016/j.inteco.2021.10.003>
- Chan, J. C., & Kroese, D. P. (2010). Efficient estimation of large portfolio loss probabilities in t-copula models. *European Journal of Operational Research*, 205(2), 361-367. <https://doi.org/10.1016/j.ejor.2010.01.003>
- Csóka, P., Havran, D., & Szűcs, N. (2015). Corporate financing under moral hazard and the default risk of buyers. *Central European Journal of Operations Research*, 23(4), 763-778. <https://doi.org/10.1007/s10100-013-0319-2>
- Cui, H., Tan, K. S., & Yang, F. (2022). Portfolio credit risk with Archimedean copulas: asymptotic analysis and efficient simulation. *Annals of Operations Research*, 1-30. <https://doi.org/10.1007/s10479-022-04717-0>
- Dewick, P. R., & Liu, S. (2022). Copula modelling to analyse financial data. *Journal of Risk and Financial Management*, 15(3), 104. <https://doi.org/10.3390/jrfm15030104>
- Fenech, J. P., Vosgha, H., & Shafik, S. (2015). Loan default correlation using an Archimedean copula approach: A case for recalibration. *Economic Modelling*, 47, 340-354. <https://doi.org/10.1016/j.econmod.2015.03.001>
- Fredheim, M. (2008). *Copula Methods in Finance*: VDM Verlag.
- Frey, R., & McNeil, A. J. (2003). Dependent defaults in models of portfolio credit risk. *Journal of Risk*, 6(1), 59-92. <http://doi.org/10.21314/JOR.2003.089>
- García-Céspedes, R., & Moreno, M. (2022). The generalized Vasicek credit risk model: A Machine Learning approach. *Finance Research Letters*, 102669. <https://doi.org/10.2139/ssrn.3836719>
- Godlewski, C., & Weill, L. (2011). Does Collateral Help Mitigate Adverse Selection? A Cross-Country Analysis. *Journal of Financial Services Research*, 40, 49-78. <https://doi.org/10.1007/s10693-010-0099-y>
- Guo, N., Wang, F., & Yang, J. (2017). Remarks on composite Bernstein copula and its application to credit risk analysis. *Insurance: Mathematics and Economics*, 77, 38-48. <https://doi.org/10.1016/j.insmatheco.2017.08.007>
- Hull, J. C. (2015). *Risk Management and Financial Institutions*: Wiley Finance Series.
- Lee, J.-W., & Shin, K. (2008). IMF bailouts and moral hazard. *Journal of International Money and Finance*, 27(5), 816-830. <https://doi.org/10.1016/j.jimonfin.2008.04.001>
- Liu, C., Shi, H., Cai, Y., Shen, S., & Lin, D. (2019). A new pricing approach for sme loans issued by commercial banks based on credit score mapping and archimedean copula simulation. *Journal of Business Economics and Management*, 20(4), 618-632.
- Menkhoff, L., Neuberger, D., & Rungruxsivorn, O. (2011). Collateral and its substitutes in emerging markets' lending. *Journal of Banking & Finance*, 36(3), 817-834. doi: <https://doi.org/10.1016/j.jbankfin.2011.09.010>
- Mirrlees, J. A. (1999). The Theory of Moral Hazard and Unobservable Behaviour: Part I. *The Review of Economic Studies*, 66(1), 3-21. <https://doi.org/10.2307/2566946>
- Patton, A. J. (2012). A review of copula models for economic time series. *Journal of Multivariate Analysis*, 110, 4-18. <https://doi.org/10.1016/j.jmva.2012.02.021>
- Rank, J. (2006). *Copulas: From theory to application in finance*: Risk Books.
- Tirole, J. (2005). *The Theory of Corporate Finance New Jersey*: Princeton University Press.
- Uesugi, I., Sakai, K., & Yamashiro, G. M. (2010). The Effectiveness of Public Credit Guarantees in the Japanese Loan Market. *Journal of the Japanese and International Economies*, 24(4), 457-480. <https://doi.org/10.1016/j.jjie.2010.08.001>
- Zuleta J., L. A. (2016). *Inclusión financiera de la pequeña y mediana empresa en Colombia*. Serie Financiamiento para el Desarrollo. Naciones Unidas - CEPAL. http://repositorio.cepal.org/bitstream/handle/11362/40771/S1601064_es.pdf?sequence=1&isAllowed=y

The influence of food values on snacks and beverage choices: an experimental study in Mexico

Pilar Arroyo* 

Emeritus Professor, EGADE Business School, Tecnológico de Monterrey, Toluca, México.

pilar.arroyo@tec.mx

Abstract

This study examines whether Mexican consumers consider the value associated with the attributes of manufactured snacks when deciding what to eat between meals. A choice experiment involving the selection of healthy versus unhealthy snacks and beverages was performed using Qualtrics. A set of four options, each one corresponding to a combination of mid-day snack and beverage, was presented to 256 Mexican consumers, who, after making a choice, specified the importance they assigned to food choice values. Linear discriminant analysis and classification trees were used to identify what food choice values and psychographic and demographic traits explain the choices. The analytical results indicate weight control, healthiness and sustainability, and the emotional value of healthy snacks mainly drives the choices of health-conscious consumers.

Keywords: food values; choice experiment; classification trees..

La influencia del valor de un alimento en la selección de snacks y bebidas saludables: un estudio experimental en México

Resumen

Este estudio analiza si el valor asociado a los atributos de snacks manufacturados es considerado por los consumidores mexicanos en su proceso de decisión para elegir qué comer entre comidas. Un experimento para elegir entre snacks y bebidas saludables versus no saludables se realizó en Qualtrics. Cuatro opciones que correspondían a una combinación de snack y bebida fueron presentadas a 256 consumidores mexicanos que, después de elegir, especificaron la importancia asignada a los valores de selección de alimentos. Se aplicaron el análisis lineal discriminante y los árboles de clasificación para identificar los valores y las características psicográficas y demográficas que explican las elecciones. Los resultados indican que el control de peso, la nutrición y sustentabilidad, más el valor emocional de los snacks determina principalmente su preferencia entre los consumidores conscientes de su salud.

Palabras clave: valor alimenticio; experimento de elección; árboles de clasificación.

A influência do valor de um alimento na escolha de snacks e bebidas saudáveis: um estudo experimental no México

Resumo

Este estudo analisa se o valor associado aos atributos dos snacks industrializados é considerado pelos consumidores mexicanos em seu processo de decisão para escolher o que comer entre as refeições. Um experimento para escolher entre snacks e bebidas saudáveis e não saudáveis foi conduzido no Qualtrics. Quatro opções, cada uma correspondendo a uma combinação de snack e bebida, foram apresentadas a 256 consumidores mexicanos que, após fazer uma escolha, especificaram a importância atribuída aos valores de seleção de alimentos. A análise discriminante linear e as árvores de decisão foram aplicadas para identificar os valores e as características psicográficas e demográficas que explicam as escolhas. Os resultados indicam que o controle de peso, a nutrição e a sustentabilidade, além do valor emocional dos snacks, determinam principalmente sua preferência entre os consumidores conscientes da saúde.

Palavras-chave: valor nutritivo; experimento de escolha; árvores de decisão.

* Corresponding author.

JEL classification: 62K15; 68T99.

How to cite: Arroyo, P. [2023]. The influence of food values on snacks and beverage choices: An experimental study in Mexico. *Estudios Gerenciales*, 39(168), 387-401. <https://doi.org/10.18046/j.estger.2023.167.6002>

DOI: <https://doi.org/10.18046/j.estger.2023.167.6002>

Received: 28-02-2023

Accepted: 27-06-2023

Available on line: 30-09-2023

1. Introduction

The global market for health and wellness food is projected to continue growing during the period 2020-2027 led by countries such as the USA, China, Japan, Canada, and Germany (Research and Markets, 2022; Mintel, 2021). The rising consumer interest in the healthiness, safety, and sustainability of food products exerts pressure on public and private organizations to create a healthy environment (Mwanri et al., 2012), imposes strong health regulations, and extends the offer of healthy manufactured food products (Muro-Rodríguez et al., 2021). Large food corporations, such as PepsiCo (Sherred, 2019), Nestlé (Simonin and Anwar, 2016), Mondelēz (Mondelēz, 2014), and Coca-Cola have invested in the reformulation of their regular products and launched new lines of healthy snacks and beverages that have contributed to the global growth of this market (Noguez, 2021; Grand View Research, 2021).

According to Euromonitor International, during 2015-2020, the value of the healthy food market niche in Mexico increased its value by 41.7% to 15,591 million USD (Noguez, 2021). The National Institute of Statistics and Geography (INEGI) estimates the value of the snack market at 3,232 million USD, with around 86% of consumers eating snacks several times per week and about 50% stating they have increased their consumption of healthy snacks (Legiscomex, 2021; Procomer, 2017). Regarding beverages, water is acknowledged as the smartest drink. However, sometimes people are craving something more. Although drinks with empty calories are the main offer at supermarkets and convenience stores, nutritious drinks such as natural cranberry, pomegranate, orange sugar-free juices, coconut water, and green tea are wanted because they contain natural healthy ingredients, vitamins, minerals, or added fiber which are considered functional components (Denby, 2021).

Snacks may contribute to or detract from a healthy diet as their consumption contributes to around 20% of daily energy consumption in countries such as the USA. Snacking, defined as any eating occasion outside of a typical mealtime, can improve diet quality if healthy snacks/beverages are selected, but the excessive and routine consumption of unhealthy snacks may contribute to overweight and poor nutrition (Enriquez & Gollub, 2023). Snacking is conditioned to the context. For example, at work, individuals tend to select easy-to-eat products (convenience), such as cookies and chips, that have low nutritional value. Snacking can be driven by external cues such as sensory perceptions, time of day, and social influence but also can be associated with searching for gratification instead of satisfying hunger or complementing the diet. Advancing snacking research is relevant for health promotion by providing information about how important it is for several segments of consumers (e.g., males versus females, taste lovers versus nutrition seekers) to consider the nutritious value of snacks and beverages (Mai & Hoffmann, 2012; Murakami et al., 2022), and how

the combination of healthy and unhealthy products (e.g., vegetable chips and a chocolate drink) satisfies cravings and provides gratification while contributing to a healthy diet (Enriquez & Gollub, 2023).

Furthermore, understanding how individuals value snack attributes depending on their psychographic profiles is relevant to outlining direct communication campaigns and interventions to promote/modify alimentary behaviors that contribute to reducing overweight and obesity rates in low to middle-income countries (WHO, 2021). In Mexico, overweight and obesity represent a public health problem; 72% of Mexican adults were overweight or obese in 2016, and this rate has been consistently increasing since 1999. The National Strategy to Prevent and Control Overweight, Obesity, and Diabetes includes health communication campaigns, nutritional advice in health centers, banning junk food at schools, and the use of black octagons to identify unhealthy ingredients in manufactured food (Rivera-Dommarco et al., 2018). However, all these strategies do not consider the motives and needs of different segments.

Moreover, although a healthy environment contributes to healthy eating, in the end, the decision of what to eat depends on how consumers select food products. Consumers can make decisions by weighing benefits against drawbacks. If benefits are worthy and drawbacks acceptable, a decision is made. Nevertheless, some products, mainly comfort low-cost goods such as snacks, are selected by fast decision-making and proclivity for immediate gratification. Consequently, understanding what food meta-attributes are influencing consumers' choices (Muro-Rodríguez et al., 2021) and what different consumer segments expect to achieve via food purchases (Wongprawmas et al., 2021) are important to food manufacturers for the design and market of healthier products (Young, 2000).

This study contributes to the literature by unveiling the hierarchy of product values that drive the consumers' selection of snacks and beverages contingent on their personal traits (health consciousness, self-control, self-assessment of diet quality, and demographics), thus enhancing the understanding of what consumers value in a snack and why some segments select healthy/unhealthy snacks. Former studies conclude that demographics significantly influence alimentary behaviors (Murakami et al., 2022; Vorage et al., 2020). Demographic variables (age, sex, educational level, and income, among the most important) cannot be modified by health education or campaigns. However, they are relevant to identify where the target audience is and how they can be contacted. Regarding psychographic variables, health consciousness (Mai & Hoffmann, 2012, 2015), self-efficacy (Bouwman et al., 2020), perceived risk (Deshpande et al., 2009), personal and product values (Claessens et al., 2023), and healthy lifestyles have been used for segmentation (Arroyo et al., 2020; Hardcastle & Hagger, 2016) and to explain and predict healthy alimentary behaviors.

Determinants of food choices are complex and involve a wide variety of factors; previous studies suggest that combining demographics and psychographics can better explain and predict health behaviors. The psychographic variables should be selected for the particular product category under investigation (snacks in this work) because their influence may vary among product categories (Jenkins et al., 2021; Meiselman et al., 2021).

Because snacking is associated with indulgence and impulsive eating that may result in the consumption of more palatable, energy-dense snacks even if labeled with black octagons, this work selected the following psychographics: health consciousness, self-control, and perceptions of diet quality. This research adds to the literature on snacking by exploring the drivers of the snack choice decision, specifically if different demographic and psychographic segments of consumers maximize their benefit or utility through the rational valuation of snack attributes or if they select them based on a decision-making process that disregards the value of the product's attributes. Additionally, this study employs classification trees as an analytical tool to represent the ordered sequence of values that lead to a final choice.

The remainder of this work is organized as follows: the next section presents a revision of the literature regarding theories of product values and the psychographics that determine food choices. The third section describes the experimental methodology applied, and the fourth presents and discusses the results. Finally, the last section states the main conclusions and practical recommendations.

2. Theoretical Background

According to the theory of random utility (McFadden, 1986), the overall utility of a product depends on the worth that the consumer assigns to its physical and intangible attributes. The product value refers to the net benefit of a product, that is, the overall utility it delivers to the consumers based on their needs and motivations (Ceyda, 2021). Under the assumption consumers are rational agents, they will choose the product that maximizes their expected utility or, equivalently, provides the highest perceived value constrained to a feasible set of options (Zeithmal, 1988).

The theory of consumption values (CVT) proposed by Sheth et al. (1991) explains how consumers evaluate and choose to purchase or not a specific product based on five dimensions: functional, social, emotional, epistemic, and conditional values. Functional value refers to the product's quality, price, and performing attributes. Social value is conceptualized as the perceived utility derived from associating the product's consumption with the expectancies and values of significant social groups. Emotional value relates to positive feelings, and conditional value to the utility obtained from consuming the product according to a specific situation. Finally, the epistemic value refers to the consumers' proclivity

for novelty and curiosity. Consumption values are independent and additively contribute to explaining the heterogeneity in consumers' choices. While maximizing all consumption values is desirable, consumers may prioritize values depending on their goals. For example, the segment of ethical consumers concerned about environmental and social issues looks to maximize these values but still make trade-offs with functional values such as price and taste (Loizou et al., 2013).

While the CVT is a general marketing theory, the Food Choice Questionnaire (FCQ) developed by Steptoe et al. (1995) was specifically designed to assess the underlying food meta-attributes or choice motives influencing purchasing. Then, both concepts consider the triggering reasons for the selection of food are determined by the relative importance attached to consumers' various food values/food choice motives. The 36 items of the FCQ cover nine health-related and non-health-related attributes that somewhat concur with the five consumption values. For example, the mood factor relates to the emotional value while nutrition, sensory, and price are covered by the functional value. The FCQ has been used to segment consumers (Arroyo et al., 2020; Izquierdo-Yusta et al., 2018) and to explain preferences toward traditional foods (Almli et al., 2011), ecological products (Lee & Yun, 2015), and functional foods (Küster-Boluda & Vidal-Capilla, 2017).

Lusk and Briggeman (2009) also proposed consumers' food choices depend on a set of inferred food values (FVs) that represent more abstract concepts than the physical attributes of the product because they simultaneously involve various food attributes, entail "end states" (e.g., stay healthy), or represent the consequences of food consumption (e.g., environmental impact). Lusk (2011) used these eleven FVs to explain behavioral outcomes such as purchasing organic food. Luomala et al. (2015) confirmed the influence of FVs on preferences toward healthy (e.g., fruit and vegetables) versus tasty food (meat and sweets). Whereas Nystrand and Olsen (2020) found utilitarian food values strongly and positively affect the consumers' attitudes toward functional values in contrast with hedonic FVs that less strongly and negatively influence attitudes.

Based on the extant literature that indicates that food choices are driven by food values or, equivalently, food choice motives (from now on, food choice values), the first research hypothesis is proposed:

H1: The selection of healthy versus unhealthy manufactured food/beverage depends on how consumers rank food choice values (FCV).

2.1 Psychographic variables influencing food choices

Psychographic traits and lifestyles can influence the importance consumers assign to different FCVs (Arroyo et al., 2020; Mai & Hoffman, 2012; Muro-Rodríguez et

al., 2021). For example, empirical studies support the relationship between self-control, behavior, and well-being (Cobb-Clark et al., 2019). Self-control (SC) is defined by Gillebaart (2018, p. 4) as "the set of skills, capacities, and behaviors that we need to 'operate' in a self-regulation feedback loop," that is, SC refers to what one does to avoid internal and external barriers to interrupt undesirable behaviors to attain a desired end state. For example, individuals with greater self-control achieve higher academic and labor performance, have better health, and have better financial and overall well-being. In contrast, individuals with low self-control may behave more irrationally and exhibit more maladaptive eating behaviors because their decisions are more automatic and subliminal (Cobb-Clark et al., 2019; Gillebaart, 2018).

Some individuals may find it more difficult to resist impulses to frequently consume high-sugared, more fatty snacks than others because they have lower self-control to stop themselves from giving in to unhealthy food choices. Honkanen et al. (2012) approach snacking as a behavior that may be either reflective or impulsive. The reflective process is guided by a thoughtful estimation of the healthiness of snack products, while impulsive snacking is driven by hunger, emotions, habits, and context. Food-related self-control was found to moderate the relationship between impulsive snack buying and behavior. Impulsive buying and consumption of snacks were stronger when food-related self-control was weak. Meanwhile, individuals with strong self-control and negative attitudes towards unhealthy snacking are more prone to make rational decisions based on the healthiness of the products.

