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Social media impact on international sports events related to the brand Spain: a comparison between inner versus outside events

Social media
impact on
sports events

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Abstract

Purpose – This study analyzes the impact of sports social media on a country regarding three international events connected to the brand Spain. It examines (1) the use and importance of various social media platforms in sports events and (2) identifies the countries generating the most social media content.

Design/methodology/approach – A total of 1,711,084 posts were collected for analysis, focusing on FIFA World Cup Qatar 2022, XLI Marathon Valencia Trinidad Alfonso 2022 and Davis Cup 2022, with a particular emphasis on the Spain brand. Through Atribus, diverse social media data were recovered and analyzed. Later, we recommended employing various metrics and ANOVAs to address the research questions. Additionally, we conducted a sentiment analysis.

Findings – The results show differences between (1) the use and relevance of social network platforms and events and (2) the content generated by different countries. The practical implications offer valuable insights for sports event organizers, destination managers and other stakeholders. The research implications suggest potential avenues for future research based on the observed patterns and behaviors in social media posts related to sports events and Brand Spain.

Originality/value – (1) Some papers have studied the role of sports events' social media, ignoring the comparison among different social media platforms; (2) usually, previous literature has focused on a single event or sport and (3) although there is considerable research related to the strategic and operational Inés Küster Boluda Inés Küster Boluda role of social media, there is less systematic analysis related to the extent

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1. Introduction

Online social networks (OSNs) are critical platforms for participation in social life because every day, users on Instagram, Twitter, or Facebook, among others, publish numerous posts (Jansen *et al.*, 2021). These social media platforms have substantially impacted contemporary life (Xiang, 2013). As Highfield and Leaver (2016, p. 48) state, social media has the potential to mix “the political and the mundane, the extraordinary and every day,” and its research offers a better understanding of actions and strategies from the relevant actors themselves.

The sports industry has not been unaffected by using social media. Sports and social media connect people (Watkins, 2018). The growth and development of new media technologies are playing a relevant role in developing skills among athletes and participants and developing a sense of community among supporters and audiences in local and national or global contexts (Thorpe, 2017; López-Carril *et al.*, 2020). In this sense, the emergence of social media has impacted the delivery and consumption of sports (Filo *et al.*, 2015) and changed how sports teams, athletes, supporters and events interact with one another. Sports supporters can develop feelings of connection to the community (Watkins, 2018) because these fans do not think of the team, athlete or event and the community as independent identities but rather as identities intimately linked, which can improve civic pride (Heere and James, 2007). In this scenario, social media can enhance the link between sports and the community.

The Greenfly consultancy firm provides some figures showing the importance of social network use in the sports market (Greenfly, 2022). For example, fans of any age use social media platforms to access sports content (51% of fans get sports content on Facebook, 46% on YouTube, 31% on Instagram and 25% on Twitter). Some of the most followed accounts on social media are related to sports entities (Real Madrid has 114 million followers on Instagram, the NBA has 66.3 million followers, and Ronaldo, the most followed person, has 431 million followers). We can find that every day, a trending topic is related to sports. Additionally, 41% of global sports fans watch sports through digital platforms and 32% of sports fans — and 43% of Gen Z fans — use social media platforms while watching live sports. Companies know it and invest money in this channel while the amount of content published on these networks.

With this, sports researchers have found an exciting field of study in sports social media.

The literature review by Filo *et al.* (2015), focused on the knowledge of sports social media from a service-dominant logic perspective emphasizing relationship marketing, identifies three main categories of research in this field: strategic, operational and user-focused.

Together with this, the recent work of Zeren *et al.* (2022) found 37 papers in the Scopus database that reveal that (1) studies related to sports marketing and social media focus on sports fans and social media engagement, sports marketing practices of sports providers and athlete brand identity; (2) most of the studies use a quantitative approach and (3) sports marketing and social media research mainly focus on Facebook and Twitter.

Considering the above, this study aims to investigate (1) the use and relevance of diverse social media in inner and outside international sports events and (2) the identification of the countries where higher social media content is generated. To achieve this objective, we analyzed diverse social media impacts related to Spain on three events: (1) FIFA World Cup

Qatar 2022, (2) XLI Marathon Valencia Trinidad Alfonso 2022 and (3) Davis Cup 2022, two of which of them celebrated in Spain. 1,711,084 posts were retrieved.

Because of the growing interest in academia (Filo *et al.*, 2015; López-Carril *et al.*, 2020; Zeren *et al.*, 2022), this study aims to add value to previous studies in the following directions. First, although previous studies have analyzed the impact of sports on a country's image (i.e. Grix, 2012; White and Absher, 2013; Kim *et al.*, 2014), fewer have studied the role of sports social media. Second, most studies usually focused only on one event (i.e. Dubinsky, 2022) or sport (i.e. Aichner, 2019; AlKhalifa and Farello, 2021). Third, we examined three sports with varying popularity (more or less popular; more or less international) and scope (team and individual sports, inner versus outside sports events). Fourth, although there is considerable research on social media's strategic and operational role, there is less systematic analysis of the extent to which sports events use social media in general and concerning different platforms (Aichner, 2019).

In sum, as Abeza and Sanderson (2022) state, since a research focus emerged in 2008 along with the first publication of articles in *the International Journal of Sport Communication*, academics have called for the development of more sophisticated research questions and the application of innovative research methods related to sport and social media research.

2. Sports, social media and country image

As stated, the interest in studying sports' social media has grown recently. We can find diverse studies that focus on sports social media and others that try to analyze their impact on the country's image involved in sports activity (hosting a sports event, winning a competition, etc.). Not in vain, sports social media studies focus on how these platforms can help sportspersons, clubs and events improve their relationships with fans, players, coaches, organizations and consumers (Achen *et al.*, 2020).

Despite the interest in the study of sports social media, more research is needed to analyze the impact of social media on country branding. However, it represents a powerful field of research. Sports companies and organizations recognize that sports supporters watch events and expand word-of-mouth to share their beliefs, attitudes and experiences through social media (Wakefield and Bennett, 2018).

The studies in this field focus mainly on sports events, as these events impact the country's image the most. In this sense, for example, AlKhalifa and Farello (2021) conducted a content analysis based on Instagram to investigate social media as an instrument for sports diplomacy in the Arab world. The authors study one year of the Instagram posts of three women's football committees and identify four main topics that can impact the country's image: associations with international campaigns and social media challenges, community engagement, technical displays and event hosting.

However, most studies on sports social media overlook the impact of branding, focusing instead on club or event engagement (Joanna and Zuzanna, 2020). Many studies focus on just one sport or event. In this sense, we can find Aichner's study (2019). The author performed an investigation on Facebook, YouTube, Instagram and Twitter from 78 European football clubs to analyze: (1) the level of social media usage, (2) the football fans' engagement with content posted by football clubs and (3) the differences in user engagement with commercial social media advertisements targeting football fans.

Also, in football, Dubinsky (2022) studies the role of sports in national branding and public diplomacy during the pandemic. The author focuses on the projected image of the USA in 13 countries through nine days of international online media covering Super Bowl LV, celebrated in Tampa, Florida, in 2021. Here, the author identifies five themes that contribute to developing the affective-sympathetic dimension of the image of America: (1) shared culture and values, (2) socio-political climate, (3) the pandemic, (4) the event and (5) positionality.