Self-control requires more than inhibiting impulses and unwanted responses. The integrated model of self-control of Kotabe & Hoffman (2015) proposes that desire and partly incompatible higher-order goals generate a desire-goal conflict that requires motivated reasoning and control capacity to stop the undesired behavior. In the case of healthy eating, it means one needs to inhibit the desire to obtain the immediate gratification of eating tasty but unhealthy food and rationally adopt long-term alimentary behaviors that contribute to well-being. Astolfi et al. (2021) explored the relationship between self-control and six health-risk behaviors among Brazilian adolescents; the consumption of ultra-processed food and sedentary behavior were considered. The low SC group preferred the pleasurable consumption of ultra-processed food to the high SC group. Similar results were reported by Wills et al. (2007), who found that American adolescents with poor SC eat more food with saturated fats than adolescents with good SC who prefer fruit and vegetables.

Therefore, the second research hypothesis is stated as follows:

H2: The value assigned to the healthy versus unhealthy attributes of snacks and beverages depends on the individual's self-control. Individuals with high self-

control are more likely to choose healthy snacks and beverages than individuals with low self-control.

Health consciousness (HC) is a psychographic construct that denotes the degree to which a person plays an active role in maintaining their health (Gould, 1990). Health behavior theories propose that health-conscious consumers integrate their health concerns into protective actions to manage their health and adopt a healthy lifestyle (Newsom et al., 2005). Several studies have shown HC is related to seeking out health-related information, positive attitudes toward nutrition and healthy behaviors such as exercising and dieting, and being more reactive toward health information and the manufacturing process of the products consumed (Hong, 2009; Michaelidou & Hassan, 2008; Espinosa & Kadić-Maglajlić, 2018). Previous research also has found that health-related attributes of manufactured food are more valued than accessibility and hedonic attributes among health-conscious consumers (Arroyo et al., 2020).

Mai and Hoffmann (2015) examined the effect of health consciousness on the unhealthy=tasty intuition (UTI) decision, that is, the intuitive belief that the healthier the food, the tastier it is. The research findings indicate that health consciousness decreases the UTI; more health-conscious consumers do not infer taste decreases for reduced-sugar/fat products in contrast with less health-conscious individuals. However, healthiness and tastiness perceptions are formed in different ways. Tastiness is primarily based on sensory attributes and is the dominant driver of purchase intentions, while healthiness is based on the assessment of extrinsic attributes (labeling) and is not as good a predictor of food choices as other motives. Thus, although health consciousness enhances the positive indirect effect of healthiness information on purchase intentions, snack manufacturers need to offer healthy products that are more palatable to attract the low health-conscious segment and better satisfy the more health-conscious segment.

Health-conscious consumers are different from weight-conscious consumers whose main concern or motivation is to control his/her calorie intake. By contrast, health-conscious individuals have a better understanding of health issues and are more prone to take action to safeguard their health by selecting more nutritious and safer food (Iqbal et al., 2021).

Accordingly, the next hypothesis is proposed:

H3: The value assigned to the healthy versus unhealthy attributes of snacks and beverages depends on health consciousness. More health-conscious individuals are more likely to choose healthy snacks and beverages.

Adherence to dietary recommendations (ADR) provided by health organizations indicates that higher ADR scores are significantly associated with a higher economic status, better self-rated health, lower health service use, and a lower saturated fat intake (Collins

et al., 2008). Perceptions about diet quality are a psychosocial factor that influences dietary intake and, if inaccurate, preserves poor dietary habits (Powell-Wiley et al., 2014). Previous research concludes that individuals tend to overestimate the healthfulness of their diet and, therefore, make no efforts to improve their alimentary behavior (Brug et al., 1994). However, Adjoian et al. (2016) found that the Health Eating Index is positively correlated with self-rated diet quality scores among New York residents. Thus, a single item (Healthy/Unhealthy, Yes/No) could be a simple surrogate measure to assess the quality of dietary intake in extreme cases and identify individuals who require support to recognize healthy food and improve their dieting.

Batis et al. (2020) analyzed the data from the National Health Survey to compare groups with high versus low self-rated dietary quality. Findings indicate that individuals who perceived their diet as healthy show a slightly better ADR regarding their consumption of fruit, highly industrialized products, and salty snacks. However, regarding other products, perceptions of diet quality were higher than what they actually are, conforming to the Healthy Eating Index. Gago et al. (2021) also found a significant association between self-ratings of diet quality and higher consumption of fruit but a weak relation with vegetable consumption among adults in Puerto Rico. These findings suggest that individuals who judge their diet as healthy try to improve their ADR by preferring snacks and beverages made from fruit and vegetables over salty and fatty ones. The revision of cross-sectional, longitudinal, and intervention studies performed by Bellisle (2014) indicates improper snacking is not induced by hunger, but the environmental context (e.g., watching TV) negatively influences diet quality. Replacing snacks with high caloric content with low-energy alternatives rather than reducing snacking frequency may improve diet quality. Individuals aware of these facts are expected to adjust their between-meals eating with their daily eating intake.

Therefore, the last research hypothesis is formulated as follows:

H4: The hierarchy of values for selecting snacks and beverages depends on the individual's self-perceptions of how healthy their diet is.

3. Methodology

3.1 Experimental design

An online experiment using Qualtrics software was performed. Participants were recruited among students, faculty, and staff of the three campuses of the Autonomous University of Coahuila, located in the most populated cities of this northern state, namely Saltillo, Torreon, and Monclova. The requirements to participate in the study were that the individual is at least 18 years

old and consumes a mid-day snack and beverage at least three times per week. The recruitment process ended when a total of 256 participants (see details for the sample size below) who confirmed their participation in the study. Following Mora and Lopez-Valcarcel (2018), participants were asked to select a mid-morning snack and drink among a set of four choices. Choices were randomly coded as follows: 1 = (U, U) = unhealthy food, unhealthy beverage; 2 = (U, H) = unhealthy food, healthy beverage; 3 = (H, H) = healthy food, healthy beverage, 4 = (H, U) = healthy food, unhealthy beverage.

Two healthy and two unhealthy options were included for food and drink. These options were defined based on an Internet search and discussed with the university's nutritionist and an independent professional. Participants were each asked to pick up one food item and one drink from the following products: for food, a portion of mixed nuts (healthy option), a portion of mixed dried fruits (healthy option), a pack of cookies (unhealthy option), or a popular Mexican packed snack cake (unhealthy option). For drinks, the choices offered were coconut water (healthy option), cranberry juice (healthy option), a regular soft drink (unhealthy option), or a popular fruit-flavored beverage in Mexico (unhealthy option). Therefore, four possible choices for each combination of the 2x2 experiment are possible:

- 1) (U, U): (cookies, soda), (cookies, fruit-flavored beverage), (fruit, soda), (fruit, fruit-flavored beverage).
- 2) (U, H): (cookies, coconut), (cookies, c-juice), (cake, coconut), (cake, c-juice)
- 3) (H, H): (nuts, coconut), (nuts, c-juice), (fruit, coconut), (fruit, c-juice)
- 4) (H, U): (nuts, soda), (nuts, fruit-flavored beverage), (fruit, soda), (fruit, fruit-flavored beverage)

Picking up one option from each of the four possible healthy/unhealthy combinations results in a total of $4^4 = 256$ possible choices. Then, a specific set of choices was randomly presented to each participant, for example, cookies and a soda, cookies and cranberry juice, a portion of nuts plus coconut water, or a portion of dried fruit with a fruit-flavored beverage. All options were presented simultaneously, and the participant selected the most preferred choice for a mid-morning snack. The choice was coded as previously explained. The sample size of 256 subjects equals the total possible food choices or stimuli but also satisfies the recommended 5:1 ratio of participants to items in the structured questionnaire designed to assess product food values and individual traits (Hair et al., 2017).

3.2 Design of the measurement instrument

A structured questionnaire using validated scales was designed to measure food choice values and selected psychographic constructs. Items were translated to

Spanish by the researcher and then back-translated by an English professor to ensure the translation did not change their meaning. The first part of the questionnaire uses the multi-scale proposed by [Arroyo et al. \(2020\)](#) to assess the participants' food choice values (FCV). The scale was based on the FCQ and the TCV proposed by [Sheth et al. \(1991\)](#). Items referring to the novelty of food technologies that companies incorporate to improve their snack and beverage offer were added to assess the epistemic value ([Speciality Food, 2021](#)). These items were adapted from those designed by [Bazzani et al. \(2018\)](#). Individuals were instructed to rate the degree of importance of each item on the FCV scale on a five-point scale ranging from 1 = "not important" to 5 = "very important" to decide what food to buy/consume.

The second part of the questionnaire includes scales to measure the psychographic variables declared on hypotheses H2-H4. *Health consciousness* was measured using a four-item scale based on [Mai and Hoffmann \(2012\)](#). *Self-control* was assessed by the 13-item Self-Control Scale (BSCS) developed by [Tangney et al. \(2004\)](#). The BSCS is a widely used scale in psychological research when the interest is to examine the association between self-control and various positive outcomes ([Lindner et al., 2015](#)). The *self-assessment of diet quality* was evaluated by asking participants to respond "Good" or "Poor" to the following question, "How do you rate the overall quality of your diet?" Before answering this question, participants were asked to revise two diagrams, the Healthy Eating Plate ([Harvard School of Public Health, 2011](#)) (see [Figure 1A](#) in the Annexes) and the Healthy Drinking Jar ([Gobierno de México, Procuraduría Federal del Consumidor, 2017](#)) (See [Figure 2A](#) in the Annexes).

[Murakami et al. \(2022\)](#) found that the assessment of food product values (accessibility, convenience, health/weight control, tradition, sensory appeal, organic, comfort, and safety), food literacy, cooking food skills, and eating behaviors (e.g., emotional overeating) differ depending on the age and sex of Japanese adults. Therefore, the last section of the questionnaire asked respondents about their sociodemographic characteristics (age, sex, income, and education level).

The composition of the sample is as follows. Four age categories were considered: 19-25 years old (41% of participants), 26-35 years old (13%), 36 to 50 years old (39%), and over 50 years old (7%). Regarding income, the categories correspond to the AMAI classification ([Mexican Association of Marketing Research \[AMAI\], 2021](#)), namely A/B or high socioeconomic level (33%), C+ and C or medium (39%), and C- or medium-low (28%). The educational level was categorized as elementary school (7%), high school (16%), BS degree (50%), and graduate degree (27%). The percentage of males was 58% and 42% of females.

4. Results and Discussion

4.1 Scale purification and validation

The first part of the analysis was the validation of the measurement instrument. Together, PCA, EFA, and CFA were used to analyze the questionnaire for data reduction, scale construction and improvement, and validation assessment. According to [Arroyo et al. \(2020\)](#), nine FCVs were expected. However, although [Jáuregui Lobera & Bolaños-Ríos \(2011\)](#) states the FCQ has appropriate psychometric properties to be used in the Spanish context, a simplified structure with eight factors was reported by Marsola et al. in the case of Brazil (cited by [Jáuregui-Lobera & Bolaños-Ríos, 2011, p. 1317](#)), while [Espinoza-Ortega et al. \(2016\)](#) identified a larger number of factors when they applied the FCQ in Mexico. Therefore, the multi-dimensionality of the scales was first explored through exploratory factor analysis (EFA). The psychographic traits (self-control and health consciousness) were included in the EFA; solutions with ten to twelve factors were explored. Principal components (PC), a very popular factor extraction method focused on identifying the smallest number of factors or components necessary to explain as much of the variance as possible, was applied. PC is useful for examining the number of components that later need to be associated with theoretical latent variables, identifying which items make up each component and how strongly they relate to the component. Thus, PCA is most useful as a descriptive tool for the process of measure development and the understanding of the strengths and weaknesses of the measure in terms of content validity and structural validity ([Osborne & Costello, 2009](#)).

According to the criteria of eigenvalue >1, scree plot, and % of variance explained (58%), a nine-factor solution was regarded as satisfactory. After rotation, the "cleanest" factor structure – item loadings above .3, no item cross-loadings on several factors, and high communalities (>0.4) – was fully explored ([Osborne & Costello, 2009](#)). Items related to FCVs were grouped only into seven factors. The remaining three factors grouped items associated with the two psychographic constructs, but the last one comprised only two items of the self-control multi-scale ("I am lazy" and "I say inappropriate things"), both with small loadings (<0.236), small cross-loadings with the two factors that group SC items, and low communalities (<0.3). Thus, this last factor was discarded because the two-dimensional structure of the BSCS did not represent a substantial improvement in assessing self-control concerning the unidimensional measure ([Linder et al., 2015](#)). Four more items, two of the BSCS ("Pleasure and fun keep me from getting work done" and "I have trouble concentrating") and two

of the FCV multi-scale ("No chance I could develop a disease by consuming this food" and "Production process guarantees no harmful bacteria or viruses"), were eliminated of the nine-factor solution because of their negligible factor loadings and communalities (< 0.3) (Osborne and Costello, 2009; Wieland et al., 2017).

The grouping of items properly distinguishes FCVs from the psychographic traits. The two main differences between the purified multi-scale of this work and the one reported by Arroyo et al. (2020) are:

- 1) The first factor includes items regarding the sustainability and safety of the production process as well as the naturalness and healthiness of the product's ingredients. This factor, named "healthiness and sustainability food value," seems to reflect the major concerns regarding the safety, natural content, eco-friendliness, and healthiness of the food consumed. Previous research indicates that customers demonstrate an increasing interest in manufacturing processes that guarantee nutritious ingredients are not lost during processing, products are not in contact with environmental contaminants and germs, adhere to ethical and environmental standards, and help to maintain a good state of health (Di Renzo et al., 2015; McKinsey & Company, 2022; Nystrand & Olsen, 2020; Sadiq et al., 2020; Vågsholm et al., 2020).
- 1) The last factor comprises items that refer to the preference for organic, functional, and superfood products¹ that offer some novelty to the consumer while enhancing the product's nutritional value (Infobae, 2017). Accordingly, it was named "novelty for functionality" value.

A CFA using SPSS AMOS was applied to the purified scale. All factor loadings except by two of the BSCS scale ("I do things bad for me if they are fun" and "People would say I have an iron discipline") were significant and exceeded 0.575 (see Table 1). The index $\chi^2 = 873.302$ (P-value = 0.102) and the ratio $\chi^2/df = 2.417$ were acceptable. After the elimination of the items with non-significant loadings, the goodness-of-fit index (GFI) was 0.922, the comparative fit index (CFI) was 0.897, the adjusted goodness-of-fit index (AGFI) equaled 0.915, and the root-mean-square error of approximation (RMSEA) was 0.053. The values of all indexes confirm the reasonable fit of the measurement model. All Cronbach's alpha were nearly above 0.7 as recommended, while the AVE exceeded the 0.5 bounds for six constructs (see Table 1). Additionally, all the intercorrelations between a specific construct and all other constructs were below the corresponding AVE, thus providing evidence of discriminant validity (Hair et al., 2017). Therefore, the reliability and convergent validity of the scales were judged satisfactory.

Most of the respondents (65%) selected a healthy snack, and from this group, the drink choices were evenly distributed: 51% selected a healthy beverage and 49% an unhealthy one. The least frequent selection (11%) was the unhealthy snack accompanied by a healthy beverage. About a fifth of the respondents preferred unhealthy choices (22%). These results suggest that experimental subjects are turning toward healthier products, particularly snacks.

Two analyses were performed to provide empirical support to the research hypotheses. First, a linear discriminant analysis (LDA) was applied to identify what variables distinguish between (snack and beverage) choices. Although LDA does not impose the normality assumption and inferences are robust to unequal covariance matrices, it assumes linear relationships among the discriminating variables, and outliers can cause severe problems (Huberty & Olejnik, 2006). Therefore, classification trees, a new methodology that unfolds the sequence of "food values" that lead to a final choice were used to give additional support to the first research hypotheses. Finally, a MANOVA was applied to compare choice segments in terms of the psychographic and demographic characteristics of consumers.

Decision trees are a non-parametric supervised learning method used mostly to perform hierarchical segmentation and predict the result for new observations. Decision trees can be used for classification to predict a category, or regression to predict a continuous numeric value. The first type predicts an unordered variable C that can take $c = 4$ discrete possible values, or food choices for this study, and a set of numeric and categorical attributes A_1, \dots, A_p that correspond to the 1, 2, ..., 7 food values. The goal is to predict a (healthy/unhealthy snack, healthy/unhealthy beverage) choice based on the importance assigned to a certain FCV.

Classification tree algorithms automatically split numerical attributes A_i into two ranges to maximize class prediction accuracy, that is, the proportion of individuals in a node who made a specific choice (identified as node purity). Splitting into numeric attributes is generally based on the information gain ratio (an entropy-based measure) or the Gini index. The splitting process is recursively repeated until no improvement in prediction accuracy is achieved. The final step involves pruning nodes to reduce the tree size and avoid model overfitting. This approach has the advantage that data transformation is unnecessary, cases with missing predictor variables do not require special treatment, prediction performance is not dependent on covariance homogeneity, and variable selection is intrinsic to the methodology. The use of classification trees is appropriate for this work because they are adjunct to LDA and provide a graphical hierarchy that allows the identification of the dominant attributes that distinguish between choices and the proposal of a subset of decision rules (Arana, 2021). The analytical results are discussed in the following sections.

¹ The concept of superfood originated in Japan in the 1980s when government agencies started approving foods with proven benefits in an effort to improve the health of the general population.

Table 1. Confirmatory Factor Analysis Results.

Variable	Factor loadings	AVE	Cronbach's alpha
Healthiness and sustainability (13 items)		0.5103	0.9262
The package of the product is made with recycled biodegradable materials	0.753**		
The production process of the product is environmentally friendly	0.745**		
The product does not contain genetically modified ingredients	0.737**		
The product is not too much processed	0.725**		
The product is nutritious or healthy	0.719**		
The product contains natural ingredients	0.705**		
The local production of the product is clearly marked	0.698**		
The package guarantees the product's freshness	0.687**		
The nutritional label on the back of the package indicates it is healthy	0.673**		
The product package has environmentally friendly production certifications	0.659**		
The product contains vitamins and minerals	0.648**		
The product does not contain artificial additives	0.633*		
The product has been manufactured through a safe process	0.627*		
Weight control (8 items)		0.5386	0.8714
The amount of calories the product has is relatively low	0.775**		
The consumption of the product helps with keeping a normal weight	0.729**		
The product has a low-fat content	0.724**		
The product contributes to maintaining a healthy, balanced diet	0.698**		
The product helps with losing weight	0.687**		
The product has a low sugar content	0.673**		
The product is sweetened with safe artificial sugar substitutes	0.659**		
The health claims in the package indicate it may help prevent some diseases	0.640*		
Convenience (6 items)		0.5890	0.8033
The product takes too long to cook	-0.779**		
The product is not easy to prepare	-0.687**		
The product is not easy to take along	-0.661**		
The product is not ready to eat	-0.649**		
The product is easily found in shops and supermarkets	-0.458*		
The product is available in shops close to home or work	-0.565**		
Basic sensory attributes (5 items)		0.6930	0.689
How good it looks	-0.588**		
How good it smells	-0.571**		
How good it tastes	-0.566**		
The product represents a good value for money	-0.522*		
The product helps me to feel satisfied	-0.520*		
Tradition (4 items)		0.5966	0.7262
The product is like the food I ate when I was a child	-0.719**		
The product reflects my cultural or ethnic traditions	-0.659**		
It is a usual product easily available	-0.655**		
The product is familiar to me	-0.483*		
Emotional value (3 items)		0.4764	0.7671
The product helps to deal with my mood	-0.738**		
The product helps me relax	-0.735**		
The product makes me feel good when I consume it	-0.697**		
Novelty for functional value of food (3 items)		0.4887	0.7549
I look for functional products	-0.802**		
I prefer organic food	-0.749**		
I seek products with extra nutritional value but low caloric content	-0.574**		

Table 1. Confirmatory Factor Analysis Results (Continued).

		0.5285	0.6573
Health consciousness (4 items)			
I am very self-conscious about my health	-0.746**		
I am generally attentive to my inner feelings about my health	-0.676**		
I am constantly examining my health	-0.663**		
I reflect on my health a lot	-0.658**		
Self-control (7 items)		0.4871	0.6826
I am good at resisting temptation	0.814**		
I have a hard time breaking bad habits	-0.758**		
I refuse things that are bad for me	0.724**		
I am able to work effectively toward long-term goals	0.697**		
I wish I had more self-discipline	-0.684**		
Sometimes, I can't stop myself from doing something, even if I know it is not good for me	-0.663**		
I often act without thinking through all the alternatives	-0.659**		

Source: Own elaboration.

4.2 Discriminant Analysis

The seven FCVs and the three psychographic variables were used as discriminants or predictors of snack/beverage choices. Three discriminant functions significantly contribute to distinguishing choices (Wilk's lambda = 0.703, $P = 0.000$). The standardized canonical discriminant coefficients (see Table 2) indicate that choices significantly depend on the importance assigned to the emotional, healthiness and sustainability, weight control, utilitarian, and convenience values of manufactured food. In the second discriminant, the sign of the discriminant coefficients for healthiness and sustainability and weight control are opposite to the utilitarian and convenience values. This result suggests a trade-off between the safety, healthiness, environmental friendliness, and weight-control value of food and the hedonic, money-worth, accessibility, and easiness meta-attributes that add utilitarian value to snacks and beverages. All FCVs, except for the novelty of functional food/beverages, discriminate between choices, as shown by the correlations above 0.3 on at least one of the discriminant functions. Regarding the individual traits of participants, only health consciousness had a significant but small correlation (0.323) with the third discriminant. Therefore, FCVs are the main drivers of food and drink selection.

The overall one-leave-out classification rate of the linear discriminant functions was 81.3%. The healthiest selection namely (healthy snack, healthy beverage), was the category with the highest correct classification rate (94.2%). In contrast, the choice with the highest misclassification rate (62.1%) was the (unhealthy snack, healthy beverage) choice, which was also the least frequent selection.

Table 2. Standardized Canonical Discriminant Function Coefficients.

	Discriminant Function		
	1	2	3
Safety and sustainability	.263	-.495	.072
Weight control	.369	-.475	.092
Convenience	.185	.630	.807
Basic sensory attributes	.153	.351	.067
Traditionalism	.307	.192	-.005
Emotional	.568	-.499	-.628
Novelty of functional food	.023	.255	-.039
Self-control	.036	.019	.100
Self-assessment of diet quality	.016	.139	-.043
Health consciousness	.083	.107	.323

Source: Own elaboration.

4.3 Classification Tree

The "One Standard Deviation" tree, which is the smallest tree (number of nodes) with a misclassification error within one standard error of the minimum misclassification error tree was analyzed. Prior probabilities were set equal to the percentages of participants that picked up one of the possible four choices. The Gini impurity function was used to do the splitting, and the k-fold cross-validation method with MINITAB software defaults was used to estimate the misclassification error rate. The resultant tree is shown in Figure 1. The overall correct classification rate for the training set was 82.8%, and for the test set, 78.5%, akin to the LDA rates. Once again, the healthiest selection had the highest correct classification rate, 95.3% for the training set and 90.7% for the test set. However, the tree depicts the sequence of FCVs that compose the overall utility of the final snack/beverage choice.

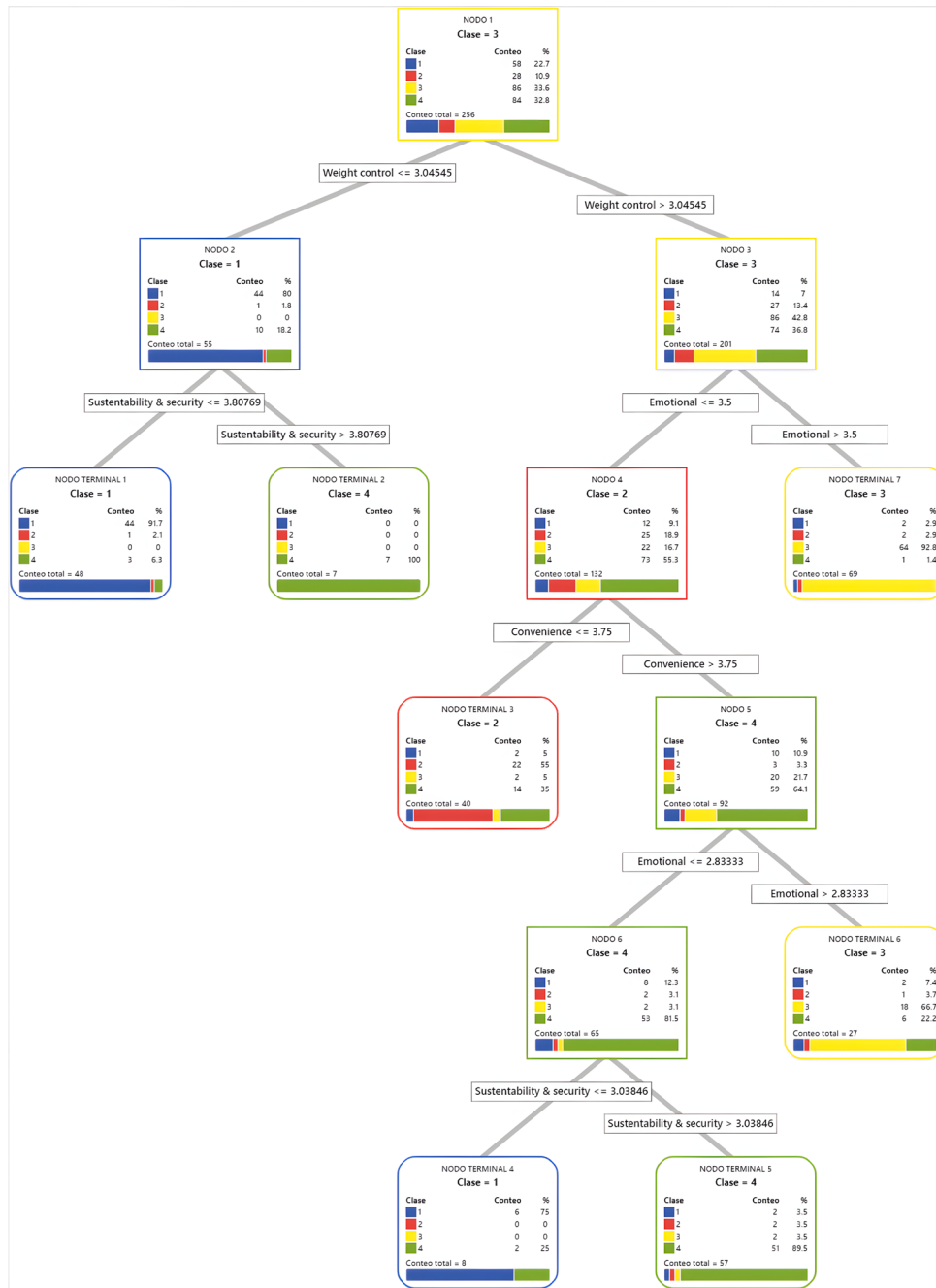


Figure 1. Classification tree predicting food choices based on food choice values.
Source: own elaboration.

Each (snack, beverage) choice can be tracked through the tree, and selection is explained by the contributions of the FCV added at each decision node up terminal nodes where no further decisions are made. The tree diagram shows each snack/beverage choice results from a different hierarchy of values, confirming that each consumer selection is driven by different FCVs that add to the final utility of their selection, thus providing empirical support to H1. For example, the virtually pure terminal node 7 (a node that contains the data from a single class only) largely groups individuals who selected option 3

= (H, H) [25% of participants versus 34% who actually chose option 3). According to the sequence in the tree, this choice was driven by a high worth assigned to the weight-control value and then to the emotional value or feeling of wellness. In contrast, the almost pure terminal node 1 groups a large percentage of participants that selected the unhealthiest choice 1 = (U, U) [17% versus 23% who actually selected option 1). In agreement with the literature, these individuals assigned a low worth to the weight-control and healthiness and sustainability values. None of the FCVs seem to provide utility to these

participants, thus suggesting that the unhealthiest selection was impulsive. Pure nodes, such as the terminal node 2, are unimportant because they contain a low percentage of individuals, that is, they correspond to small segments of individuals with unusual selection patterns.

The relative importance of each value is computed by dividing its importance score by the highest importance score of the FCVs and then multiplying by 100%. The emotional value had the largest relative importance (100%), followed by the healthiness and sustainability (94%), weight control (89%), convenience (65%), and traditionalism (27%) values. The traditionalism FCV does not appear in the tree as a primary variable because a "right-sized" tree with a high correct prediction rate is selected among a sequence of optimally pruned trees by the CART algorithm of MINITAB. Note that an FCV might be used for more than one split (emotional value) or not at all (novelty). The addition of the contributions for each of the seven FCVs allows the estimation of how much each one has contributed to a final prediction, namely a snack/beverage choice.

Following the analysis, consumers grouped according to their food/beverage choices were compared regarding their self-control, health consciousness, and demographic characteristics. The MANOVA results revealed highly significant differences between choices depending on the individual characteristics: Wilks-lambda = 0.76212 (P = 0.000), Lawley-Hotelling test = 0.2999 (P = 0.000), and Pillai's trace = 0.24734 (P = 0.000). Univariate ANOVAs using as responses "self-control" and "health consciousness" were performed, including the demographics as covariables (non-controllable factors). In agreement with LDA, only health consciousness influences food/beverage choices. Thus, H2 is unsupported, while H3 is empirically supported. The results of the ANOVA for the only significant psychographic trait are shown in Table 3. Significant differences in health consciousness depending on the age and educational level of participants were also identified. A residual analysis was performed to validate the assumptions of the analysis and identify outliers; no need for transformations was identified, and there was only one residual <-3 that was expected given the sample size of 256 (0.003*256 = 0.768 rounded to one residual).

Bonferroni multiple comparisons indicate that participants who select a healthy snack and any (healthy/unhealthy) beverage are not statistically different concerning their health consciousness. Meanwhile, the individuals who selected the options (unhealthy snack, healthy beverage) or (unhealthy snack, unhealthy beverage) have equivalent levels of health consciousness. Moreover, the health consciousness of participants who chose a healthy snack is higher than the corresponding levels of individuals who preferred unhealthy snacks. Thus, selecting healthy snacks is significant and positively related to health-consciousness levels, as stated by H3.

Table 3. ANOVA results. The response is health consciousness.

Source of variation	df	SS	MS	F-value	P-value
Age	1	4.028	4.02818	9.17	0.003
Sex	1	0.124	0.12417	0.28	0.596
Educational level	1	3.665	3.66539	8.34	0.004
Socioeconomic level	1	0.292	0.29247	0.67	0.415
Food choices	3	11.869	3.95619	9.00	0.000
Error	242	212.721	0.87901		
Lack of fit	216	92.295	0.42729	0.95	0.400
Pure error	26	14.052	0.45172		
Total	250	134.044			

Source: own elaboration.

Regarding the demographic variables, participants who selected the unhealthy snack but the healthy beverage were the oldest. As previously argued, this result could be attributed to the belief among individuals over 50 years old that sweetened beverages are particularly unhealthy and should be avoided. In comparison, the unhealthiest option (1=U,U) was preferred by youngsters (between 19-25 years old), a result that may be attributed to the greater concern and better dietary behaviors of adults in comparison with youths who are especially fans of snack food that they bought not for necessity but because of fun, low price, in-store promotion, and ease of purchase (Nagai, 2020). Multiple comparison tests (Bonferroni and Tukey) did not show differences in health consciousness due to educational level. However, a weak (0.207) but significant correlation between educational level and age was identified, thus suggesting that health consciousness increases with age until some point but is not significantly affected by educational level.

The influence of the self-assessment of diet quality was assessed through a cross-tabulation and chi-square test ($\chi^2 = 6.290$, P-value = 0.711) because the variable is dichotomous. Results show there are no significant differences in food/beverage choices depending on the perceptions of the individual's diet quality. Therefore, H4 was unsupported. The non-significance of this construct could be attributed to the low validity of the binary measure, or it may be because snacks between meals are skipped by some consumers and considered non-critical for others compared to food and drinks consumed during regular meals.

5. Conclusions, Recommendations, and Future Research

A challenge faced by marketers and health organizations is how to influence the purchase behavior of consumers in favor of healthier products, given the large variety of products in the snack market and the association of snacking with indulgence and impulse. This work draws on the generic theory of Consumption Values and the empirically validated food choice values metrics to identify seven food choice values as the underlying motives influencing snack and beverage

choices. The application of linear discriminant analysis and classification trees allows the identification of the sequence of FCVs that predicts the choice of healthy/unhealthy mid-day snacks that deliver the maximum utility to the individual. This research introduces classification trees as an innovative analytic tool to understand consumer choices.

Understanding healthy food choices using classification trees provides a hierarchical display of FCVs, where the most important one is the first used to split consumers according to their choices. For example, consumers who choose a healthy food and a healthy beverage first value the weight control rendered by their selection and then the well-being feelings derived from the consumption of healthy products. These findings can be used by food manufacturers to design new products with appealing meta-attributes and better market them to different consumer segments, and by health organizations to design health communication campaigns and interventions that increase the health consciousness of consumers.

The results of the study show a large percentage (66.4%) of consumers prefer healthy snacks (nuts or dried fruit) because they assign higher importance to weight control, healthiness and sustainability, well-being emotions, and appreciate their convenience and traditionalism. This finding corresponds with the notion that healthy foods help to keep an appropriate weight and contribute to well-being, targeting consumers who are conscious about their nutrition and health. Food marketers can promote food innovations and re-formulated products by highlighting that snacks such as unsalted mixes of vegetables and seeds contain more nutritious ingredients than re-formulated snacks with less not-so-good ingredients (e.g., sugar). The basic attributes of "good for the price" and "tastiness" must be the basis for the promotion of regular snacks among youngsters who find low value for all FCVs and select unhealthy choices more by impulse and short-term gratification.

Because the "novelty of functional food" seems to be a non-appreciated value (Muro-Rodríguez et al., 2021), but sustainability is, food innovations could be promoted as more environmentally friendly because they are made from natural ingredients and packed in ecological wraps. Moreover, food producers could benefit from improving the hedonic and convenience attributes of healthy snacks and beverages to target new consumer segments that balance nutritional with utilitarian (hedonic and price) value (Sigurdsson et al., 2017; Arroyo et al., 2020). Thus, by emphasizing (deemphasizing) important (unimportant) FCVs, food marketers could influence consumers' snack selections.

Regarding beverages, results suggest sodas, artificially flavored beverages, and juices manufactured from nutritious fruits are credited as unhealthy beverages that should be consumed occasionally because of their high

energy contribution. However, the nutritional and hedonic value of non-sugared, natural, healthy beverages must be communicated, and their combination with healthy snacks (e.g., lyophilized fruits and vegetables) must be endorsed as an alternative for indulgence while maintaining a proper energy intake.

The research also confirms that health consciousness is a psychographic trait that mainly influences the decision to consume healthy snacks but not beverages. Although the role of health consciousness in food selection has been largely discussed, its negative influence on the consumption of unhealthy snacks has not been sufficiently addressed in the available literature. Meanwhile, self-control and self-assessment of diet quality had a non-significant effect on the selection of mid-day snacks. The low reliability of the self-control scale and the use of a surrogate binary variable for diet quality evaluation could explain the non-significance of these consumers' traits in the choice of snacks/beverages. Further studies could improve these limitations by developing more valid scales to assess the effect of these variables on healthy versus unhealthy snack/beverage choices.