But beyond football, the relevance of social media in nation branding can also be seen in other sports. For example, Schubert and Seyffert (2017) focus their study on table tennis, a sport with a small marketing budget and little media coverage. Their research suggests that sports organizations can utilize social media to accomplish various goals, including sustaining public interest and reinforcing brand awareness (Schubert and Seyffert, 2017). Also, the study by Park *et al.* (2021) examines the impact of the post content on Facebook pages for the Boston, Chicago and New York City marathons. The authors conclude that content generated by marketers is more effective than content generated by users to get more engagement among users.

Sports organizations and events have used social media with different aims (Abeza and Sanderson, 2022). Most of the studies have just focused on the analysis of the use of these platforms for their organizational goals (Achen *et al.*, 2020), and to a lesser extent, studies have assessed their relationship with country branding (AlKhalifa and Farelo, 2021; Dubinsky, 2022).

Considering previous lines, we propose the following research question to analyze social media in three international sports events with different scopes:

RQ1. How are the social media of three international sports events used when talking about the event and Spain?

Therefore, this paper argues that sports social media can impact a country's image. Furthermore, different social media platforms can work in different ways. For example, the study by Achen *et al.* (2020) compares Facebook and Twitter to study how professional sports organizations in the USA use these platforms and how interaction on these networks differs.

In this sense, sports marketing and social media research primarily focus on Facebook and Twitter, while less (almost no) attention has been paid to other social media websites such as Instagram, YouTube, or TikTok (Zeren *et al.* (2022), p. 126). Not in vain, social media includes other alternatives such as blogs, forums, photo sharing, online news, web, virtual worlds and video sharing (Aichner and Jacob, 2015). Thus, we consider the link between social media and the country through more than one sport and more than one social media (AlKhalifa and Farelo, 2021; Dubinsky, 2022).

In this sense, and based on previous lines, we investigate the use and importance of social media in diverse sports events related to the brand Spain. In this sense, we propose the following research question.

RQ2. Are different social networks equally relevant when discussing an international sports event linked to the brand Spain?

In addition, since this paper focuses on international sports events related to the brand Spain, it is essential to know the different uses in different countries. We propose a third research question according to previous works (i.e. Van de Belt *et al.*, 2012; Aichner, 2019).

RQ3. What is the impact of different social networks in diverse countries when discussing an international sports event linked to the brand Spain?

3. Methodology

This study followed a two-month (1 November 2022 to 31 December 2022) exploration of posts related to Spain, published on several social media platforms (Twitter, Facebook, Instagram, YouTube, Reddit, TikTok, News, Blog, Web and Forums) of three main sports events: FIFA World Cup Qatar 2022, XLI Marathon Valencia Trinidad Alfonso 2022 and Davis Cup 2022. We have selected these three international mega-sports events because, according to Kim *et al.* (2014), these events are believed to impact the host country's image from an international marketing perspective.

In this sense, Atribus ad hoc software was used to monitor the diverse social media platforms and the three international events. This tool collects and analyses conversations in social networks and online (social listening). It is a proprietary software technology, which provides accurate and reliable data. Taking Fan and Gordon's (2014) social network analysis process as a reference, the analysis process is divided into 3 phases or stages: Capture, Understand and Present. Firstly, information is captured from different sources to process the big data and extract the relevant information. The second phase is Understand: optimize and eliminate the data that produces "noise" and proceed to the analysis through artificial intelligence (AI) and machine learning techniques; the last phase is Present: summarize and analyze the findings obtained with the previous analysis phases.

3.1 Data collection (capture)

Using data from the following digital media: Twitter, Facebook (fanpages), Instagram, YouTube, TikTok, Reddit, digital news, websites, forums and blogs, mentions were collected via API, accepting the terms and conditions of each digital media. The Atribus platform collected all the content and users who gave their opinions using at least one term related to the event and the Spain brand, both with the event's name and the indistinct use of its hashtags, through the construction of Boolean searches.

The method of non-participant observation (netnography) is used, where the behavior of users, the conversations they carry out and the way they relate to each other in digital media are analyzed (Del Fresno García, 2011). There is no interviewer for data collection in the fieldwork, but rather the behavior of users in the digital environment is analyzed passively.

A total of 1,711,084 posts were retrieved (1,694,264 posts from the FIFA World Cup Qatar 2022, 3,629 posts from XLI Marathon Valencia Trinidad Alfonso 2022 and 13,191 posts from Davis Cup 2022). In addition to the original content published by users, profiles that have interacted with the original content have also been collected and analyzed.

3.2 Data processing (capture)

The data obtained through the different sources of information above are stored in the Atribus platform, in a joint database, where they are systematically structured for further processing and treatment.

Regarding the users' profiles from FIFA World Cup Qatar 2022, 43% of the posts come from males, 22% from females and 35% from organizations. Most of the users are 18–24 years old (36%), followed by users between 25 and 34 years old (27%). Most posts are written in English (53%), followed by Japanese and Spanish (17% each).

Related to XLI Marathon Valencia Trinidad Alfonso 2022, 46% of the posts come from males, 26% from females and 28% from organizations. These users are between 25 and 34 (12%) and 18 and 24 (11%). Here, almost all posts are in Spanish (83%).

And with Davis Cup 2022, 37% of the posts come from males, 23% from females and 40% from organizations. In addition, many users who post are between 18 and 24 years old (27.09%), followed by users between 25 and 34 years old (24.47%). Most posts are in Spanish (48%) and English (46%).

3.3 Data analysis (understand)

Four stages were followed to answer the three research questions. First, we calculate the posts for each event and social media platform. Second, and following Aichner and Jacob's (2015) and Aichner's (2019) proposals, we calculate the social media impact factor (SMIF), and third, we estimate the social media use (SMU) for each social media, as shown in the following equations. Following Aichner and Jacob (2015), with SMIF, AU platform is the sum of the

active users of each platform and $\sum AU$ platform is the sum of the active users of all media included in the study. With SMU, first, we calculate the equation without the constant k. After this, k is calculated by dividing 1 by the previous result. Finally, SMU is estimated.

$$SMU_{platform} = \frac{AU_{platform}}{\sum AU_{platforms}}$$

AU platform = monthly active users of each social media platform

$\sum AU_{platforms}$ = sum of monthly active users of all the social media platforms

$$SMU_{Facebook} = \text{postings} \times \frac{\text{likes} + \text{comments} \times 5 + \text{shares} \times 10}{\text{fans}} \times k1$$

$$SMU_{Twitter} = \text{postings} \times \frac{\text{likes} + \text{replies} \times 5 + \text{retweets} \times 10}{\text{followers}} \times k2$$

$$SMU_{Instagram} = \text{postings} \times \frac{\text{likes} + \text{comments} \times 5}{\text{followers}} \times k3$$

$$SMU_{Youtube} = \text{videos} \times \frac{\text{views} + \text{likes} \times 100 + \text{comments} \times 500}{\text{subscribers}} \times k4$$

Finally, we analyze the use of social media in different countries to know which countries have generated more social media content related to the three international events together with the word Spain. In addition, we performed a sentiment analysis using Natural Language Processing (NLP). Based on Bayes' theorem, we calculated the probability of a given post having a positive, negative or neutral sentiment using Atribus software (Gamallo, 2014). Different weights and scores were then assigned.