Previous studies report a significant influence of self-control on healthy snacking (Cobb-Clark et al., 2019; Honkanen et al., 2012), but recent research (Marques et al., 2020) shows that impulsivity, an unplanned action marked by fast decision-making antagonistic to self-control, does not affect food choices when there is a wide variety of choices. The large variety of manufactured snacks in the Mexican market could explain the non-significant effect of self-control on the selection of healthy snacks. Consumers may be overwhelmed by the large set of options and deviate from a time-consuming cognitive assessment process of the snacks' utility and select them because they are available, advocated by others, or simply because they are in the mood to consume a different product. Another explanation is that self-control needs to be combined with positive attitudes (Honkanen et al., 2012), health consciousness, or health risk perceptions (Chou et al., 2020) to inhibit impulsive unhealthy choices. This work did not propose interactions between the psychographic and demographic variables. Therefore, a relevant extension is to include moderator effects in the prediction of snack/beverage choices.

Additional works derived from this research include the selection of a probabilistic stratified sample that guarantees the representativeness of various age groups because in this study the group of young adults is over-represented. A stratified random sample would also allow a comparison of how food values influence food choices for different age generations (e.g., millennials vs. centennials) or brand trust levels. The use of supplementary variables, such as attitudes toward healthy food, health risk perceptions, and health condition, is another interesting extension to this study that could improve the profiling of consumers who prefer healthy versus unhealthy mid-day snacks.

Conflict of interest

The author declares no conflict of interest.

References

- Adjoian, T. K., Firestone, M. J., Eisenhower, D., & Yi, S. S. (2016). Validation of self-rated overall diet quality by Healthy Eating Index-2010 score among New York City adults, 2013. *Preventive Medicine Reports*, 3, 127-131. <https://doi.org/10.1016/j.pmedr.2016.01.001>
- Almli, V. L., Verbeke, W., Vanhonacker, F., Næs, T., & Hersleth, M. (2011). General image and attribute perceptions of traditional food in six European countries. *Food Quality and Preference*, 22(1), 129-138. <https://doi.org/10.1016/j.foodqual.2010.08.008>
- Arana, C. (2021). *Modelos de Aprendizaje Automático Mediante Árboles de Decisión*. CEMA Working Papers: Serie Documentos de Trabajo. 778, Universidad del CEMA. <https://ucema.edu.ar/publicaciones/download/documentos/778.pdf>.
- Arroyo, P. E., Liñan, J., & Vera Martínez, J. (2020). Who really values healthy food? *British Food Journal*, 123(2), 720-738. <https://doi.org/10.1108/BFJ-04-2020-0328>.
- Asociación Mexicana de Agencias de Inteligencia de Mercado y Opinión [AMAI] (2021). *Nivel Socioeconómico AMAI 2022*. https://amai.org/descargas/Nota_Metodologico_NSE_2022_v5.pdf.
- Astolfi, R. C., Leite, M. A., Papa, C.H.G., Ryngelblum, M., Eisner, M., & TourinhoPeres, M. F. (2021). Association between self-control and health risk behaviors: a cross-sectional study with 9th grade adolescents in São Paulo. *BMC Public Health*, 21, 1706. <https://doi.org/10.1186/s12889-021-11718-4>.
- Batis, C., Castellanos-Gutiérrez, A., Aburto, T. C., Jiménez-Aguilar, A., Rivera, J. A., & Ramírez-Silva, I. (2020). Self-perception of dietary quality and adherence to food groups dietary recommendations among Mexican adults. *Nutrition Journal*, 19(1), 59. <https://doi.org/10.1186/s12937-020-00573-5>
- Bazzani, C., Gustavsen, G. W., Nayga, R. M., Jr., & Rickertsen, K. (2018). A comparative study of food values between the United States and Norway. *European Review of Agricultural Economics*, 45(2), 239-272. <https://doi.org/10.1093/erae/jbx033>
- Bellisle, F. (2014). Meals and snacking, diet quality and energy balance. *Physiology & Behavior*, 134, 38-43. <https://doi.org/10.1016/j.physbeh.2014.03.010>
- Bouwman, E.P., Onwezen, M.C., Taufik, D., de Buissonjé, D., & Ronteltap, A. (2020). Brief self-efficacy interventions to increase healthy dietary behaviours: evidence from two randomized controlled trials. *British Food Journal*, 122(11), 3297-3311. <https://doi.org/10.1108/BFJ-07-2019-0529>
- Brug, J., van Assema, P., Kok, G., Lenderink, T., & Glanz, K. (1994). Self-rated dietary fat intake: association with objective assessment of fat, psychosocial factors, and intention to change. *Journal of Nutrition Education*, 26(Sup 1), S130-S139. <https://doi.org/10.1038/sj.ejcn.1602186>
- Ceyda, T. (2021). Theory of consumption values in consumer behavior research: a review and future research agenda. *International Journal of Consumer Studies*, 45(6), 1176-1197. <https://doi.org/10.1111/ijcs.12687>
- Chou, F.-S., Wang, C.-C., Lai, M.-C., Tung, C.-H., Yang, Y.-J. & Tsai, K.-H. (2020). Persuasiveness of organic agricultural products: Argument strength, health consciousness, self-reference, health risk, and perceived fear. *British Food Journal*, 122(4), 1289-1304. <https://doi.org/10.1108/BFJ-11-2019-0868>
- Claessens, I. W. H., Gillebaart, M. & de Ridder, D. T. D. (2023). Personal values, motives, and healthy and sustainable food choices: Examining differences between home meals and restaurant meals. *Appetite*, 182, 106432. <https://doi.org/10.1016/j.appet.2022.106432>
- Cobb-Clark, D. A., Dahmann, S. C., Kamhöfer, D. A., & Schildberg-Hörisch, H. (2019). Self-control: Determinants, life outcomes and intergenerational implications. *IZA Discussion Papers*, No. 12488. Bonn: Institute for the Study of Labor (IZA).
- Collins, C. E., Young, A. F., & Hodge, A. (2008). Diet quality is associated with higher nutrient intake and self-rated health in mid-aged women. *Journal of the American College of Nutrition*, 27(1), 146-157. <https://doi.org/10.1080/07315724.2008.10719686>.
- Denby, L. (2021, March 18). *Ten healthy drinks you're not drinking –yet*. <https://www.tasteofhome.com/collection/healthy-drinks-you-should-be-drinking/>.
- Deshpande, S., Basil, M. D., & Basil, D. Z. (2009). Factors influencing healthy eating habits among college students: An application of the Health Belief Model. *Health Marketing Quarterly*, 26(2), 145-164. <http://doi.org/10.1080/07359680802619834>
- Di Renzo, L., Colica, C., Carraro, A., Goga, B. C., Marsella, L. T., Botta, R., Colombo, M. L., Gratteri S., Chang, T. F. M., Droli, M., Sarlo, F., & De Lorenzo, A. (2015). Food safety and nutritional quality for the prevention of non-communicable diseases: the nutrient, hazard analysis and critical control point process (NACCP). *Journal of Translational Medicine*, 13, 128-141. <https://doi.org/10.1186/s12967-015-0484-2>
- Enriquez, J. P., & Gollub, E. (2023). Snacking consumption among adults in the United States: A scoping review. *Nutrients*, 15(7), 1596. <https://doi.org/10.3390/nu15071596>
- Espinosa, A., & Kadić-Maglajlić, S. (2018). The mediating role of health consciousness in the relation between emotional intelligence and health behaviors. *Frontiers in Psychology*, 9, 1-11. <https://doi.org/10.3389/fpsyg.2018.02161>
- Espinosa-Ortega, A., Martínez-García, C., Thomé-Ortiz, H., & Vizcarra-Bordi, I. (2016). Motives for food choice of consumers in Central México. *British Food Journal*, 118(11), 2744-2760. <https://doi.org/10.1108/BFJ-04-2016-0143>
- Gago, C. M., Lopez-Cepero, A., O'Neill, J., Tamez, M., Tucker, K., Orengo, J., & Mattei, J. (2021). Association of a single-item self-rated diet construct with diet quality measured with the alternate Healthy Eating Index. *Frontiers in Nutrition*, 8, 646694. <https://doi.org/10.3389/fnut.2021.646694>
- Gillebaart, M. (2018). The 'operational' definition of self-control. *Frontiers in Psychology*, 9, 1231. <https://doi.org/10.3389/fpsyg.2018.01231>
- Gobierno de México. Procuraduría Federal del Consumidor [2017, November 1st.]. *La Jarra del Buen Beber. La Importancia de Mantenerse Bien Hidratado*. <https://www.gob.mx/profeco/documentos/la-jarra-del-buen-beber-la-importancia-de-mantenerse-bien-hidratado?state=published>
- Grand View Research. (2021). *Snacks Market Size, Share, & Trends. Analysis Report by Product (Frozen & Refrigerated, Fruit, Bakery, Savory, Confectionery, Dairy, Others), By Distribution Channel, By Region, And Segment Forecasts, 2022 - 2030*. <https://www.grandviewresearch.com/industry-analysis/snacks-market#:~:text=The%20global%20snacks%20market%20size,2.7%25%20from%202022%20to%202030>.
- Gould, S. J. (1990). Health consciousness and health behavior: The application of a new health consciousness scale. *American Journal of Preventive Medicine*, 6(4), 228-237. [https://doi.org/10.1016/S0749-3797\(18\)31009-2](https://doi.org/10.1016/S0749-3797(18)31009-2)
- Hardcastle, S. J., & Hagger, M. S. (2016). Psychographic profiling for effective health behavior change interventions. *Frontiers of Psychology*, 6, 1-2. <https://doi.org/10.3389/fpsyg.2015.01988>
- Hair, J. F., Hult, G.T.M., Ringle, C.M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Thousand Oaks, CA: Sage Publications. <https://doi.org/10.15358/9783800653614>
- Harvard School of Public Health (2011). *Healthy Eating Plate*. <https://www.hsph.harvard.edu/nutritionsource/healthy-eating-plate/>

- Hong, H. (2009). Scale development for measuring health consciousness: Re-conceptualization. In K. Yamamura (Ed.), *Proceedings of the 12th Annual International Public Relations Research Conference: Research That Matters to the Practice* (pp. 212-233). Florida, FL, USA: University of Miami..
- Honkanen, P., Olsen, S. O., Verplanken, B., & Tuu, H. H. (2012). Reflective and impulsive influences on unhealthy snacking. The moderating effects of food related self-control. *Appetite*, 58(2), 616-622. <https://doi.org/10.1016/j.appet.2011.11.019>
- Huberty, C. J., & Olejnik, S. (2006). *Applied MANOVA and Discriminant Analysis*. (2nd ed.). John Wiley & Sons.
- Infobae. (2017, July 28). *Superfoods: 10 alimentos con densidad nutricional que potencian la salud*. <https://www.infobae.com/tendencias/nutriglam/2017/07/28/superfoods-10-alimentos-con-densidad-nutricional-que-potencian-la-salud/>
- Iqbal, J., Yu, D., Zubair, M., Rasheed, M. I., Khizar, H. M. U., & Imran, M. (2021). Health consciousness, food safety concern, and consumer purchase intentions toward organic food: The role of consumer involvement and ecological motives. *SAGE Open*, 11(2). <https://doi.org/10.1177/21582440211015727>
- Izquierdo-Yusta, A., Gómez-Cantó, C. M., Pelegrin-Borondo, J., & Martínez-Ruiz, M. P. (2018). Consumers' behaviour in fast-food restaurants: a food value perspective from Spain. *British Food Journal*, 121(2), 386-399. <https://doi.org/10.1108/BFJ-01-2018-0059>.
- Jáuregui-Lobera, I., & Bolaños Ríos, P. (2011). What motivates the consumer's food choice? *Nutrición Hospitalaria*, 26(6), 1313-1321. <https://www.redalyc.org/pdf/3092/309226774018.pdf>.
- Jenkins, E. L., Legrand, S., Brennan, L., Molenaar, A., Reid, M., & McCaffrey, T. A. (2021). Psycho-behavioural segmentation in food and nutrition: A systematic scoping review of the literature. *Nutrients*, 13(6), 1795. <https://doi.org/10.3390/nu13061795>.
- Kotabe, H. P., & Hofmann, W. (2015). On integrating the components of self-control. *Perspectives on Psychological Science*, 10(5), 618-638. <https://doi.org/10.1177/1745691615593382>
- Küster-Boluda, I., & Vidal-Capilla, I. (2017). Consumer attitudes in the election of functional foods. *Spanish Journal of Marketing*, 21(1), 65-79. <https://doi.org/10.1016/j.sjme.2017.05.002>
- Lee, H. J., & Yun, Z. S. (2015). Consumers' perceptions of organic food attributes and cognitive and affective attitudes as determinants of their purchase intentions toward organic food. *Food Quality and Preference*, 39, 259-267. <https://doi.org/10.1016/j.foodqual.2014.06.002>
- Legiscomex (2021). *El Mercado de snacks creció en México*. <https://www.legiscomex.com/Documentos/mercado-snacks-crecio-mexico-oct-11-16-16not>
- Lindner, C., Nagy, G., & Retelsdorf, J. (2015). The dimensionality of the Brief Self-Control Scale—An evaluation of unidimensional and multidimensional applications. *Personality and Individual Differences*, 86, 465-473. <https://doi.org/10.1016/j.paid.2015.07.006>
- Loizou, E., Michailidis, A., & Chatzitheodoridis, F. (2013). Investigating the drivers that influence the adoption of differentiated food products: The case of a Greek urban area. *British Food Journal*, 115(7), 917-935. <https://doi.org/10.1108/BFJ-04-2010-0068>
- Luomala, H., Jokitalo, M., Karhu, H., Hietaranta-Luoma, H. L., Hopia, A., & Hietamäki, S. (2015). Perceived health and taste ambivalence in food consumption. *Journal of Consumer Marketing*, 32(4), 290-301. <https://doi.org/10.1108/JCM-11-2014-1233>
- Lusk, J. L. (2011). External validity of the food values scale. *Food Quality and Preference*, 22(5), 452-462. <https://doi.org/10.1016/j.foodqual.2011.02.009>
- Lusk, J. L., & Briggeman, B. C. (2009). Food values. *American Journal of Agricultural Economics*, 91(1), 184-196. <https://doi.org/10.1111/j.1467-8276.2008.01175.x>
- Mai, R., & Hoffmann, S. (2012). Taste lovers versus nutrition fact seekers: How health consciousness and self-efficacy determine the way consumers choose food products. *Journal of Consumer Behavior*, 11(4), 316-328. <https://doi.org/10.1002/cb.1390>
- Mai, R., & Hoffmann, S. (2015). How to combat the unhealthy = tasty intuition: the influencing role of health consciousness. *Journal of Public Policy & Marketing*, 34(1), 63-83. <https://doi.org/10.1509/jppm.14.006>.
- Marques, I. C. F., Ting, M., Cedillo-Martínez, D., & Pérez-Cueto, F. J. A. (2020). Effect of impulsivity traits on food choice within a nudging intervention. *Nutrients*, 12(5), 1402. <https://doi.org/10.3390/nu12051402>
- McFadden, D. (1986). The choice theory approach to market research. *Marketing Science*, 5(4), 275-297. <https://doi.org/10.1287/mksc.5.4.275>
- McKinsey & Company (2022). *Navigating the market headwinds: The state of grocery retail 2022*. North America. https://www.mckinsey.com/~media/mckinsey/industries/retail/how%20we%20help%20clients/the%20state%20of%20grocery%20retail%202022%20north%20america/mck_state%20of%20grocery%20na_fullreport_v9.pdf
- Meiselman, H. L., Kuesten, C., & Bi, J. (2021). The use of demographics and psychographics to study product effects with nutrient supplements: exploratory multi-country data. *Foods*, 10(8), 1918. <https://doi.org/10.3390/foods10081918>
- Michaelidou, N., & Hassan, L. M. (2008). The role of health consciousness, food safety concern and ethical identity on attitudes and intentions towards organic food. *International Journal of Consumer Studies*, 32(2), 163-170. <https://doi.org/10.1111/j.1470-6431.2007.00619.x>
- Mintel (2021). *2021 Global Food and Drink Trends*. <https://www.mintel.com/global-food-and-drink-trends/thank-you>.
- Mondelez (2014, October 7). *Insights from the Mondelez International Foundation Healthy Lifestyles workshop published in leading nutrition journal*. <https://ir.mondelezinternational.com/news-releases/news-release-details/insights-mondelez-international-foundation-healthy-lifestyles>
- Mora, T., & Lopez-Valcarcel, B. G. (2018). Breakfast choice: An experiment combining a nutritional training workshop targeting adolescents and the promotion of unhealthy products. *Health Economics*, 27(2), 306-319. <https://doi.org/10.1002/hec.3549>
- Murakami, K., Shinozaki, N., Yuan, X., Tajima, R., Matsumoto, M., Masayasu, S., & Sasaki, S. (2022). Food choice values and food literacy in a nationwide sample of Japanese adults: Associations with sex, age, and body mass index. *Nutrients*, 14(9), 1899. <https://doi.org/10.3390/nu14091899>
- Muro-Rodríguez, A. I., Pérez-Jiménez, I. R., Esteban-Dorado, A., & Martínez-Ruiz, M. P. (2021). Food values, satisfaction, and loyalty: Some evidence in grocery retailing acquired during the COVID-19 Pandemic. *Sustainability*, 13(7), 3908. <http://dx.doi.org/10.3390/su13073908>
- Mwanri, L., Foley, W., Coveney, J., Muller, R., Verity, F., Ward, P. R., Carter, P., Mohr, P., & Taylor, A. (2012). Food supply and the obesity scourge: Is there a relationship? *Health*, 4(12A), 1457-1463. <https://doi.org/10.4236/health.2012.412A210>
- Nagai, M. (2020). Relationships among lifestyle awareness, age, and lifestyle-related diseases in healthy Japanese community residents. *Asian/Pacific Island Nursing Journal*, 5(2), 103-110. <https://doi.org/10.31372/20200502.1092>.
- Newsom, J. T., McFarland, B. H., Kaplan, M. S., Huguet, N., & Zani, B. (2005). The health consciousness myth: implications of the near independence of major health behaviors in the North American population. *Social Science & Medicine*, 60(2), 433-437. <https://doi.org/10.1016/j.socscimed.2004.05.015>
- Noguez, R. (March, 24, 2021). *La reinvencción de los alimentos*. Forbes. <https://www.forbes.com.mx/nuestra-revista-la-reinvenccion-de-los-alimentos/>.
- Nystrand, B. T., & Olsen, S. O. (2020). Consumers' attitudes and intentions toward consuming functional foods in Norway. *Food Quality and Preference*, 20, 103827. <https://doi.org/10.1016/j.foodqual.2019.103827>.