4. Results

To answer RQ1, Table 1 offers the posts for each event and social media platform. As the data shows, all the social media platforms are present at the three international sports events, all of which consider Spain. In the three events, Twitter is the most used platform. The second is Instagram with FIFA World Cup Qatar 2022, XLI Marathon Valencia Trinidad Alfonso 2022 and online news in Davis Cup 2022. The ANOVA test shows significant differences in the

Social media platform	FIFA world cup Qatar 2022	Davis cup 2022	XLI Marathon Valencia Trinidad Alfonso 2022	Total
Twitter	1,533,781	2,508	1,456	1,537,745
Facebook	19,081	299	115	19,495
Instagram	117,597	430	268	118,295
YouTube	358	119	30	507
Reddit	149	0	0	149
TikTok	51	26	26	103
News	15,739	7,636	1,178	24,553
Blog	469	175	19	663
Web	7,039	1,673	302	9,014
Forums	925	325	235	1,485
Total	1,694,264	13,191	3,629	1,711,084

Table 1.
Posts for each sports event and social media platform

Source(s): Authors' own elaboration

number of posts on almost all the social media sites among the three events, except for the forums ($t = 1.22, p > 0.1$).

It is relevant to determine which social network will be most relevant for each event (RQ2). In this sense, the next step measures and compares the social media impact on the three international sports events, following the proposals of Aichner and Jacob (2015) and Aichner (2019). Table 2 shows the social media impact (SMIF) of all the platforms in the three sports events. Twitter is the social media with the highest social impact factor in Total (SMIF_Twitter Total = 0.9) and in two of the sports events analyzed: FIFA and Marathon (SMIF_Twitter FIFA = 0.91; SMIF_Twitter Marathon = 0.40). The second one is Instagram (SMIF_Instagram Total = 0.07; SMIF_Instagram FIFA = 0.07; SMIF_Instagram Marathon = 0.07). And the third one is Facebook (SMIF_Facebook Total = 0.01; SMIF_Facebook FIFA = 0.01; SMIF_Facebook Marathon = 0.03). The impact factor of online news must be noted, especially for the Davis Cup 2022 (SMIF_News Davis = 0.58). For this competition, the social media with a higher impact factor are online news, Twitter and Instagram. In sum, depending on the sports event, the impact of the diverse social media platforms differs.

The ANOVA analysis shows that there are significant differences in using Facebook ($t = 3.57, p < 0.05$), Instagram ($t = 6.00, p < 0.05$), YouTube ($t = 1.83, p < 0.1$), Reddit ($t = 1.73, p < 0.1$), online news ($t = 1.67, p < 0.1$) and web ($t = 1.86, p < 0.1$).

In addition, Table 3 presents the SMU during the three sports events analyzed. To calculate this indicator, Facebook, YouTube, Instagram and Twitter were chosen as the leading social media platforms for this analysis. Although Aichner (2019) states that when

	FIFA world cup Qatar 2022	Davis cup 2022	Xli Marathon Valencia Trinidad Alfonso 2022	Total
SMIF_Twitter	0.91	0.19	0.40	0.90
SMIF_Facebook	0.01	0.02	0.03	0.01
SMIF_Instagram	0.07	0.03	0.07	0.07
SMIF_YouTube	0.0002	0.009	0.008	0.0003
SMIF_Redditi	0.0001	0.0000	0.000	0.0001
SMIF_TikTok	0.0000	0.002	0.007	0.0001
SMIF_News	0.0093	0.58	0.32	0.01
SMIF_Blog	0.0003	0.01	0.005	0.00
SMIF_Web	0.0042	0.13	0.08	0.01
SMIF_Forumsi	0.0005	0.025	0.06	0.001

Source(s): Authors' own elaboration

Table 2.
Social media
impact (SMIF)

	FIFA world cup Qatar 2022	Davis cup 2022	XLI Marathon Valencia Trinidad Alfonso 2022
SMU_Facebook	0.99	0.99	0.99
SMU_YouTube	0.98	1.04 = 1	0.99
SMU_Twitter	0.87	1	1
SMU_Instagram	0.99	1	1.03 = 1

Note(s): 0 = no use of social media platform; 1 = full use of social media platform

Source(s): Authors' own elaboration

Table 3.
Social media use (SMU)

the SMU exceeds the optimal value of one, the SMU is equal to one, we can leave the exact value to know more precisely the relevance of each indicator.

Although the three sports events used all social media, specific nuances can be made. Regarding FIFA World Cup Qatar 2022, Facebook and Instagram are more used than YouTube and Twitter. With Davis Cup 2022, the most relevant social media platforms are YouTube, Twitter and Instagram. And with XLI Marathon Valencia, the most relevant social media are, first, Instagram, followed by Twitter, and, in third place, Facebook and YouTube. The ANOVA shows that there are significant differences between events and social media.

Finally, and to answer RQ3, Figure 1 shows the eight countries where the most social media content about the international sports event linked to the brand Spain was generated. Spain and the USA have the highest traffic at the three sports events. With Spain, this may be

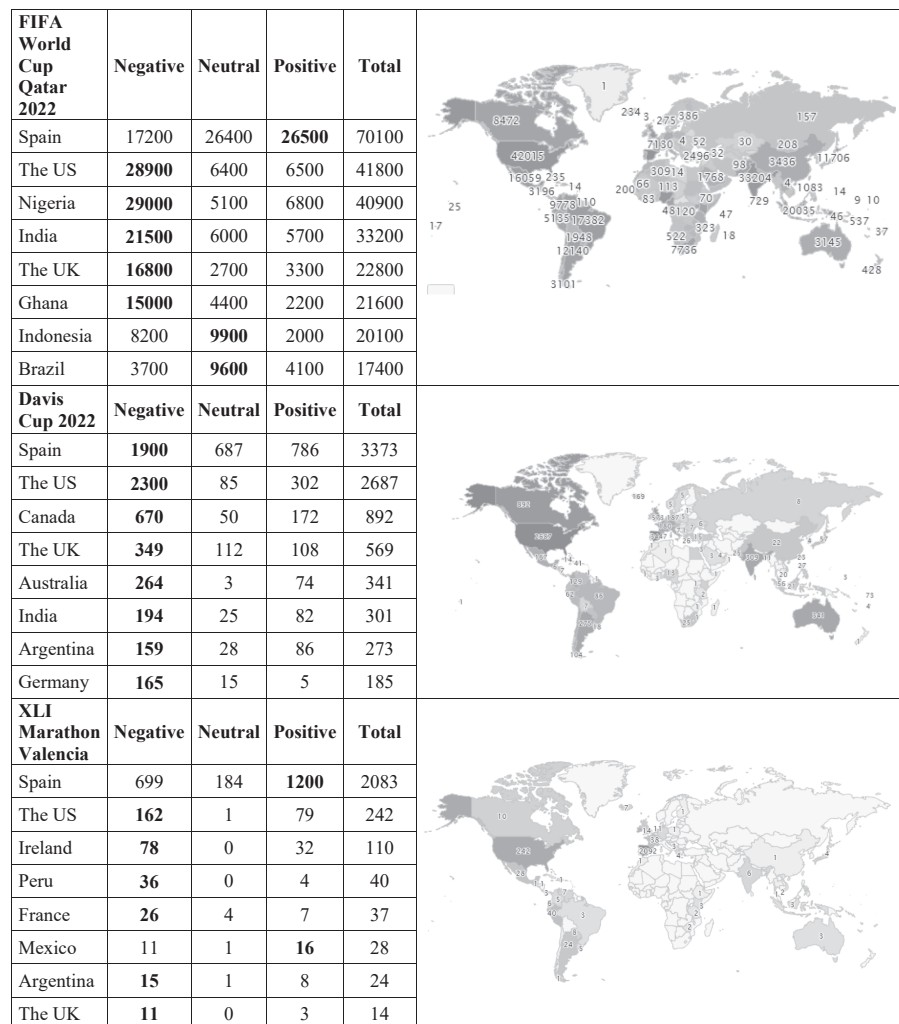


Figure 1.
Geolocation of
the posts

Source(s): Adapted from Atribus outputs

because Spaniards follow their athletes and teams, and two of the three events were held in Spain (Davis Cup and Marathon Valencia). The size of the country can explain the relevance of the USA.

We can also see that only three countries (Spain, the United States and the United Kingdom) appear in all three events. Curiously, the most contributions come from countries where one might not think Spain is such a relevant country, such as Nigeria or Peru.

As seen in Figure 1, although this study is not intended to conduct a sentiment analysis, we would like to point out that posts are not always made in a positive direction. Thus, in the countries where most content has been generated, with the FIFA World Cup Qatar, only Spanish posts have been more positive than neutral or negative when commenting on the championship and the Spanish brand. In the case of the Davis Cup, negative posts predominate in all countries. For the XLI Marathon Valencia, there is also a predominance of negative posts in all countries except those from Spain and Mexico. These results may be due to the poor results achieved by Spanish teams and athletes, even though, for example, no Spanish team participated in the Davis Cup. In the case of the FIFA World Cup in Qatar, Spain did not do well, which may explain the negative sentiment. In the other two cases, it could be linked to the event venue. Either way, more research is needed to conclude.

5. Conclusions, implications and further research

Undoubtedly, social media has become a tool for connecting audiences, fans, teams and events. However, organizations and institutions need to know how individuals and organizations use them. The methodology used in this paper can also help them.

Therefore, this paper focused on social media's impact on three international sports events (FIFA World Cup Qatar 2022, XLI Marathon Valencia Trinidad Alfonso 2022 and Davis Cup 2022) when individuals and organizations outside the organization of such events use the brand Spain in their posts.

The study results of the 1,711,084 posts allow us to draw the following main conclusions, which can be summarized in four main points.

First, our results have shown that not all social networks behave similarly, depending on the sports event analyzed. The nature of the event itself and its scope can determine them.

Second, not all countries are equally engaged with a sports event and a nation (Spain in our study). Unequal social networks are employed by individuals and organizations in the FIFA World Cup Qatar, the Davis Cup 2022 and the XLI Marathon Valencia Trinidad Alfonso 2022.

Third, as expected, Spanish posts were the most numerous at the various events for two main reasons. First, this paper has considered the posts related to three sports events and the brand Spain, and second, maybe because two sports events occurred in Spain.

Fourthly, the high number of negative posts and their country of origin are surprising. As stated, the poor results and the event venue could explain these negative posts.

For the business world, this paper offers four main practical implications. First, the study reveals that sports events and destination managers must pay attention to social media platforms and the audience's use. In advance, they must know how each social media behaves and where their audience is concentrated. Second, and more specifically, destination managers need to see the impact of social media on each sports event because the audience of each event has different behavior in their use of social media platforms. In this sense, following the sports classification proposed by Durand (1968), our results show that within collective sports with massive audiences, such as football, social networks such as Twitter, Instagram, Facebook and YouTube are preferred by users to post comments related to the sports events and the brand Spain. Other less popular sports events (i.e. the Davis Cup) or more individualistic sports events (i.e. marathons) have more impact on organizational media.

In particular, organizations post more comments related to these events. In these more minority sports events, Twitter and Instagram are the networks most used by the public to make posts.

Third, sports events organizers and destination managers must understand the nature (audience vs. business) of the posts published. It is essential to know how the reach of social media has particularly affected different aspects of the sports industry and the use of these platforms by other stakeholder groups, such as athletes, coaches, managers, teams, leagues, events, governing bodies and fans (Abeza and Sanderson, 2022). The information posted by these stakeholder groups might be helpful to institutions in understanding how to increase their relationships with fans by adopting a well-thought-out marketing strategy (Obaid and CK, 2022).

And fourth, these organizers and managers must identify and know the provenance of social media audiences. As results have shown, posts can come from anywhere worldwide because social networks have no borders. The results show that the countries that generate the most posts do not have the most teams or participants in sporting events, even if they are not the most prominent countries.

One of the main limitations is that this study only investigates three international sports events from three different disciplines (football, tennis and marathons). In addition, two of them were held in Spain. Future studies can analyze other events celebrated in other countries and their relationship with the brand Spain. It would also be interesting to conduct a content analysis, looking at the content of what is said on these networks in addition to the use of social networks.

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Consumers' healthy lifestyle as a determinant of the influence of microcelebrities and microinfluencers

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Abstract

Purpose – This study analyzes what type of influencer – microcelebrity or microinfluencer – is best suited to promoting healthy food brands and how that influence depends on consumers' healthy lifestyles.

Design/methodology/approach – An empirical study with a real healthy food brand was developed in which three real influencers from Instagram collaborated and posted a story showing the company's products. A total of 148 individuals participated in the study. The proposed model was tested using the PROCESS macro.

Findings – Drawing on the celebrity endorsement literature and the meaning transfer model, this study proposes that microcelebrities' and microinfluencers' influence on consumers' perception and behavior in terms of post relevance, brand attitude and purchase intention toward healthy food brands depends on the consumers' healthy lifestyle. Thus, microcelebrities have more influence on individuals with unhealthy lifestyles, while microinfluencers have more influence on individuals that pursue a healthy lifestyle.

Originality/value – It is one of the first studies to examine the different roles of microinfluencers versus microcelebrities in promoting consumers' attitudes and behaviors toward healthy food brands. In addition, this is one of the few studies to show a higher effect of microcelebrities over microinfluencers.

Keywords Healthy food brands, Healthy lifestyle, Microcelebrities, Microinfluencers, Food influencers

Paper type Research paper

1. Introduction

Consumers' concerns about food quality have been increasing, particularly regarding food's perceived healthiness (Teixeira and Rodrigues, 2021). People have developed a propensity to maintain healthy lifestyles (Teixeira and Rodrigues, 2021) and use social media to seek and share information regarding healthy food consumption (Belenioti *et al.*, 2015; Samoggia *et al.*, 2019). One of the most powerful information sources on social media about healthy food is influencers, as they have been shown to affect consumers' food choices. For instance, Chetoui *et al.* (2023) demonstrated that influencers affect consumers' purchases of organic food brands; Sicilia *et al.* (2023) showed that influencers can even have a greater effect on healthy food choices compared to front-of-package labeling. Therefore, companies selling healthy products have begun to rely on influencers in their communication campaigns (Alwafi *et al.*, 2022). Although previous studies in the food context have started to analyze influencers' effect, a clear understanding of their influence is still lacking (Hudders and Lou, 2023). It is

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vital to analyze whether influencer endorsement can affect consumer knowledge, awareness of healthy food choices, and healthy food behaviors (Ventura *et al.*, 2021).