Osborne, J. W., & Costello, A. B. (2009). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Pan-Pacific Management Review*, 12(2), 131-146. <https://doi.org/10.7275/jyj1-4868>

Powell-Wiley, T. M., Miller, P. E., Agyemang, P., Agurs-Collins, T., & Reedy, J. (2014). Perceived and objective diet quality in US adults: a cross-sectional analysis of the National Health and nutrition examination survey (NHANES). *Public Health Nutrition*, 17(12), 2641-2649. <https://doi.org/10.1017/S1368980014000196>

Procomer (2017, May 2). *Crece demanda de snacks más naturales y saludables en consumidores mexicanos*. https://www.procomer.com/alertas_comerciales/crece-demanda-de-snacks-mas-naturales-y-saludables-en-consumidores-mexicanos/

Research and Markets (2022). *Health and Wellness Foods - Global Market Trajectory & Analytics*. https://www.researchandmarkets.com/reports/5140967/health-and-wellness-foods-global-market?gclid=EALalQobChMI56mwq6GG_QiVuw2tBh09EAX-EEAYyAAEgJaKPD_BwE

Rivera-Dommarco, J. A., Colchero, M. A., Fuentes, M. L., González de Cosío Martínez, T., Aguilar-Salinas, C. A., Hernández Licona, G., & Barquera, S. (Eds.) (2018). *La Obesidad en México. Estado de la Política Pública y Recomendaciones para su Prevención y Control* [Obesity in Mexico. The State of Public Policy and Recommendations for its Prevention and Control]. Instituto Nacional de Salud Pública.

Sadiq, M., Paul, J., & Bharti, K. (2020). Dispositional traits and organic food consumption. *Journal of Cleaner Production*, 266, 121961. <https://doi.org/10.1016/j.jclepro.2020.121961>

Sherrd, K. (October 15, 2019). *Targeted innovation and apt marketing helps PepsiCo's snack portfolio*. <https://www.bakeryandsnacks.com/Article/2019/10/15/Targeted-innovation-and-apt-marketing-help-PepsiCo-s-snack-portfolio>

Sigurdsson, V., Menon, R. G. V., & Fageerstrom, A. (2017). Online healthy food experiments: capturing complexity by using Choice-Based Conjoint Analysis. *The Behavior Analyst*, 40(2), 373-391. <https://doi.org/10.1007/s40614-017-0114-9>

Simonin, D., & Anwar, A. (2016). *Nestlé Healthy Kids Program – Case Study – Managing Change Projects Across Boundaries*. Université de Genève.

Sheth, J. N., Newman, B. I., & Gross, B. L. (1991). Why we buy what we buy: A theory of consumption values. *Journal of Business Research*, 22(2), 159-170. [https://doi.org/10.1016/0148-2963\(91\)90050-8](https://doi.org/10.1016/0148-2963(91)90050-8)

Speciality Food (2021, August 4). *6 Essential innovations in snack foods*. <https://www.specialityfoodmagazine.com/news/snack-food-innovation-trends>

Stepoe, A., Pollard, T. M., & Wardle, J. (1995). The development of a measure of the motives underlying the selection of food: the Food Choice Questionnaire. *Appetite*, 25(3), 267-284. <https://doi.org/10.1006/appe.1995.0061>

Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, 72(2), 271-324. <https://doi.org/10.1111/j.0022-3506.2004.00263.x>

Vågsholm, I., Arzoomand, N. S., & Boqvist, S. (2020). Food security, safety, and sustainability—Getting the trade-offs right. *Frontiers in Sustainable Food Systems*, 4, 1-14. <https://doi.org/10.3389/fsufs.2020.00016>

Vorage L., Wiseman, N., Graca, J., & Harris, N. (2020). The association of demographic characteristics and food choice motives with the consumption of functional foods in emerging adults. *Nutrients*, 12(9), 2582. <https://doi.org/10.3390/nu12092582>

Wieland, A., Durach, C. F., Kembro, J., & Treiblmaier, H. (2017). Statistical and judgmental criteria for scale purification. *Supply Chain Management: An International Journal*, 22(4), 321-328. <https://doi.org/10.1108/SCM-07-2016-0230>

Wongprawmas, R., Mora, C., Pellegrini, N., Guiné, R., Carini, E., Sogari, G., & Vittadini, E. (2021). Food choice determinants and perceptions of a healthy diet among Italian consumers. *Foods*, 10(2), 318. <https://doi.org/10.3390/foods10020318>

World Health Organization [WHO] (2021, June 9). *Overweight and Obesity*. <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>

Wills, T. A., Isasi, C. R., Mendoza, D., & Ainette, M. G. (2007). Self-control constructs related to measures of dietary intake and physical activity in adolescents. *Journal of Adolescent Health*, 41(6), 551-558. <https://doi.org/10.1016/j.jadohealth.2007.06.013>

Young, J. (2000). Functional foods and the European consumer. In J. Buttriss, & M. Saltmarsh, *Functional Foods II, Claims and Evidence* (pp. 75-81). United Kingdom: Royal Society of Chemistry.

Zeithaml, V. A. (1988). Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence. *Journal of Marketing*, 52(3), 2-22. <https://doi.org/10.2307/1251446>

Annexes

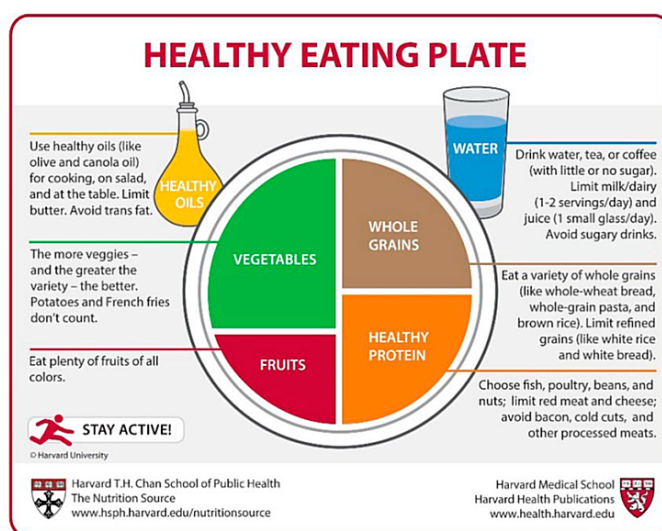


Figure A1. The Healthy Eating Plate. Source: Harvard T. H. Chan School of Public Health (2011).

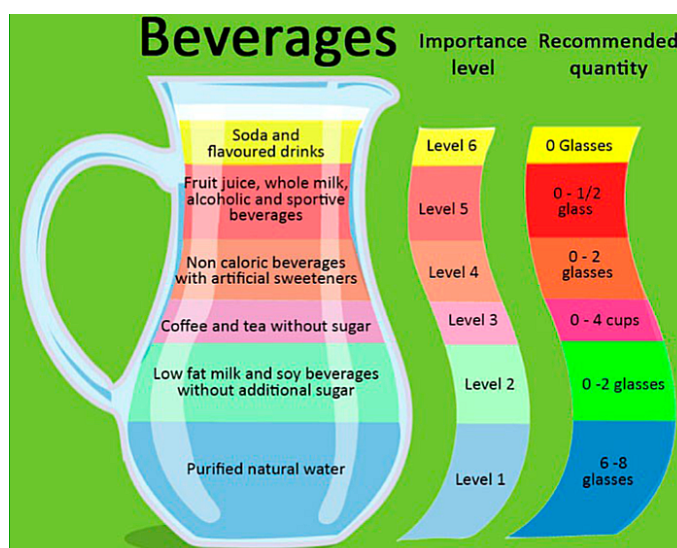


Figure A2. The anHealthy Drinking Jar. Source: Gobierno de México. Procuradía Federal del Consumidor (2017).

AGRADECIMIENTO REVISORES

Estudios Gerenciales agradece la colaboración de los evaluadores de los artículos incluidos en la revista Vol. 39. N.º 168 correspondiente al tercer trimestre del 2023 (julio – septiembre).

Isabel Cristina Carmona Garcés
Universidad de Antioquia, Colombia

Jorge Enrique Culebro Moreno
Universidad Autónoma Metropolitana, México

Erik M. Muñoz Henríquez
Universidad de Talca, Chile

Anahí Eugenia Briozzo
Universidad Nacional del Sur, Argentina

Williams Oliveira
Universidade Federal de Pernambuco, Brasil

Cibele Roberta Sugahara
Pontificia Universidade Católica de Campinas, Brasil

Jairo de Carvalho Guimarães
Universidade Federal do Piauí, Brasil

Christian Enrique Cruz Torres
Universidad de Guanajuato, México

Carlos Mauricio Salazar Botello
Universidad del Bío-Bío, Chile

Magda Lizet Ochoa Hernández
Universidad Autónoma de Tamaulipas, México

Blanca Cecilia Zuluaga Diaz
Universidad Icesi, Colombia

Iván Alejandro Rueda Fierro
Pontificia Universidad Católica del Ecuador, Ecuador

Andrés Araya Rosales
Universidad Católica del Norte, Chile

Juan José García Ochoa
Universidad de Sonora, México

Lloyd Herbert Morris Molina
Universidad Católica de Pereira, Colombia

Andrés Cabrera Narvéez
Universidad Central, Colombia

Oscar Diaz Becerra
Pontificia Universidad Católica del Perú, Perú

Malena Portal Boza
Universidad Autónoma de Baja California, México

Alan Bandeira Pinheiro
Universidade Federal do Paraná, Brasil

Maicon da Silva
Universidade de Santa Cruz do Sul, Brasil

Luis Felipe Miguel Llanos Reynoso
Universidad Anáhuac, México

Alexandre Ripamonti
Escola Superior de Propaganda e Marketing, Brasil

Leonardo Ortegón Cortázar
Politécnico Grancolombiano, Colombia

Daniel Bucio Gutierrez
Universidad Autónoma de Tamaulipas, México

Ramon Silva Leite
Pontificia Universidad Católica de Minas Gerais, Brasil

Política editorial

Estudios Gerenciales es la revista Iberoamericana de administración y economía enfocada principalmente en las subáreas temáticas de gestión organizacional, emprendimiento, innovación empresarial, mercadeo, contabilidad, finanzas, estrategia, negocios internacionales y economía de los negocios. Su principal objetivo es la difusión de rigurosos trabajos de investigación y casos de enseñanza en estas áreas temáticas, que generen herramientas de estudio de la comunidad Iberoamericana y su actual contexto económico y administrativo.

La revista *Estudios Gerenciales*, a través de la publicación de artículos inéditos, relevantes, de alta calidad y arbitrados anónimamente (*double-blind review*), está dirigida a investigadores, estudiantes, académicos y profesionales interesados en conocer las más recientes investigaciones y análisis en administración y economía en la región Iberoamericana.

Se admiten artículos en español, inglés y portugués y, como política editorial, la revista busca un equilibrio de artículos de autores de diversos países Iberoamericanos o de otras regiones; por lo tanto, un número de la revista podrá incluir como máximo un 20% de artículos de autoría de Investigadores-Docentes asociados a la Universidad Icesi. Sin embargo, para todos los casos, los artículos serán sometidos al mismo proceso de evaluación.

Estructura de la revista

En *Estudios Gerenciales* se privilegia la publicación de la producción intelectual con origen en investigaciones científicas o tecnológicas y que susciten artículos de investigación, revisión y casos de estudio, que sigan una rigurosa metodología investigativa y generen aportes significativos a los conocimientos en los campos citados, para la comunidad Iberoamericana.

La estructura de la revista *Estudios Gerenciales* comprende la publicación de artículos y casos de estudio. El caso de estudio se define como un “documento que presenta los resultados de un estudio sobre una situación particular con el fin de dar a conocer las experiencias técnicas y metodológicas consideradas en un caso específico. Incluye una revisión sistemática comentada de la literatura sobre casos análogos.” (Definición de Colciencias). El objetivo de incluir casos de estudio es brindar herramientas de análisis sobre diversas situaciones del contexto Iberoamericano, las cuales generen discusión a partir de las preguntas que se deben plantear en cada caso.

Copyright

Los autores de artículos serán responsables de los mismos, y por tal no comprometen los principios o políticas de la Universidad Icesi ni las del Comité Editorial de la revista *Estudios Gerenciales*. Los autores autorizan y aceptan la cesión de todos los derechos a la revista *Estudios Gerenciales*, tanto en su publicación impresa como electrónica. Luego de publicado el artículo, puede ser reproducido sin autorización del autor o la Revista, mencionando autor(es), año, título, volumen, número, rango de páginas de la publicación y DOI, y como fuente: *Estudios Gerenciales* (abstenerse de usar Revista *Estudios Gerenciales*).

Periodicidad, distribución y acceso electrónico

La periodicidad de la revista es trimestral; la revista se distribuye a través de una base de datos de suscriptores, bibliotecas y centros de investigación en administración y economía en Iberoamérica y otros países. Adicionalmente, se puede acceder libremente (Open Access) a través de la página web de la revista *Estudios Gerenciales*:

- Web de la revista: www.icesi.edu.co/estudios_gerenciales

Estudios Gerenciales es continuidad de Publicaciones ICESI.

Estudios Gerenciales es una revista científica patrocinada y publicada por la Facultad de Ciencias Administrativas y Económicas de la Universidad Icesi.

Guía para los autores de artículos

- Los autores deben garantizar que su artículo es inédito, es decir, que no ha sido publicado anteriormente (total o parcialmente) en otra revista (física o electrónica). No se acepta la postulación de artículos que ya han sido publicados en otro idioma, artículos similares publicados por los mismos autores, artículos con una contribución irrelevante, o artículos cuyos resultados se encuentren publicados. Documentos en *working papers*, sitios web personales o de instituciones, memorias de eventos (*proceedings* no publicados en otras revistas académicas), etc., son admitidos para postulación aunque deben hacer mención a los mismos.
- El equipo editorial hace uso del Software *Ithenticate* para revisar la originalidad de las postulaciones recibidas.
- Los autores son responsables de obtener los permisos para reproducción de material con derechos de autor (imágenes, fotos, etc.). Los permisos serán anexados dentro de los documentos enviados para postulación.
- La revista no cobra cargos (*article processing charge -APC*) por la postulación, revisión y/o publicación de los artículos.
- Al postular el manuscrito a través de la plataforma, en el campo “Comentarios para el Editor/a” debe indicar de forma breve cuál es la contribución del artículo al área de conocimiento que trata.

Proceso de revisión de los artículos

Los artículos postulados a la revista *Estudios Gerenciales* serán revisados inicialmente por el equipo editorial y, si se ajusta a los parámetros de publicación de artículos (estándares académicos y editoriales), se envía a dos pares evaluadores externos para una revisión “doblemente ciega”, donde se tienen en cuenta aspectos como la originalidad, aporte al área de conocimiento, pertinencia del tema, claridad en las ideas, entre otros.

A partir de los comentarios y recomendaciones de los revisores, el equipo editorial decide si el artículo es aceptado, requiere de modificaciones (leves o grandes) o si es rechazado. El proceso de revisión inicial (entre el momento de postulación y la emisión del primer concepto) puede tomar un tiempo aproximado de 5 meses. Posteriormente, los autores de artículos que requieren cambios tendrán un tiempo máximo de 2 meses para realizar los ajustes necesarios (este tiempo lo indica el equipo editorial). Una vez los autores reenvían su artículo con los cambios solicitados y una carta de respuesta a los revisores, se somete a una segunda evaluación por parte de los pares, a partir de lo cual el equipo editorial toma una decisión final sobre la publicación del artículo (esta parte del proceso puede tomar 3 meses).

Postulación de un artículo

Los autores interesados en postular un artículo a *Estudios Gerenciales* deben registrarse y luego ingresar en el Sistema de Gestión Editorial de la revista en Open Journal System (OJS). Para esto se debe ingresar en el link http://www.icesi.edu.co/revistas/index.php/estudios_gerenciales/login y seguir todas las instrucciones de la sección “Nuevo envío”. Al realizar la postulación se deben registrar a todos los autores del artículo usando la opción “Añadir colaborador”. La postulación de artículos se puede realizar ininterrumpidamente durante todo el año.

Pautas generales para los artículos

Para poder postular un artículo en *Estudios Gerenciales* se deben preparar dos archivos, la página de presentación y el manuscrito anónimo, estos deben contener:

1) Página de presentación del artículo. Primera página del documento, que debe separarse del resto del manuscrito. Incluye:

- a) Título en español e inglés. Claro y preciso, no debe exceder 20 palabras. Debe tener coherencia y relación con el contenido del artículo. No debe contener abreviaciones.
- b) Breve reseña de cada autor, indicando: último título académico alcanzado, vinculación institucional, cargo, dirección de correspondencia y correo electrónico de contacto. En el caso de varios autores, se debe seleccionar un solo autor para correspondencia.
- c) Resumen analítico del artículo en español e inglés. El resumen no debe exceder 120 palabras y debe incluir: objetivo del trabajo, metodología y el resultado o recomendación más importante que surge del trabajo. No debe contener referencias.
- d) Palabras claves en español y en inglés (mínimo 3, máximo 5). No se acepta el uso de abreviaciones.
- e) Clasificación JEL¹ para todos los artículos (máximo 3 códigos).
- f) Si es el caso, se debe anexar la información básica de las investigaciones que dan origen al artículo, fuentes de financiación y agradecimientos a los que se dé lugar.