This study seeks to understand how different types of influencers (microinfluencers vs microcelebrities) are best suited to promoting healthy food brands. Previous research about influencers has distinguished between celebrities, who are known in other areas outside social media, and influencers, who are unknown offline but have become famous through their self-branding activities on the Internet (Al-Emadi and Yahia, 2020). Both can be considered micro if they have fewer than 100,000 followers (De Veirman *et al.*, 2017). In general, previous studies have shown a higher effect of influencers on consumers compared to celebrities (Djafarova and Rushworth, 2017; Schouten *et al.*, 2021). This result could be explained because influencers are seen as closer than celebrities (Leung *et al.*, 2022). However, when both types of influencers have a similar number of followers, microcelebrities interact similarly to influencers, reducing their followers' distance. In fact, microinfluencers and microcelebrities have been found to be more influential than macro ones (Taylor, 2020). Additionally, previous studies have shown that celebrities' influence on consumers is aspirational, that is, consumers follow the celebrity's behavior because they want to be like him/her (Escalas and Bettman, 2009). Therefore, in the healthy food context, consumers could eat the same foods as celebrities to get the same body. Then, microcelebrities could become relevant in promoting healthy food compared to microinfluencers. However, to the best of our knowledge, no study has compared whether microinfluencers are also more influential than microcelebrities in promoting healthy food brands. Previous studies in the food context have not distinguished between different types of influencers (e.g. Chetioui *et al.*, 2023); instead, they have analyzed a unique type of influencer (e.g. Pfender *et al.*, 2023) or focused on sporty influencers (Von Mettenheim and Wiedmann, 2021). This indicates the need to improve our understanding of the complex figure of the influencer and their potential effects on health decisions (Truman, 2022).

In the context of healthy food consumption, consumers' concerns about following a healthy lifestyle stand out. Attitudes toward healthy food and following a healthy lifestyle are related to the intention to consume healthy food (Tan *et al.*, 2022) and may determine how an influencer's recommendation is perceived (Von Mettenheim and Wiedmann, 2021). Consumers' healthy lifestyle concerns in the context of food could have a similar role to product involvement in determining consumers' responses to influencers' recommendations in other product categories such as beauty, tech, or travel. In that context, product involvement could determine the different effects of celebrities and influencers on consumers (e.g. Chapa and Khan, 2024). However, previous results are not conclusive. Some studies have shown celebrities' superiority to influencers in high-involvement conditions (Chapa and Khan, 2024), while other studies demonstrated the opposite (Ahmadi and Ieamsom, 2022). Nevertheless, these studies are limited to product categories unrelated to consumers' health. Therefore, the need arises to investigate how microcelebrities' and microinfluencers' impact on consumers varies for consumers with different healthy lifestyle concerns.

Therefore, we propose that the effect of microcelebrity endorsers and microinfluencers on brand attitude and purchase intention toward healthy food brands is mediated by post relevance, and this indirect effect is contingent on individuals' concern about following a healthy lifestyle. This study makes two main contributions to the literature: (1) It examines the different roles of microinfluencers versus microcelebrities in promoting consumers' attitudes and behaviors toward healthy food brands. (2) It considers consumers' concerns about following a healthy lifestyle.

2. Theoretical background

2.1 Microcelebrities versus microinfluencers

Celebrities are primarily known for their non-social-media-related activities (e.g. music) and can have their own community of followers on social media (Jin *et al.*, 2019). However, neither their followers nor their main outcomes come from social media; rather, they use social media

to support their careers (Campbell and Farrell, 2020). Therefore, celebrities' characteristics, such as their source of influence, their role as content creators, and their relationship with their followers, are different compared to influencers (Sicilia and López, 2023). Celebrities typically do not feel that they must create content and interact with their followers. In fact, celebrities are less likely than influencers to interact with followers and thus are perceived as more distant (Yuan and Lou, 2020). In general, consumers are influenced by celebrities because they admire the celebrities and aspire to be like them (Escalas and Bettman, 2009).

In contrast, influencers gain fame on social media through self-branding – that is, using their social media activities to engage in strategic self-presentation to attract the attention of a large number of followers (Folkvord *et al.*, 2020). They can be defined as “people who built a large network of followers and are regarded as trusted tastemakers in one or several niches” (De Veirman *et al.*, 2017). Ordinary people can become influencers, producing their own content and managing their personal brand image to increase public awareness and develop a following that can be used for commercial endorsement purposes through online platforms (Khamis *et al.*, 2017). Their great influence usually comes from their knowledge, experience, expertise, and involvement with a product category (Lyons and Henderson, 2005). Sometimes, they also influence consumers due to their physical and social attractiveness (Delbaere *et al.*, 2021) or because they are seen as authentic and close to their followers (Leung *et al.*, 2022).

Previous studies have compared the effects of celebrities versus influencers on consumers. Schouten *et al.* (2021) have shown that influencers have a higher effect on consumers with respect to ad attitude and brand intention compared with celebrities. This higher effect is explained by influencers' higher credibility, expertise in the product category, and perceived similarity to followers (Schouten *et al.*, 2021). More recently, Hess *et al.* (2022) showed that influencers have a greater effect than celebrities when they fulfill their followers' expectations and are perceived as credible. However, celebrities can have a greater effect on consumers than influencers in certain conditions. For example, Jin *et al.* (2019) found that celebrities have a greater effect than influencers under conditions of high self-discrepancy – that is, when the follower compares themselves with the celebrity or influencer and feels there is a discrepancy between that person's actual self and the idealized media images. Furthermore, Gräve and Bartsch (2022) showed that celebrities have a greater effect on consumers when the promotion is intrusive.

In this context, the size of the community also determines microcelebrities' and microinfluencers' influence. Some studies have shown that microinfluencers exert a higher influence on consumers than macroinfluencers (Taylor, 2020). This effect can be explained by stronger parasocial relationships with the microinfluencers (Conde and Casais, 2023) and because they are perceived as more authentic than macroinfluencers (Taylor, 2020). In the same vein, microcelebrities may be more influential than macro ones. Microcelebrities can deliver very targeted messages, as their audiences include followers who have similar interests to the microcelebrity compared to macrocelebrities' interests (Taylor, 2020). However, no study has compared the different influences that microinfluencers and microcelebrities exert. Microcelebrities may also have traditional characteristics associated with microinfluencers such as higher authenticity or higher connection with their community. Therefore, there is a need to analyze microcelebrities' and microinfluencers' influence in relation to healthy food brands.

2.2 Influencer marketing of healthy products

Healthy food intake is important not only because it can reduce obesity but also because it increases well-being and prevents diseases (Blanchflower *et al.*, 2013). Understanding the factors that influence consumers' food choices is essential (Tan *et al.*, 2022). Traditionally, customers' food selection has been greatly influenced by their social environment, including friends' opinions, and by commercial information. In view of this, the food industry has been

criticized for encouraging the consumption of highly processed products and not promoting consumers' health (Fleming-Milici and Harris, 2020). However, since the outbreak of COVID-19, the global food industry has been under tremendous pressure to adapt to the changes in the market, and researchers and industry experts have observed a surge in demand for healthy foods (FoodCircle, 2022).

Accordingly, social media can influence what food consumers buy and eat (Castro-González *et al.*, 2024). Consumers who are exposed to socially endorse healthy food images on Instagram tend to select and consume larger portions of fruits and vegetables, in comparison to those exposed to non-healthy food (Hawkins *et al.*, 2021). According to Hawkins *et al.* (2021), the more individuals perceive other Facebook users to consume fruit and vegetables, the more the individuals consume themselves. In addition, obese customers who disclose their fitness goals on social media show healthier lifestyle behavior intentions compared to those that do not disclose their goals (Singh and Sharma, 2022). Influencers may affect this (Folkvord *et al.*, 2020), as they are important creators of content. In fact, new figures in this realm have appeared, such as Instagram health and well-being influencers (Chetioui *et al.*, 2023) and digital food influencers (Goodman and Jaworska, 2020), who are impacting the consumption of healthy products. In fact, previous studies have shown that influencers can affect consumers' well-being (Jamil *et al.*, 2024). In this context, influencer expertise, credibility, and physical attractiveness have been identified as antecedents of attitude toward the influencer, and hence toward the intention purchase to organic products (Chetioui *et al.*, 2023). In addition, the influencer's personal characteristics (i.e. athletic vs sedentary lifestyle) may affect children's healthy food choices (De Jans *et al.*, 2021).

Instagram posts regularly feature influencers whose lifestyles and values are referenced in images – for example, an image of an influencer eating healthy foods (Coates *et al.*, 2019). For instance, young people have been shown to attend to health-food advertising posts from influencers for longer than those from other sources (e.g. peers) (Murphy *et al.*, 2020). However, considering the characteristics of healthy products, viewers may be engaged with the influencer but not feel inclined to imitate their dietary behavior (Von Mettenheim and Wiedmann, 2021). That is, consumers may feel attracted by the influencer, but not by the product category promoted. Therefore, it is necessary to clarify the role influencers play in followers' engagement with posts and intention to consume healthy products.

2.3 The meaning transfer model

Various models and theories have been employed to explain celebrity endorsement, including the source credibility model, the source attractiveness model, the congruence or match-up model, and the meaning transfer model (Han and Balabanis, 2024; Jain and Roy, 2016). More recently, Han and Balabanis (2024) identified parasocial interaction theory, the two-step flow model, and the persuasion knowledge model as being able to explain influencers' impact on attitudinal and behavioral outcomes – although these theories do not consider the endorsement process.

The source credibility model posits that the endorser's credibility can carry over to strengthen the persuasiveness of product information (i.e. Sternthal *et al.*, 1978). Regarding the source attractiveness model, endorsement researchers have found that an attractive celebrity can affect consumer attitudes more favorably than a less attractive celebrity (Jain and Roy, 2016). The congruence or match-up model suggests that the endorser's effects are contingent on the "fit," or endorser–product congruence (Kirmani and Shiv, 1998). According to the meaning transfer model, consumers buy the meanings of the celebrity lifestyle by consuming endorsed brands, assuming that these symbolic meanings will transfer to them through mimicry and thus enhance their self-identity (McCracken, 1989).

Considering the different meanings that microcelebrities and microinfluencers may transfer to healthy food brands, the meaning transfer model (McCracken, 1989) is especially relevant to analyze which type of influencer, the microcelebrity or the microinfluencer, is more

effective in promoting healthy food brands. McCracken (1989) proposed a three-stage meaning transfer process. In the first stage (pre-endorsement), the meanings associated with a celebrity emerge from the celebrity's roles, campaigns, characteristics, or accomplishments. Celebrities in general, and microcelebrities in particular, are influential cultural symbols, and as a result, consumers associate them with certain valued personality and lifestyle attributes (McCracken, 1989). The meanings associated with microcelebrities derive mainly from their professional careers (e.g. singers, actors, journalists) and were created outside of social media, whereas microinfluencers' meanings derive from self-branding on social media.

In the second stage (endorsement), the celebrity transfers the meanings to products through endorsement (Jain and Roy, 2016). Jain and Roy (2016) identified seven themes of celebrity meaning: personality, credibility, physical appearance, feeling, performance, values, and cogent power. In this sense, Campbell and Warren (2012) found that both positive meanings, such as smartness and fun and negative meanings, such as conceitedness and arrogance, were transferred from celebrities to endorsed products and brands. Microcelebrities transmit a meaning associated with their fame and professional activity that microinfluencers do not possess. This process takes place through celebrity-endorsed advertisements (Chan and Fan, 2022).

In the third stage (post-endorsement), meanings are transferred from the product to the consumers through purchase and consumption. The observation of role models' (celebrities') behaviors, attitudes, and lifestyle choices may lead to vicarious observational learning and behavioral emulation (East *et al.*, 2014): "If I see a good-looking microcelebrity eating a healthy food, I am likely to emulate that behavior." When the consumer can identify the product's meanings, they will respond to the endorsement, proceeding to the last step, namely consuming the product (Lee and Jeong, 2023).

3. Research model and hypotheses

This study proposes that the effect of microinfluencers' versus microcelebrities' endorsements on post relevance will differ. Post relevance is defined as the extent to which consumers perceive the information conveyed in a post as valuable (Sohn, 2014). The proposed different effects on post relevance can be explained through the "endorsement stage," when the celebrity or influencer should transfer certain meanings to products (Jain and Roy, 2016). According to Parmar *et al.* (2020), for beverages and food products, endorsement requires the celebrity or influencer to be attractive and have a healthy lifestyle. Celebrities, as opposed to experts, create greater levels of pleasure and arousal from Instagram food posts (Kusumasondjaja and Tjiptono, 2019). Batra and Homer (2004) provided some of the earliest experimental evidence showing that celebrity traits could be transferred from celebrities to endorsed brands. Thus, the symbolic meanings associated with microcelebrities are transferred to the brands that they endorse through advertising and marketing communications (Parmar *et al.*, 2020). As Roy and Jain (2017) demonstrated, celebrity meaning contributes to brand meaning.

However, the symbolic values that microinfluencers endorse are based on the personal brands they have created through their posts on Instagram, so they lack certain imagery associated with microcelebrities. Finally, in the post-endorsement stage, consumers perceive that the imagery associated with the celebrity can be achieved if they also consume the healthy product. Based on this reasoning, we propose that microcelebrities may transfer more meaning to healthy food brands than microinfluencers due to the symbolic meanings associated with microcelebrities. Therefore, we propose:

- H1.* An Instagram publication about a healthy food brand will be perceived as more relevant when it is published by a microcelebrity than by a microinfluencer.

Brand attitude and purchase intention are important outcomes to determine the return on investment for a social media endorsement (Sicilia and López, 2023). Effective brand-

sponsored content on Instagram has led to positive consumer responses, such as stronger recognition, more favorable attitudes toward the brand, or greater intention to purchase (Djafarova and Rushworth, 2017). We propose that this effect could be moderated by consumers' healthy lifestyle concern.