2) Manuscrito anónimo. Además del título, resumen, palabras clave (lo anterior en español e inglés) y los códigos JEL, el manuscrito anónimo debe incluir (el texto no se debe enviar en dos columnas):²

• Para los artículos de investigación científica y tecnológica se sugiere la siguiente estructura:

- a) Introducción: debe dar cuenta de los antecedentes, el objetivo y la metodología de la investigación. Al final plantea el hilo conductor del artículo.
- b) Marco teórico: comprende la revisión bibliográfica que justifica la investigación, donde se comentan resultados de estudios que validan la relevancia y necesidad del trabajo de investigación.
- c) Metodología: presenta y justifica la metodología escogida, para luego pasar a desarrollarla y mostrar los resultados de la aplicación de la misma.
- d) Resultados: presenta los principales resultados de la aplicación de la metodología empleada de manera comprensible y necesaria para evaluar la validez de la investigación.
- e) Conclusiones: se resaltan los principales aspectos del artículo mas no representa un resumen del mismo. Se resaltan las recomendaciones, limitaciones del artículo y se plantean futuras líneas de investigación.
- f) Referencias bibliográficas: se presentarán de acuerdo al estilo APA en su última edición (véase el final de esta sección)³.
- g) Anexos.

• Para los artículos de revisión se sugiere la siguiente estructura:

- a) Introducción: debe dar cuenta de los antecedentes, el objetivo y la metodología de la investigación. Al final plantea el hilo conductor del artículo.
- b) Marco teórico: comprende la revisión bibliográfica que justifica la investigación, donde se comentan resultados de estudios que validan la relevancia y necesidad del trabajo de investigación.
- c) Desarrollo teórico: incluye la revisión de aspectos destacables, hallazgos o tendencias que resultan de la investigación.
- d) Conclusiones: se resaltan los principales aspectos del artículo mas no representa un resumen del mismo. Se resaltan las recomendaciones, limitaciones del artículo y se plantean futuras líneas de investigación.
- e) Referencias bibliográficas: se presentarán de acuerdo al estilo APA

en su última edición. Debe presentar una revisión bibliográfica de por lo menos 50 referencias.

f) Anexos.

• La estructura de los casos de estudio (reporte de caso) puede variar dependiendo de la forma como se aborde el estudio de la situación particular. Se sugiere la siguiente estructura:

- a) Introducción: debe dar cuenta de los antecedentes, el objetivo y la metodología de la investigación. Al final plantea el hilo conductor del artículo.
- b) Marco teórico: comprende la revisión bibliográfica que justifica la investigación, donde se comentan resultados de estudios (otros casos) que validan la relevancia y necesidad del trabajo de investigación.
- c) Caso de estudio: incluye una revisión sistemática comentada sobre una situación particular, donde se den a conocer las experiencias técnicas y metodológicas del caso bajo estudio.
- d) Discusión o reflexión final: reflexión o comentarios que surgen de la revisión de la situación planteada en el caso de estudio.
- e) Preguntas de discusión: debe incluir preguntas o ejercicios que se resuelvan a partir de la revisión y/o reflexión sobre del caso bajo estudio.
- f) Referencias bibliográficas: se presentarán de acuerdo al estilo APA en su última edición.
- g) Anexos.

3) Tablas y figuras. En el texto se deben mencionar todas las tablas y figuras antes de ser presentadas. Cada una de estas categorías llevará numeración (continua de acuerdo con su aparición en el texto), título y fuente. Las tablas y figuras se deben incluir en el lugar que corresponda en el cuerpo del texto y se deben enviar en un archivo a parte en su formato original (PowerPoint, Excel, etc.). Para las tablas y figuras que sean copiadas y reproducidas de otras fuentes, deben agregar el número de página del que fueron tomados. Las imágenes y fotos deben enviarse en alta definición.

4) Ecuaciones. Las ecuaciones se realizarán únicamente con un editor de ecuaciones. Todas las ecuaciones deben enumerarse en orden de aparición.

5) Notas de pie de página. Se mostrará solo información aclaratoria, cada nota irá en numeración consecutiva y sin figuras o tablas.

6) Citas textuales. Corresponde al material citado original de otra fuente. Una cita textual que se incorpore en texto se debe encerrar entre comillas dobles. En todo caso siempre se debe agregar el autor, el año y la página específica del texto citado, e incluir la cita completa en la lista de referencias. Las citas deben ser fieles, es decir, no se deben hacer modificaciones en el texto, incluso si la ortografía es errónea. No deben ir en texto subrayado o en cursiva y en los casos en los que el autor desee hacer énfasis, puede agregar cursiva y luego incluir entre corchetes el texto “[cursivas añadidas]”. Solamente se debe agregar el número de página en los casos de citas textuales (incluidas figuras y tablas).

7) Consideraciones generales

a) Extensión: no debe exceder de 30 páginas en total (incluye bibliografía, gráficos, tablas y anexos).

b) Formato de texto y páginas: el artículo se debe enviar en formato Word; se sugiere el uso de fuente Times New Roman, tamaño 12, tamaño de página carta, interlineado 1,5, márgenes simétricos de 3 cm.

c) Los artículos se deben redactar en tercera persona del singular (impersonal), contar con adecuada puntuación y redacción y carecer de errores ortográficos. El autor es responsable de hacer la revisión de estilo previamente a su postulación a la revista.

d) En los artículos en español y portugués, en todas las cifras (texto,

¹ Para seleccionar los códigos según la clasificación JEL, consultar:

<https://www.aeaweb.org/econlit/jelCodes.php?view=jel>

² Se recomienda a los lectores revisar la estructura de artículos previamente publicados en *Estudios Gerenciales* para conocer ejemplos de la estructura de un manuscrito científico:

http://www.icesi.edu.co/revistas/index.php/estudios_gerenciales/issue/archive

³ Para mayor información, visite el sitio: <http://www.apastyle.org>

figuras y tablas), se deben usar puntos como separador de miles y comas como separador de decimales. En los artículos en inglés, las comas se usan como separador de miles y los puntos como separador de decimales.

Estilo APA para presentación de citas bibliográficas

Las referencias bibliográficas se incluirán en el cuerpo del texto de dos formas: como narrativa (se encierra entre paréntesis sólo el año de publicación, ejemplo: Apellido (año)); y como referencia (se encierra entre paréntesis el apellido del autor y el año, ejemplo: (Apellido, año)). En el caso de ser más de dos autores cite el apellido de todos la primera vez y luego sólo el primero seguido de "et al."

Todas las referencias que se nombren en el cuerpo del artículo deben estar incluidas en el listado de las referencias. Igualmente, todas las referencias del listado deben ser nombradas en el cuerpo del documento.

Para las referencias que tengan DOI, se debe incluir al final de cada una. El formato es <https://doi.org/10....>

El listado de referencias se debe incluir al final en orden alfabético, para lo cual se debe tener en cuenta el siguiente estilo:

- Artículo de revista

Apellido, inicial(es) del nombre. (año). Título artículo. *Nombre de la revista, Volumen* (Número), rango de páginas.DOI.

Ejemplo:

Deery, S., Rayton, B., Walsh, J. y Kinnie, N. (2016). The Cost of Exhibiting Organizational Citizenship Behavior. *Human Resource Management*, 56(6), 1039-1049. <https://doi.org/10.1002/hrm.21815>

- Libro

Apellido, inicial(es) del nombre (año). *Título* (# ed., vol.). Ciudad de publicación: Editorial.

Ejemplo:

Prychitko, D. y Vanek, J. (1996). *Producer cooperatives and labor manager Systems* (3ra ed.). Boston, MA: Edgar Elgar Publishing.

- Capítulo en libro editado

Nombre del autor del capítulo. (año). Título del capítulo. En inicial del nombre y apellido de los editores del libro (Eds.), *Título del libro* (rango de páginas del capítulo en el libro). Ciudad de publicación: Editorial.

Ejemplo:

Becattini, G. (1992). El distrito industrial marshalliano como concepto socioeconómico. En F. Pyke, G. Becattini y W. Sengenberger. (Eds.), *Los distritos industriales y las pequeñas empresas* (pp. 61-79). Madrid: Ministerio de Trabajo y Seguridad Social.

- Contribución no publicada para un simposio

Apellido, inicial(es) del nombre (año, mes). Título de ponencia o comunicado. En nombre organizadores (Organizador/Presidente), *nombre del simposio*. Descripción del Simposio, Ciudad, País.

Ejemplo:

Lichstein, K.L., Johnson, R.S., Womack, T.D., Dean, J.E. y Childers, C.K. (1990, junio). Relaxation therapy for polypharmacy use in elderly insomniacs and noninsomniacs. En T.L. Rosenthal (Presidente), *Reducing medication in geriatric populations*. Simposio efectuado en la reunión del First International Congress of Behavioral Medicine, Uppsala, Suecia.

- Internet

Apellido, inicial(es) del nombre (año). *Título*. Recuperado el día del mes del año, de: dirección electrónica.

Ejemplo:

Echevarría, J. J. (2004). *La tasa de cambio en Colombia: impacto y determinantes en un mercado globalizado*. Recuperado el 21 de junio de 2005, de: <http://www.banrep.gov.co/documentos/presentacionesdiscursos/pdf/tasa.pdf>

Responsabilidades éticas

Responsabilidad. Los autores de los artículos deben declarar que la investigación se ha llevado a cabo de una manera ética y responsable y siempre acorde con las leyes pertinentes.

Claridad. Los resultados del estudio deben explicarse de forma clara y honesta y los métodos de trabajo deben describirse de manera inequívoca para que sus resultados puedan ser confirmados por otros.

Publicación redundante o duplicada. *Estudios Gerenciales* no acepta material previamente publicado y no considerará para su publicación manuscritos que estén remitidos simultáneamente a otras revistas, ni publicaciones redundantes o duplicadas, esto es, artículos que se superpongan sustancialmente a otro ya publicado, impreso o en medios electrónicos. Los autores deben ser conscientes que no revelar que el material sometido a publicación ya ha sido total o parcialmente publicado constituye un grave quebranto de la ética científica.

Autoría. Los autores se comprometen a asumir la responsabilidad colectiva del trabajo presentado y publicado. En la declaración de autoría se reflejará con exactitud las contribuciones individuales al trabajo. En la lista de autores deben figurar únicamente aquellas personas que han contribuido intelectualmente al desarrollo del trabajo.

El autor de un artículo deberá haber participado de forma relevante en el diseño y desarrollo de éste para asumir la responsabilidad de los contenidos y, asimismo, deberá estar de acuerdo con la versión definitiva del artículo. En general, para figurar como autor se deben cumplir los siguientes requisitos:

- 1) Haber participado en la concepción y diseño, en la adquisición de los datos y en el análisis e interpretación de los datos del trabajo que ha dado como resultado el artículo en cuestión.
- 2) Haber colaborado en la redacción del texto y en las posibles revisiones del mismo.
- 3) Haber aprobado la versión que finalmente va a ser publicada.

La revista *Estudios Gerenciales* declina cualquier responsabilidad sobre posibles conflictos derivados de la autoría de los trabajos que se publican en la Revista.

Financiación. Los autores deberán declarar tanto las fuentes de financiación como posibles conflictos de intereses. Existe conflicto de intereses cuando el autor tuvo/tiene relaciones económicas o personales que han podido sesgar o influir inadecuadamente sus actuaciones. El potencial conflicto de intereses existe con independencia de que los interesados consideren que dichas relaciones influyen o no en su criterio científico.

Obtención de permisos. Los autores son responsables de obtener los oportunos permisos para reproducir parcialmente material (texto, tablas o figuras) de otras publicaciones. Estos permisos deben solicitarse tanto al autor como a la editorial que ha publicado dicho material.

La revista pertenece al Committee on Publication Ethics (COPE) y se adhiere a sus principios y procedimientos (www.publicationethics.org).

Estudios Gerenciales de la Universidad Icesi está bajo una licencia internacional CC BY de Creative Commons Attribution 4.0.

Information about *Estudios Gerenciales*

Editorial policy

Estudios Gerenciales is the Ibero-American journal of management and economics focused primarily on the sub-thematic areas of organizational management, entrepreneurship, business innovation, marketing, accountancy, finance, strategy, international business and business economics. The journal's primary objective is the dissemination of rigorous research and teaching cases related to these subject areas to further the study of the Ibero-American community and its current economic and administrative context.

Estudios Gerenciales, through the publication of relevant high quality previously unpublished articles subject to a double-blind peer review process, is generally aimed at researchers, students, academics and professionals interested in the most recent research and analyses in economics and management in Ibero-America.

Articles can be submitted in Spanish, English or Portuguese and, as editorial policy, the journal seeks a balance of articles by authors from different Ibero-American countries or other regions; therefore, an issue of the journal may include a maximum of 20% of articles authored by researchers-professors associated with Icesi University. However, in all cases, the articles will be subjected to the same evaluation process.

Structure of the journal

In *Estudios Gerenciales* we privilege the publication of intellectual production originating in scientific and technological research that foster research articles, literature reviews and case studies that follow a rigorous research methodology and generate significant contributions to knowledge in the above fields in the Ibero-American community.

The structure of the journal *Estudios Gerenciales* includes the publication of articles and case studies. The case study is defined as a "document that presents the results of a study on a particular situation in order to publicize the technical and methodological experiences considered in a specific case. It includes a systematic review of literature on similar cases" (Colciencias definition). The purpose of including case studies is to provide analysis tools on various situations from the Latin American context which generate discussions based on the questions to be asked in each case.

Copyright

Articles are the sole responsibility of their authors, and will not compromise Icesi's University principles or policies nor those of the Editorial Board of the journal *Estudios Gerenciales*. Authors authorize and accept the transfer of all rights to the journal, both for its print and electronic publication. After an article is published, it may be reproduced without previous permission of the author or the journal but the author(s), year, title, volume, number, range of pages of the publication and DOI must be mentioned. In addition, *Estudios Gerenciales* must be mentioned as the source (please, refrain from using *Revista Estudios Gerenciales*).

Periodicity, distribution and electronic access

The journal has a quarterly periodicity; the journal is distributed through a database of subscribers, libraries and research centers in management and economics in Latin America and other countries. Additionally, it can be freely accessed (Open Access) through the journal's website *Estudios Gerenciales*:

- Journal's website: http://www.icesi.edu.co/estudios_gerenciales

Estudios Gerenciales is a continuity of *Publicaciones ICESI*.

Estudios Gerenciales is a scientific journal sponsored and published by the Business School of the Universidad Icesi.

Guidelines for authors of articles

- Authors should ensure that their articles are unpublished, ie, that they have not been previously published (fully or partially) in another journal (printed or electronic). Application of articles that have already been published in another language, similar articles published by the same authors, articles with an irrelevant contribution or those whose results are already published are not accepted either. Documents in working papers, personal or institutional websites, memories of events (proceedings not published in other academic journals), etc. will be admitted for application, but must be mentioned.
- The editorial team uses Ithenticate software to check the originality of the applications received.
- The authors are responsible for obtaining permission to reproduce copyrighted material (images, photos, etc.). Permits will be added to the documents sent for application.
- The journal does not charge fees (article processing charge -APC) for the postulation, review and/or publication of the articles.
- When submitting the manuscript through the platform, in the field "Comments for the Editor", you should briefly indicate the contribution of the article to the area of knowledge that it deals with.

Article review process

Articles submitted to the journal *Estudios Gerenciales* will be initially reviewed by the editorial team and, if they fit the parameters of article publication (academic and editorial standards), they are sent to two external peer reviewers for a "double-blind" review, which take into account aspects such as originality, contribution to the area of knowledge, relevance of the theme, and clarity of ideas, among others.

Based on the comments and recommendations made by the reviewers, the editorial team decides if the article is accepted, requires modifications (minor or major) or if it is rejected. The initial review process (between the time of application and the issuance of the first concept) can take an approximate time of 5 months. Subsequently, the authors of articles that require changes will have a maximum of two months to make the necessary adjustments (the extent of the period will be established by the editorial team). Once the authors return their articles with the requested changes and a response letter to the reviewers, articles are subjected to a second evaluation by peers, from which the editorial team makes a final decision on the publication of the article (this part of the process may take 3 months).

Article submissions

Authors interested in submitting an article for the publication in *Estudios Gerenciales* must register and then enter the journal's Editorial Management System at Open Journal System (OJS). In order to do this, click on the link http://www.icesi.edu.co/revistas/index.php/estudios_gerenciales/login and follow all the instructions in the "New Submission" section. When making the submission, all the authors of the article must be registered using the option "Add contributor". Applications for article publication can be continuously sent throughout the year.