In the context of healthy food brands, consumers' healthy lifestyle is an important determinant of attitude toward green products (Tan *et al.*, 2022). A healthy lifestyle is defined as the behavior related to health-promoting activities – for example, the consumption of natural food products, taking care of one's health, and maintaining balance in life (Teixeira and Rodrigues, 2021). Health-conscious people tend to have positive attitudes toward organic products and a higher intention to consume them, and they adjust their behavior to maintain a healthy lifestyle (Ahmadi Kaliji *et al.*, 2022). However, consumers who have low involvement with healthy products are typically also those whom a healthy nutrition campaign should primarily target (Von Mettenheim and Wiedmann, 2021).

When a microcelebrity or microinfluencer posts regarding healthy food brands, consumers' healthy lifestyles may influence their perception of this message. According to the meaning transfer model, celebrities/influencers will transfer meanings to the product they endorse (Jain and Roy, 2016). As was discussed above, microcelebrities transmit meanings associated with their fame and professional activity. The meanings they transmit are more related to their image outside of social media than the content they publish. Accordingly, we propose that for consumers who have low healthy lifestyle concern, microcelebrities' recommendations will be valued more, as consumers try to adopt celebrities' behaviors (Bandura, 2004). People will be motivated to develop a certain behavior when they see the success that it brings to others whom they would like to emulate (De Jans *et al.*, 2021). Therefore, they will imitate a microcelebrity's behavior to attain his/her image.

In contrast, for consumers who have high healthy lifestyle concern, the microcelebrity's effect is less important, as these consumers already have more knowledge regarding the benefits of healthy products and so will be less influenced by the role models represented by microcelebrities (Hung *et al.*, 2011). Microinfluencers usually share on social media their lifestyle, what they eat, and the exercise they do and advise followers about these issues. Therefore, consumers who have high healthy lifestyle concern will be more critical of content about healthy food, perceiving as more relevant the content created by a microinfluencer who has built his/her image by sharing this type of content. Therefore, microinfluencers' publications will have a higher effect on them. Thus, we propose:

- H2. An Instagram publication about a healthy food brand posted by a microcelebrity (versus a microinfluencer) (a) will be perceived as more relevant and will have a higher effect on (b) brand attitude and (c) purchase intention for individuals with less concern toward maintaining a healthy lifestyle.

According to the meaning transfer model (McCracken, 1989), the positive disposition toward a post endorsed by a celebrity with whom consumers can identify (i.e. a microcelebrity) will transfer into a more positive attitude toward the brand (Jin, 2018). Dutta and Singh (2013) demonstrated that celebrity endorsement led to higher sales of healthy food brands because the celebrities appeared to make a conscious effort to stay healthy by consuming healthy food brands and maintaining a healthy lifestyle. A celebrity's behavior affects consumers' actions (Bandura, 2004); therefore, we propose that the effect of microcelebrity endorsers and microinfluencers on brand attitude and purchase intention is mediated by post relevance, and this indirect effect is contingent on whether individuals have high or low concern about following a healthy lifestyle. Based on this reasoning, we propose the following.

- H3. The effect of the type of influencer (microcelebrity vs microinfluencer) on (a) attitude toward a healthy food brand and (b) purchase intention is mediated by post relevance and is contingent on the individual's level of concern toward maintaining a healthy lifestyle.

Figure 1 shows the relationships proposed.

4. Methodology

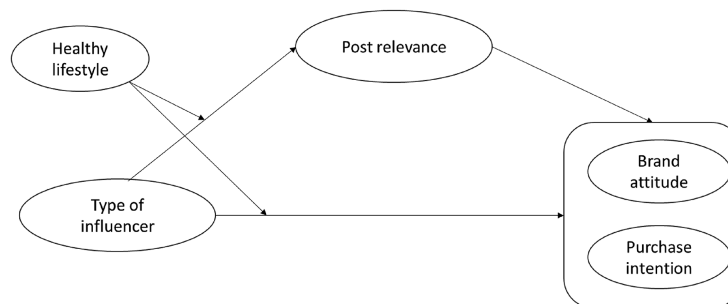
4.1 Data collection and sample

The study was developed on Instagram, since it is the most popular platform for lifestyle marketing (Statista, 2019). In addition, Instagram is a highly popular platform on which to share “fitspiration” (a portmanteau of “fitness” and “inspiration”) images while endorsing healthy products by “fit influencers” (Tiggemann and Zaccardo, 2018).

The study’s population was followers of microinfluencers and microcelebrities on Instagram. First, we chose the influencers, and then we approached their followers. As previous studies have shown that an influencer’s characteristics, such as gender, age, or type of content shared, affect their influence on followers (Sicilia and López, 2023), to use microinfluencers and microcelebrities with similar characteristics is needed. Thus, influencers based on our own judgments were sampled. To approach their followers, the influencers asked them to answer a questionnaire (see next section). Thus, participants were selected using a non-probabilistic self-selecting method. This process was followed as the control of external variables was prioritized above sample representativeness.

The study was developed in collaboration with the company Primaflor (a brand of vegetables and salads), so three influencers from a panel of an influencer marketing agency that offered their services to this company were selected. These influencers showed an interest in participating voluntarily in the research, without any economic incentive for recommending the brand. A microcelebrity and two microinfluencers were selected. Two microinfluencers, instead of one were used, to ensure a minimum sample size for the social media influencer category. The microcelebrity was Flora González (97,200 followers), who is a weather presenter on Channel News in Spain and appears in some TV shows. The microinfluencers were Cristina Polanco (27,800 followers), who is a nurse and athlete, and Rosa Sorroche (15,700 followers), who is a beauty and lifestyle blogger [1]. The three women were of a similar age, and the marketing agency considered that, due to their profiles and interests (e.g. beauty, lifestyle, and sports), they were suitable to promote Primaflor products.

The study was conducted in a realistic setting. Each influencer created a story about the product and shared it on their profile on Instagram, so each influencer’s followers saw the story created. To ensure that the stories created by each influencer were similar, the influencers were instructed on the characteristics of the story they should create. Specifically, they were told that the story should be an unboxing video, the duration should be around 20 s, they should tag the brand’s Instagram account (@Primaflor), and they should write some short text or sentences referring to the Christmas season, as the data were collected in December. It was not realistic



Source(s): Figure by authors

Figure 1. Proposed model

for each influencer to post identical Instagram stories, as each has her own communication style.

To ensure that the publications posted by the three influencers were perceived similarly, after data collection, a pre-test was conducted on the stories that were published. We employed a convenience sample of 81 individuals (49.4% women, mean age = 21.67). These were randomly assigned to one of the stories and rated the extent to which the stories were attractive and interesting, as previous studies have shown that these variables affect consumers' attitudes and behaviors (Chang *et al.*, 2015). The following responses were measured using a seven-point Likert scale: "The story was interesting," "The story was attractive." No significant differences were found between the three influencers in terms of attractiveness ($F = 1.844$; $p > 0.1$) or level of interest ($F = 1.724$; $p > 0.1$).