General guidelines for articles

In order to apply for the publication of an article in *Estudios Gerenciales* must be prepared two files, the presentation page and the anonymous manuscript, which should contain:

- 1) Article submission sheet. First page of the document, to be separated from the rest of the manuscript. Includes:
 - a) Title in English and Spanish. Clear and precise, should not exceed 20 words. It must be consistent and must be related to the content of the article. It should not contain abbreviations.
 - b) Brief outline of each author, indicating: last academic degree reached, institutional affiliation, position, postal address and email contact. In case of co-authored articles, only one of the authors will be selected to receive correspondence.
 - c) Analytical summary of the article in English and Spanish. The abstract should not exceed 120 words and should include: work objective, methodology and outcome or the most important recommendation arising from the work. It should not contain references.
 - d) Keywords in English and Spanish (minimum 3, maximum 5). The use of abbreviations is not accepted.
 - e) JEL classification¹ for all the articles (maximum 3 codes).
 - f) If applicable, basic research information giving rise to the article, sources of funding and relevant thanks must be attached.
- 2) Anonymous manuscript. Besides the title, abstract, keywords (all this in English and Spanish) and JEL codes, anonymous manuscripts should include (the text should not be sent in two columns):²
 - For articles of scientific and technological research, the following structure is suggested:
 - a) Introduction: must account for the background, the purpose and research methodology. At the end, the guiding thread of the article must be expressed.
 - b) Theoretical framework: includes a literature review that justifies research, where results of studies that validate the relevance and necessity of the research are discussed.
 - c) Methodology: presents and justifies the chosen methodology, to then develop and display the results of its application.
 - d) Results: presents the main results of the application of the methodology in an understandable and necessary way to assess the validity of the research.
 - e) Conclusions: highlight the main aspects of the article but does not represent a summary of the same. Recommendations and limitations of the article are highlighted and future research areas are raised.
 - f) Bibliographic references: must be presented according to APA style in its latest edition (see the end of this section)³.
 - g) Annexes.
 - For literature reviews articles the following structure is suggested:
 - a) Introduction: must account for the background, the purpose and research methodology. At the end, the guiding thread of the article must be expressed.
 - b) Theoretical framework: includes a literature review that justifies research, where results of studies that validate the relevance and necessity of the research are discussed.
 - c) Theoretical development: includes a review of major aspects, findings or trends that result from the research.
 - d) Conclusions: highlight the main aspects of the article but does not represent a summary of the same. Recommendations and limitations of the article are highlighted and future research areas are raised.
- e) Bibliographic references: must be presented according to APA style in its latest edition. A literature review of at least 50 references must be included.
- f) Annexes.
 - The structure of case studies (case report) may vary depending on how the study of the particular situation is addressed. The following structure is suggested:
 - a) Introduction: must account for the background, the purpose and research methodology. At the end, the guiding thread of the article must be expressed.
 - b) Theoretical framework: includes a literature review that justifies research, where the results of studies (other cases) that validate the relevance and necessity of the research are discussed.
 - c) Case Study: includes a systematic review on a particular situation, where technical and methodological experiences of the case under study are made known.
 - d) Discussion or final reflection: reflection or comments arising from the review of the situation presented in the case study.
 - e) Discussion questions: should include questions or exercises to be resolved from the review and/or the reflection on the case under study.
 - f) Bibliographic references: must be presented according to APA style in its latest edition.
 - g) Annexes.
- 3) Tables and figures. The text must mention all the tables and figures before being presented. Each of these categories will be numbered (continuous numbering according to their appearance in the text), will have a title and will mention a source. Tables and figures should be included in the relevant place inside the body and must be sent in a separate file in their original format (PowerPoint, Excel, etc.). Tables and figures that are copied and reproduced from other sources, should include the page number from which they were taken. Images and photos should be sent in high definition.
- 4) Equations. Equations are to be made only with an equation editor. All equations must be listed in order of appearance.
- 5) Footnotes. They will only show explanatory information. Each note will be numbered consecutively without figures or tables.
- 6) Literal quotes. They correspond to original quoted material from another source. A literal quote incorporated into the text must be written in double quotation marks. In any case, the author, the year and the specific page of the quoted text, should always be added, and the full quote should be included in the reference list. Quotes must be exact, that is, changes should not be made in the text, even if the spelling is wrong. They should not be underlined or italicized. In cases where the author wishes to emphasize, he can add italics and brackets to the text “[added italics].” The page number should only be added in cases of literal quotes (including figures and tables).
- 7) General considerations
 - a) Length: the article should not exceed 30 pages in total (including bibliography, graphs, tables and attachments).
 - b) Text and page formatting: the article must be sent in Word format. Times New Roman font, size 12, letter page size, spacing 1.5, and symmetrical margins of 3 cm are suggested.
 - c) Articles should be written in the third person singular (impersonal), have suitable punctuation and writing and lack of orthographic errors. The author is responsible for reviewing style prior to its application to the journal.
 - d) In articles written in Spanish and Portuguese, in all the numbers (in text, figures and tables), periods are used to separate

¹ To select the codes according to JEL classification, see: <https://www.aeaweb.org/econlit/jelCodes.php?view=jel>

² Readers are encouraged to review the structure of articles previously published in *Estudios Gerenciales* to see examples of the structure of a scientific manuscript: http://www.icesi.edu.co/revistas/index.php/estudios_gerenciales/issue/archive

³ For more information, visit: <http://www.apastyle.org>.

thousands and commas to separate decimals. In articles in English, commas are used to separate thousands and periods to separate decimals.

APA style for presenting bibliographic references

Bibliographic references will be included in the body text in two ways: as a narrative (only the year of publication, eg: family name (year) is enclosed in parentheses); and as a reference (the author's family name and the year are enclosed in parentheses, example: (family name, year)). In cases of articles co-authored by more than two authors, the name of all of them must be expressed the first time, and then only the first one followed by "et al."

All references that are named in the body of the article must be included in the list of references. Likewise, all the references in the list must be named in the body of the document.

For references that have DOI, it must be included at the end of each one. The format is <https://doi.org/10>

The list of references should be included at the end in alphabetical order, for which the following style must be taken into consideration:

- Journal article

Family name, name's initial(s) (year). Article title. *Name of the journal*, Volume (Number), range of pages.DOI.

Example:

Deery, S., Rayton, B., Walsh, J. y Kinnie, N. (2016). The Cost of Exhibiting Organizational Citizenship Behavior. *Human Resource Management*, 56(6), 1039-1049. <https://doi.org/10.1002/hrm.21815>

- Book

Family name, name's initial(s) (year). *Title* (# Ed., Vol.). City of publication: publisher.

Example:

Prychitko, D. & Vanek, J. (1996). *Producer cooperatives and labor manager Systems* (3rd ed.). Boston, MA: Edgar Elgar Publishing.

- Chapter in edited book

Name of the author of the chapter. (year). Chapter title: In names of the editors of the book (Eds.), *Title of the book* (range of pages of the chapter in the book). City of publication: publisher.

Example:

Becattini, G. (1992). The Marshallian industrial district as socio-economic concept. In F. Pyke, G. Becattini and W. Sengenberger (Eds.), *Industrial districts and small businesses* (pp. 61-79). Madrid: Ministry of Labour and Social Security.

- Unpublished contribution for a symposium

Family name, name's initial(s) (year, month). Title of the paper or communication. In organizers' name (Organizer/Chairman), *name of the symposium*. Symposium description, city, country.

Example:

Lichstein K.L., Johnson, R.S., Womack, T.D., Dean, J.E. & Childers, C.K. (1990, June). Relaxation therapy for polypharmacy use in elderly insomniacs and noninsomniacs. In T.L. Rosenthal (Chairman), *Reducing medication in geriatric populations*. Symposium held at the First International Congress Congress of Behavioral Medicine, Uppsala, Sweden.

- Internet

Family name, name's initial(s) (year). *Title*. Retrieved on day, month year from: website address.

Example:

Echevarria, J.J. (2004). *The exchange rate in Colombia: impact and determinants in a global market*. Retrieved on June 21, 2005, from: <http://www.banrep.gov.co/documentos/presentacionesdiscursos/pdf/tasa.pdf>

Ethical responsibilities

Responsibility. The authors of the articles must state that the research has been conducted in an ethical and responsible way and always in accordance with applicable laws.

Clarity. The results of the study should be clearly and honestly explained, and working methods should be described unambiguously so that their results can be confirmed by others.

Redundant or duplicate publication. *Estudios Gerenciales* does not accept previously published material and will not take into consideration those manuscripts that are simultaneously submitted to other journals. Similarly, neither redundant nor duplicate publications, i.e., articles that substantially overlap another already published, whether in printed or electronic media, will be taken into consideration. Authors should be aware that not disclosing that the material submitted for publication has been totally or partially published constitutes a serious breach of scientific ethics.

Authorship. Authors agree to take collective responsibility for presented and published work. In the statement of authorship, it must be accurately reflected the individual contributions to the work. In the list of authors, should only appear those who have contributed intellectually to work development.

The author of an article must have participated in a relevant way in the design and development of that article and must take responsibility for the contents. Also, he/she must agree with the final version of the article. In general, to appear as an author, the following requirements must be met:

- 1) Having participated in the conception and design, in data acquisition, and data interpretation and analysis of the work that has resulted in the article.
- 2) Having collaborated in drafting the text and its possible revisions.
- 3) Having approved the version that will finally be published.

In no event shall *Estudios Gerenciales* Journal be liable for possible conflicts arising from the authorship of the works published in the Journal.

Funding. The authors must declare both funding sources and possible conflicts of interest. There is conflict of interests when the author had/has financial or personal relationships that may skew or influence their actions improperly. The potential conflict of interests exists regardless of whether interested parties consider that these relations influence their scientific judgment or not.

Obtaining permission. Authors are responsible for obtaining the appropriate permissions to partially reproduce material (text, tables or figures) from other publications. These authorizations must be obtained from both the author and the publisher that published such material.

The journal belongs to the Committee on Publication Ethics (COPE) and adheres to its principles and procedures (www.publicationethics.org).

Estudios Gerenciales by Universidad Icesi is licensed under CC BY Creative Commons Attribution 4.0 International License.

Informações sobre Estudios Gerenciales

Política editorial

Estudios Gerenciales é a revista Ibero-americana de gestão e economia focada principalmente nas subáreas temáticas de gestão organizacional, empreendedorismo, inovação de negócios, marketing, contabilidade, finanças, estratégia, negócios internacionais e economia de negócios. O seu principal objetivo é a difusão de rigorosos trabalhos de investigação e casos de ensino relacionados com as anteriores áreas temáticas que criem ferramentas de estudo da comunidade Ibero-americana e do seu atual contexto económico e administrativo.

Estudios Gerenciales, através da publicação de artigos originais, de alta qualidade, relevantes e arbitrados anonimamente (*double-blind review*), tem como público-alvo investigadores, estudantes, académicos e profissional interessados em conhecer as mais recentes investigações e análises em economia e gestão na região Ibero-americana.

Serão recebidos artigos em Inglês, Espanhol e Português e, como política editorial, a revista procura um equilíbrio de artigos de autores de diversos países ibero-americanos ou de outras regiões; como tal, um número da revista poderá incluir no máximo 20% de artigos da autoria de Investigadores-Docentes associados à Universidade Icesi. Porém, para todos os casos, os artigos serão submetidos ao mesmo processo de avaliação.

Estrutura da revista

Em *Estudios Gerenciales* é privilegiada a publicação da produção intelectual baseada na pesquisa científica e tecnológica e que promova artigos de pesquisa, revisões de literatura e estudos de caso que sigam uma metodologia investigativa rigorosa e gerem contribuições significativas para o conhecimento nos campos acima na comunidade ibero-americana.

A estrutura da revista *Estudios Gerenciales* inclui a publicação de artigos e estudos de caso. O estudo de caso é definido como um "documento que apresenta os resultados de um estudo sobre uma situação particular, a fim de divulgar as experiências técnicas e metodológicas consideradas num caso específico". Inclui uma revisão sistemática da literatura sobre casos análogos" (Definição de Colciencias). O objetivo da inclusão de estudos de caso é fornecer ferramentas de análise sobre várias situações do contexto latino-americano que gerem discussão a partir das perguntas propostas em cada caso.

Direitos Autorais

Os autores dos artigos serão responsáveis dos mesmos e, assim, não comprometam os princípios ou políticas da Universidade Icesi nem do Conselho Editorial da revista *Estudios Gerenciales*. Os autores autorizam e aceitam a transferência de todos os direitos para a revista *Estudios Gerenciales* para a publicação impressa ou eletrônica. Após a publicação do artigo, pode ser reproduzido sem a permissão do autor ou da revista, se mencionar o(s) autor(es), o ano, o título, o volume, o número, o intervalo de páginas da publicação e o DOI, e *Estudios Gerenciales* como fonte (se abster de utilizar Revista *Estudios Gerenciales*).

Periodicidade, distribuição e acesso eletrônico

A periodicidade da revista é trimestral; a revista é distribuída através de um banco de dados de assinantes, bibliotecas e centros de pesquisa em gestão e economia na América Latina e em outros países. Além disso, pode ser acessada livremente (*Open Access*) através do web site da revista *Estudios Gerenciales*:

- Web site da revista: http://www.icesi.edu.co/estudios_gerenciales

***Estudios Gerenciales* é uma continuidade de Publicaciones ICESI.**

***Estudios Gerenciales* é uma revista científica patrocinada e publicada pela Faculdade de Ciências Administrativas e Econômicas da Universidad Icesi.**

Diretrizes para os autores de artigos

- Os autores devem garantir que o seu artigo é inédito, ou seja, que não foi publicado anteriormente (total ou parcialmente) em outra revista (física ou eletrônica). Não é aceita a solicitação de artigos que foram publicados em outro idioma, artigos semelhantes publicados pelos mesmos autores, artigos com uma contribuição irrelevante, ou aqueles cujos resultados foram já publicados. É admitida a solicitação de documentos de *working papers*, de web sites pessoais ou institucionais, de memórias de eventos (trabalhos não publicados em outras revistas acadêmicas), etc., mas devem ser mencionados.
- A equipa editorial utiliza o software *Ithenticate* para verificar a originalidade dos pedidos recebidos.
- Os autores são responsáveis pela obtenção das autorizações para reproduzir material protegido por direitos autorais (imagens, fotos, etc.). As autorizações serão anexadas aos documentos enviados para a solicitação.
- A revista não cobra taxas (*article processing charge -APC*) para a postulação, revisão e/ou publicação dos artigos.
- Ao enviar o manuscrito através da plataforma, No campo "Comentários para o Editor", você deve indicar brevemente a contribuição do artigo para a área de conhecimento com a qual ele lida.

Processo de revisão dos artigos

Os artigos submetidos à revista *Estudios Gerenciales* serão inicialmente analisados pela equipe editorial e, se respeitarem os parâmetros para a publicação dos artigos (padrões académicos e editoriais), são enviados para uma revisão por dois pares avaliadores externos com cegamento duplo, que levam em conta aspectos como a originalidade, a contribuição para a área de conhecimento, a significância do tema e a clareza de idéias, entre outros.

A partir das observações e recomendações dos avaliadores, a equipe editorial decide se o artigo será aceite, requer modificações (pequenas ou grandes) ou se é rejeitado. O processo de revisão inicial (entre o tempo da solicitação e a emissão do primeiro conceito) pode levar um tempo aproximado de 5 meses. Posteriormente, os autores dos artigos que requerem mudanças terão um máximo de dois meses para fazer os ajustes necessários (este prazo é indicado pela equipe editorial). Uma vez que os autores reenviam o seu artigo com as mudanças solicitadas e uma carta de resposta para os avaliadores, é submetido a uma segunda avaliação por pares, a partir da qual a equipe editorial faz uma decisão final sobre a publicação do artigo (esta parte do processo pode levar 3 meses).

Submissão de um artigo

Os autores interessados na submissão um artigo para *Estudios Gerenciales* devem se registrar e, em seguida, entrar no Sistema de Gestão Editorial da revista em Open Journal System (OJS). Para isso, o link http://www.icesi.edu.co/revistas/index.php/estudios_gerenciales/login deve ser acessado e seguir todas as instruções da opção "Nova submissão". Ao fazer a submissão, todos os autores do artigo devem ser cadastrados utilizando a opção "Incluir coautor". A submissão de artigos pode ser realizada de forma contínua ao longo do ano.

Diretrizes gerais para artigos

Para solicitar a publicação de um artigo em *Estudios Gerenciales*, devem ser preparados dois arquivos, a página de apresentação e o manuscrito anônimo, que devem conter:

- 1) Folha de submissão do artigo. Primeira página do documento. Deve ser separada do resto do manuscrito. Inclui:
 - a) Título em português e inglês. Claro e preciso, não deve exceder 20 palavras. Deve ser coerente e estar relacionado com o conteúdo do artigo. Não deve conter abreviaturas.
 - b) Breve resenha de cada autor, indicando: último título acadêmico atingido, afiliação institucional, cargo, endereço e e-mail. No caso de vários autores, deve-se selecionar um autor para a troca de correspondência.
 - c) Resumo analítico do artigo em português e inglês. O resumo não deve exceder 120 palavras e deve incluir: objetivo do trabalho, metodologia e o resultado ou a recomendação mais importante resultante do trabalho. Não deve conter referências.
 - d) Palavras-chave em português e inglês (mínimo 3, máximo 5). Não deve conter abreviaturas.
 - e) Classificação JEL¹ para todos os artigos (máximo de 3 códigos).
 - f) Se for o caso, a informação básica das pesquisas que deram origem ao artigo, as fontes de financiamento e os agradecimentos pertinentes devem ser anexados.

 - 2) Manuscrito anônimo. Além do título, do resumo, das palavras-chave (em português e inglês) e dos códigos JEL, o manuscrito anônimo deve incluir (o texto não deve ser enviado em duas colunas):²
 - Para os artigos de pesquisa científica e tecnológica sugere-se a seguinte estrutura:
 - a) Introdução: deve levar em conta os antecedentes, o objetivo e a metodologia da pesquisa. O final propõe o fio condutor do artigo.
 - b) Marco teórico: inclui a revisão da literatura que justifica a investigação, onde os resultados de estudos que validam a importância e necessidade da pesquisa são discutidos.
 - c) Metodologia: apresenta e justifica a metodologia escolhida para, em seguida, passar para desenvolver e mostrar os resultados da aplicação dos mesmos.
 - d) Resultados: apresenta os principais resultados da aplicação da metodologia de forma compreensível e necessária para avaliar a validade da pesquisa.
 - e) Conclusões: destacam os principais aspectos do artigo, mas não são um resumo. As recomendações e as limitações do artigo são destacadas e as futuras linhas de pesquisa são propostas.
 - f) Referências bibliográficas: devem ser apresentadas de acordo com o estilo última edição (ver o final desta seção)³.
 - g) Anexos.

 - Para os artigos de revisão sugere-se a seguinte estrutura:
 - a) Introdução: deve levar em conta os antecedentes, o objetivo e a metodologia da pesquisa. O final propõe o fio condutor do artigo.
 - b) Marco teórico: inclui a revisão da literatura que justifica a investigação, onde os resultados de estudos que validam a importância e necessidade da pesquisa são discutidos.
 - c) Desenvolvimento teórico: inclui a revisão dos destaques, os resultados ou as tendências que resultam da pesquisa.
 - d) Conclusões: destacam os principais aspectos do artigo, mas não são um resumo. As recomendações e as limitações do artigo são destacadas e as futuras linhas de pesquisa são propostas.
 - e) Referências bibliográficas: se apresentaram de acordo com o estilo última edição.
- f) Uma revisão da literatura de pelo menos 50 referências deve ser apresentada.
 - g) Anexos.
 - A estrutura dos casos de estudo (relato de caso) pode variar dependendo de como o estudo da situação em particular é abordado. Sugere-se a seguinte estrutura:
 - a) Introdução: deve levar em conta os antecedentes, o objetivo e a metodologia da pesquisa. O final propõe o fio condutor do artigo.
 - b) Marco teórico: inclui a revisão da literatura que justifica a investigação, onde os resultados de estudos (outros casos) que validam a importância e necessidade da pesquisa são discutidos.
 - c) Caso de estudo: inclui uma revisão sistemática sobre uma situação particular, onde se divulgam as experiências técnicas e metodológicas do caso objeto de estudo.
 - d) Discussão ou reflexão final: reflexo ou observações decorrentes da análise da situação levantada no caso de estudo.
 - e) Questões para discussão: deve incluir perguntas ou exercícios que sejam resolvidos a partir da revisão e/ou reflexão sobre o caso em estudo.
 - f) Referências bibliográficas: se apresentaram de acordo com o estilo última edição.
 - g) Anexos.
- 3) Tabelas e figuras. O texto deve mencionar todas as tabelas e figuras antes de ser apresentadas. Cada uma dessas categorias conterá uma numeração (continua de acordo com a sua aparência no texto), título e fonte. As tabelas e figuras devem ser incluídas no lugar apropriado do corpo do texto e devem ser enviadas em arquivo separado em seu formato original (PowerPoint, Excel, etc.). As tabelas e figuras que sejam copiadas e reproduzidas a partir de outras fontes, devem adicionar o número da página a partir do qual foram levadas. As imagens e fotos devem ser enviadas em alta definição.
 - 4) Equação. As equações serão feitas exclusivamente com um editor de equações. Todas as equações devem ser listadas em ordem de aparecimento.
 - 5) Notas de rodapé. Não mostrar apenas informação de esclarecimento, cada nota irá ser numerada consecutivamente, sem figuras ou tabelas.
 - 6) Citações textuais. Correspondem ao material citado que é original de uma outra fonte. Uma citação textual incorporada no texto se deve incluir entre aspas duplas. Em qualquer caso, o autor, ano e página específica do texto citado devem ser incluídos sempre, e devem incluir a citação completa na lista de referências. As citações devem ser fiéis, isto é, não devem ser feitas mudanças no texto, mesmo se a ortografia está errada. Não devem ir em texto sublinhado ou itálico, e nos casos em que o autor deseje enfatizar, pode adicionar-se itálico e, em seguida, o texto entre colchetes “[itálico adicionado].” Só precisa-se adicionar o número da página no caso de citações textuais (incluindo figuras e tabelas).
 - 7) Considerações de caráter geral
 - a) Extensão: não deve exceder 30 páginas no total (inclui bibliografia, gráficos, tabelas e anexos).
 - b) A formatação do texto e das páginas: o artigo deve ser enviado em formato Word; fonte Times New Roman, tamanho 12, tamanho de página carta, espaçamento 1,5, margens simétricas de 3 cm.
 - c) Os artigos devem ser escritos em terceira pessoa do singular (impessoal), ter uma pontuação e uma redação adequadas e

¹ Para selecionar os códigos de acordo com a classificação JEL, ver: <https://www.aeaweb.org/econlit/jelCodes.php?view=jel>

² Os leitores são incentivados a rever a estrutura dos artigos previamente publicados em *Estudos Gerenciais* para ver exemplos da estrutura de um manuscrito científico: http://www.icesi.edu.co/revistas/index.php/estudios_gerenciales/issue/archive

³ Para mais informações, visitar: <http://www.apastyle.org>

com ausência de erros ortográficos. O autor é responsável por revisar o estilo antes da sua solicitação à revista.

- d) Nos artigos em espanhol e português, devem ser utilizados pontos em todas as cifras como separadores de milhar e vírgula como separadores decimais (texto, tabelas e figuras). Em artigos em inglês, as vírgulas são usadas como separadores de milhar e os pontos como separadores decimais.

O estilo APA para a apresentação de citações bibliográficas

As referências bibliográficas são incluídas no corpo do texto de duas maneiras: como uma narrativa (entre parênteses apenas o ano de publicação, por exemplo: sobrenome (ano)); e como uma referência (entre parênteses o sobrenome do autor e o ano, exemplo: (sobrenome, ano)). No caso de mais do que dois autores, citar o sobrenome de todos pela primeira vez e, em seguida, apenas o primeiro seguido por um "et al."

Todas as referências nomeadas no corpo do artigo devem ser incluídas na lista de referências. Da mesma forma, todas as referências na lista devem ser nomeadas no corpo do documento.

Para referências que têm DOI, deve ser incluído no final de cada um. O formato é <https://doi.org/10>

A lista de referências deve ser incluída no final, em ordem alfabética. O seguinte estilo deve ser considerado:

• Artigo de revista

Sobrenome, inicial(-ais) do nome (ano). Título do artigo. *Nome da revista*, Volume (Número), intervalo de páginas.DOI.

Exemplo:

Deery, S., Rayton, B., Walsh, J. y Kinnie, N. (2016). The Cost of Exhibiting Organizational Citizenship Behavior. *Human Resource Management*, 56(6), 1039-1049. <https://doi.org/10.1002/hrm.21815>

• Livro

Sobrenome, inicial(-ais) do nome (ano). Título (# Ed., Vol.). Cidade de publicação: editorial

Exemplo:

Prychitko, D. e Vanek, J. (1996). *Producer cooperatives and labor manager Systems* (3ª ed.). Boston, MA: Edgar Elgar Publishing.

• Capítulo em livro editado

Nome do autor do capítulo. (ano). Título do capítulo. Em nomes dos editores do livro (Eds.), *Título do livro* (intervalo de páginas do capítulo no livro). Cidade de publicação: editorial.

Exemplo:

Becattini, G. (1992). O distrito industrial marshalliano como conceito sócio-económico. Em F. Pyke, G. Becattini e W. Sengenberger. (eds.), *Os distritos industriais e as pequenas empresas* (pp. 61-79). Madrid: Ministério do Trabalho e da Segurança Social.

• Contribuição inédita para um simpósio

Sobrenome, inicial(-ais) do nome (ano, mês). Título da palestra ou comunicado. Em nome organizadores (Organizador/presidente), nome do simpósio. Descrição do simpósio, cidade, país.

Exemplo:

Lichstein, K.L., Johnson, R.S., Womack, T.D., Dean, J.E. e Childers, C.K. (1990, junho). Relaxation therapy for polypharmacy use in elderly insomniacs and noninsomniacs. Em T.L. Rosenthal (Presidente), *Reducing medication in geriatric populations*. Simpósio realizado na reunião do First International Congress of Behavioral Medicine, Uppsala, Suécia.

• Internet

Sobrenome, inicial(-ais) do nome (ano). Título. Recuperado no dia do mês do ano, de: endereço eletrônico.

Exemplo:

Echevarría, J. J. (2004). *A taxa de câmbio na Colômbia: impacto e determinantes num mercado global*. Recuperado em 21 de junho de 2005, de: <http://www.banrep.gov.co/documentos/presentaciones/discursos/pdf/tasa.pdf>

Responsabilidades éticas

Responsabilidade. Os autores dos artigos devem declarar que a pesquisa foi conduzida de forma ética e responsável e sempre em conformidade com as leis aplicáveis.

Clareza. Os resultados do estudo devem ser explicados de forma clara e honesta e os métodos de trabalho devem ser descritos de forma inequívoca para que seus resultados possam ser confirmados por outros.

Publicação redundante ou duplicada. *Estudios Gerenciales* não aceita material já publicado e não serão considerados para ser publicados os manuscritos que sejam submetidos simultaneamente a outras revistas, nem publicações redundantes ou duplicadas, ou seja, artigos que se sobrepõem substancialmente a outros já publicados em meios impressos ou eletrônicos. Os autores devem estar cientes de que não informar que o material submetido para publicação tem sido total ou parcialmente publicado constitui uma grave violação da ética científica.

Autoria. Os autores se comprometem a assumir a responsabilidade coletiva do trabalho apresentado e publicado. Na declaração de autoria se refletirão com precisão as contribuições individuais para o trabalho. A lista de autores só deve incluir as pessoas que contribuíram intelectualmente para o desenvolvimento do trabalho.

O autor de um artigo deve ter participado de forma relevante na concepção e desenvolvimento do mesmo para assumir a responsabilidade pelo conteúdo e, também, deve concordar com a versão final do artigo. Em geral, para aparecer como autor, os seguintes requisitos devem ser cumpridos:

- 1) Ter participado na concepção e no desenho, na aquisição de dados e na análise e interpretação dos dados do trabalho que resultou no artigo.
- 2) Ter colaborado na elaboração do texto e nas possíveis revisões do mesmo.
- 3) Ter aprovada a versão que será finalmente publicada.

A revista *Estudios Gerenciales* recusa qualquer responsabilidade pelos eventuais conflitos decorrentes da autoria dos trabalhos publicados na Revista.

Financiamento. Os autores devem declarar as fontes de financiamento e os possíveis conflitos de interesse. Há conflito de interesses quando o autor tenha tem relações financeiras ou pessoais que influenciem suas ações de forma inapropriada. O potencial conflito de interesse existe independentemente de que as partes interessadas considerem que estas relações influenciam ou não seu critério científico.

Obtenção de licenças. Os autores são responsáveis pela obtenção das licenças apropriadas para reproduzir parcialmente material (texto, tabelas ou figuras) de outras publicações. Essas licenças devem ser solicitadas tanto ao autor como ao editor de tal material.

A revista pertence ao Committee on Publication Ethics (COPE) e adere aos seus princípios e procedimentos (www.publicationethics.org)

Estudios Gerenciales na Universidad Icesi estão sob uma licença internacional CC BY da Creative Commons Attribution 4.0.

5 Encuentro Regional

de Editores de Revistas Académicas

Un espacio en el que los editores Iberoamericanos podrán compartir conocimientos en materia de gestión editorial, intercambiar experiencias y establecer redes de colaboración, que permitan impulsar las publicaciones científicas bajo criterios de calidad e integridad.

Para más información: <https://jasolutions.com.co>

📍 Medellín, 8-10 de noviembre de 2023



Organizan:



Con el apoyo de:



GLOBAL MBA

DUAL DEGREE
MBA, Tulane University & Magister en Administración, U. Icesi



The A.B. Freeman School of Business at Tulane University is consistently listed among the United States' best business schools by U.S. News & World Report, BusinessWeek, Forbes, and Financial Times.



#2 IN COLOMBIA & #11 IN LATIN AMERICA ACCORDING TO 2021 RANKING **América economía**

Academic experiences in **three continents** with Tulane and International MBA students.



Icesi's MBA program is part of the select group of universities in Colombia accredited by AACSB and AMBA, international distinctions awarded to the best business schools in the world.



infoposgradoscae@icesi.edu.co
 322 6018380
 (572) 555 2334, ext: 8247

www.icesi.edu.co/mbaglobal

LLEGAMOS A OTRO NIVEL

DOCTORADO EN ECONOMÍA DE LOS NEGOCIOS

SNIES: 105255

Ph.D. in Business Economics

La Universidad Icesi ofrece el Doctorado en Economía de los Negocios, para investigar los problemas de los negocios con un enfoque más científico, crear nuevos conocimientos, y contribuir a una práctica docente de la mayor calidad.



UNIVERSIDAD
ICESI

**A OTRO
NIVEL**

Formación internacional al más alto nivel ahora en Cali

La combinación entre las disciplinas del conocimiento en negocios y economía, es ya una tendencia en las mejores universidades del mundo: Harvard y la London School of Economics, tienen programas que mezclan la Economía y los negocios.

Experiencia internacional de investigación

Para avanzar en el proyecto de tesis bajo la supervisión de un investigador internacional en una Universidad fuera de Colombia.

Enfoque investigativo

- Ciclo de maestría en investigación con tres opciones:
 - Maestría en Ciencias Administrativas
 - Maestría en Finanzas Cuantitativas
 - Maestría en Economía
- Ciclo de formación doctoral.

Grupos de investigación

Tres grupos de investigación con el más alto nivel de clasificación en colciencias.

Cuerpo profesoral altamente calificado

37 docentes investigadores con Ph.D., formados en ciencias administrativas, económicas y financieras en Estados Unidos y Europa principalmente.

Más información:
Universidad Icesi, Calle 18 No. 122 - 135
Teléfono: (2) 555 2334, ext. 8074 - 8709
E-mail: bzuluaga@icesi.edu.co



ACREDITACIÓN INSTITUCIONAL
DE ALTA CALIDAD

FACULTAD DE CIENCIAS
ADMINISTRATIVAS
Y ECONÓMICAS



AACSB
ACCREDITED

www.icesi.edu.co/doctorado/economia-negocios

Síguenos en:  /universidadicesi  @icesi  @universidad_icesi  /universidadicesi  universidad icesi

La Universidad Icesi es una Institución de Educación Superior que se encuentra sujeta a inspección y vigilancia por parte del Ministerio de Educación Nacional

La Universidad Icesi forma profesionales en 30 programas de pregrado, 1 doctorado, 31 maestrías, 20 especializaciones médico-quirúrgicas y 21 especializaciones, todos ellos aprobados por el Ministerio de Educación Nacional. Algunos de estos son:

Programas de pregrado

- Administración de Empresas
- Antropología
- Biología con Concentraciones en Conservación y Biología Molecular/Biotecnología
- Ciencia Política con Énfasis en Relaciones Internacionales
- Contaduría Pública y Finanzas Internacionales
- Derecho
- Diseño de Medios Interactivos
- Diseño Industrial
- Economía con énfasis en Políticas Públicas
- Economía y Negocios Internacionales
- Ingeniería Bioquímica
- Ingeniería de Sistemas
- Ingeniería Industrial
- Ingeniería Telemática
- Medicina
- Mercadeo Internacional y Publicidad
- Psicología
- Química con Énfasis en Bioquímica
- Química Farmacéutica
- Sociología

Licenciaturas

- En Enseñanza del Inglés
- En Educación Básica Primaria
- En Ciencias Naturales
- En artes y en tecnologías para la creación
- En Estudios Sociales y Humanos
- En Lenguaje y Literatura

Programa de Doctorado

- Doctorado en Economía de los Negocios

Programas de posgrado

- Maestría en Gestión de la Innovación
- Maestría en Derecho
- Maestría en Ciencias-Biotecnología

- Maestría en Estudios Sociales y Políticos
- Maestría en Gerencia de Organizaciones de Salud
- Maestría en Biotecnología
- Maestría en Formulación de Productos Químicos y Derivados
- Maestría en Gerencia para la Innovación Social
- Maestría en Periodismo
- Master's Program in the Teaching of English as a Foreign
- Maestría en Informática y Telecomunicaciones
- Maestría en Intervención Psicosocial
- Maestría en Gobierno
- Maestría en Educación
- Maestría en Gestión Informática y Telecomunicaciones
- Maestría en Ingeniería Industrial
- Maestría en Derecho
- Maestría en Administración Global con Doble Titulación
- Maestría en Administración MBA
- Maestría en Mercadeo
- Maestría en Economía
- Maestría en Finanzas

Especializaciones

- Auditoría en Salud
- Gerencia Tributaria
- Calidad para la Competitividad
- Gerencia del Medio Ambiente
- Negocios en Internet
- Derecho Comercial
- Especializaciones médico-quirúrgicas
- Derecho Laboral y de la Seguridad Social
- Legislación Laboral y de la Seguridad Social para no abogados

Programa de Alta Gerencia Internacional Programas a la medida de las necesidades de la empresa

Digitalization of the Consultancy Sector: Internal and external drivers and Facilitators // Pedro Brazo, Felix Velicia-Martín & Pedro R Palos-Sanchez

Clase media durante la pandemia: endeudamiento y percepción de la gestión gubernamental // Lina Martínez, Andrés David Espada y Nicolás Vidal

Advertising and Asymmetric Information: Evidences from Brazilian Stock Market // Alexandre Ripamonti

Inteligencia de negocios y agilidad organizacional: ¿Son relevantes la toma de decisiones racional e intuitiva? // Luis Ángel Gómez-Duque, José David Daza-Torres y José Arias-Pérez

Factores determinantes de la adopción del m-commerce en consumidores de Tijuana // Isaac Cruz Estrada y Ana María Miranda Zavala

Confianza y preocupación ambiental como antecedentes de la intención de compra de productos ecológico: un estudio exploratorio en Ecuador // Lorenzo Bonisoli, Jomely Lizbeth Flores Cumbicos y Gabriela Yazmin Quishpe Torres

Eventos informativos sobre COVID-19 y su efecto en índices bursátiles. Una revisión de la evidencia empírica // Guillermina Reimer, Anahí Briozzo y Guillermo Capobianco

Mapeo científico de la investigación a nivel mundial sobre riqueza socioemocional y empresas familiares // Yurani López, Duván Ramírez, Alejandro Hernández y Pedro Duque

Entrepreneurial intention and sustainability: an analysis through bibliometric networks // Luis Eduardo Brandão Paiva, Vânia Maria Jorge Nassif, Tereza Cristina Batista de Lima & Sílvia Maria Dias Pedro Rebouças

Donantes de sangre universitarios: un desafío para la Fundación Valle del Lili // Luciana Carla Manfredi, Juan Manuel González-Sánchez, Germán Castellanos-Ordoñez y María Carmenza Macía-Mejía M.D.