4.2 Procedure and measurement

The sample collection procedure was as follows: First, influencers posted the video via Instagram stories, a feature that lets users post photos and videos that automatically disappear after 24 h. Twenty-four hours later, influencers posted a recruitment message through the same channel asking their followers to participate in a 10-min research survey to provide their opinions and feedback about the Primaflor salads shown in the story. Thus, participants were asked several questions regarding vegetable brands, post relevance, brand attitude, purchase intention, and healthy lifestyle. Other control questions were asked, such as attitude toward the post (Batra and Stayman, 1990), the influencers' credibility (Schouten *et al.*, 2021), identification with the influencers (Bergami and Bagozzi, 2000), and brand awareness (Yoo *et al.*, 2000). In total, 148 participants answered the questionnaire, representing the final sample size. The study took place in December 2020. Detailed information on the reliability and validity assessment of the measurement scales is included as Supplementary Material.

5. Analyses and results

5.1 Sample characteristics

The participants' mean age was 33.9, and 85.71% were women. Of the participants, 74.32% were unfamiliar with the brand Primaflor before the influencer's post, and 47.29% remembered the post about Primaflor after the exposure. Before testing the hypotheses, the sample was split into two groups: individuals exposed to the microcelebrity ($n = 86$) and individuals exposed to the microinfluencers ($n = 62$). There were no differences in mean age between the two groups ($M_{\text{microcelebrity}} = 33.8$, $M_{\text{microinfluencers}} = 34$, $p > 0.10$). To check for differences between the two groups, we controlled for credibility and identification with the influencer. There were no differences in credibility (Cronbach's $\alpha = 0.95$) ($M_{\text{microcelebrity}} = 5.90$, $M_{\text{microinfluencers}} = 5.75$, $p > 0.10$) and identification with the influencer ($M_{\text{microcelebrity}} = 5.10$, $M_{\text{microinfluencers}} = 5.15$, $p > 0.10$) between the two groups. The attitude toward the post (Cronbach's $\alpha = 0.96$) was over 4.5 for both types of influencers. Thus, the stories were valued positively.

5.2 Hypothesis testing

A moderated mediation model (see Table 1) was calculated with the PROCESS macro 4.2 (Hayes, 2022, Model 8). We decided to use the PROCESS macro because it is specifically tailored for mediation, moderation, and conditional process analysis (Hayes, 2022). All of the reported regression coefficients were unstandardized, and the bootstrapping method ($m = 10,000$) was employed. Brand awareness was introduced as a control variable. As predicted, the type of influencer (microcelebrity = 1; microinfluencer = 0) had a significant effect on post relevance ($\beta = 3.01$, $p < 0.05$). That is, microcelebrity posts were perceived to be more relevant than posts from microinfluencers, which leads us to accept H1. As we can see in Table 1, there was a significant negative interaction between influencer type and consumers'

Table 1. Model results

Paths	β	SE	t	p
Type of influencer → Post relevance	3.01	1.01	2.99	0.003
Healthy lifestyle → Post relevance	0.53	0.15	3.51	0.001
Type influencer*Healthy lifestyle → Post relevance	−0.57	0.18	−3.10	0.002
Brand awareness → Post relevance	0.18	0.06	2.88	0.004
Type of influencer → Brand attitude	−0.12	0.68	1.75	0.082
Healthy lifestyle → Brand attitude	0.04	0.10	0.38	0.704
Type influencer*Healthy lifestyle → Brand attitude	−0.26	0.12	−2.09	0.039
Post relevance → Brand attitude	0.46	0.06	8.13	0.000
Brand awareness → Brand attitude	0.28	0.04	6.58	0.000
Type of influencer → Purchase intention	1.20	0.88	1.36	0.175
Healthy lifestyle → Purchase intention	0.13	0.13	0.98	0.328
Type influencer*Healthy lifestyle → Purchase intention	−0.23	0.16	−1.42	0.158
Post relevance → Purchase intention	0.62	0.07	8.46	0.000
Brand awareness → Purchase intention	0.19	0.05	3.47	0.000

Note(s): Dependent variable = brand attitude: $R^2 = 0.77$; Dependent variable = purchase intention: $R^2 = 0.71$
Brand awareness was used as a covariate

Source(s): Table by authors

healthy lifestyles on post relevance ($\beta = -0.57$, $p < 0.01$) and brand attitude ($\beta = -0.26$, $p < 0.05$). Typically, one standard deviation above and below the mean of the moderator is used to indicate high- and low-level conditioning. As Table 2 shows, participants with low healthy lifestyle concern ($\beta = 0.99$, $p < 0.05$) perceived the message posted by the microcelebrity as more relevant than the message posted by microinfluencers. However, for participants with high healthy lifestyle concern, the effect reversed ($\beta = -0.80$, $p < 0.05$), and messages posted by microcelebrities were perceived as less relevant. Regarding healthy lifestyle's moderation of brand attitude, only for individuals with high levels of healthy lifestyle concern was

Table 2. Conditional effects at values of the moderator

Path	Values of the moderator	Effect	t	p
Direct effect				
Type of influencer → Post relevance	3.72	0.87	2.23	0.027
	5.17	0.05	0.18	0.854
	6.62	−0.77	−2.10	0.038
Type of influencer → Brand attitude	3.72	0.22	0.85	0.394
	5.17	−0.158	−0.90	0.370
	6.62	−0.54	−2.19	0.030
Indirect effects	Values of the moderator	Effect	CI _{low}	CI _{high}
Type of influencer → Post relevance → Brand attitude	3.72	0.40	0.03	0.79
	5.17	0.02	−0.23	0.27
	6.62	−0.36	−0.76	−0.01
Type of influencer → Post relevance → Purchase intention	3.72	0.54	0.39	1.03
	5.17	0.03	−0.30	0.38
	6.62	−0.48	−0.97	−0.01

Note(s): Moderate mediation index (DV: Brand attitude) = −0.2609 (−0.46, −0.07); Moderate mediation index (DV: Purchase intention) = −0.3495 (−0.58, −0.11)

Source(s): Table by authors

Table 3. Hypotheses testing

H	Hypothesis	Result
H1	An Instagram publication about a healthy food brand will be perceived as more relevant when it is published by a microcelebrity than by a microinfluencer	Accepted
H2	An Instagram publication about a healthy food brand posted by a microcelebrity (versus a microinfluencer) (1) will be perceived as more relevant and will have a higher effect on (2) brand attitude and (3) purchase intention for individuals with less concern toward maintaining a healthy lifestyle	Partially accepted
H3	The effect of the type of influencer (microcelebrity vs microinfluencer) on (1) attitude toward a healthy food brand and (2) purchase intention is mediated by post relevance and is contingent on the individual's level of concern toward maintaining a healthy lifestyle	Accepted

Source(s): Table by authors

microinfluencers' effect on brand attitude higher than that of microcelebrities ($\beta = -0.54$, $p < 0.05$). Both types of influencers exerted the same effect on brand attitude for individuals with low and medium levels of healthy lifestyle concern. In contrast, healthy lifestyle concerns did not moderate the effect of the type of influencer on purchase intention ($\beta = -0.23$, $p > 0.1$). Thus, H2a and H2b were accepted, while H2c was rejected.

H3 posited that post relevance would mediate the effect of the type of influencer on brand attitude and purchase intention. In this sense, post relevance had a significant effect on brand attitude ($\beta = 0.46$, $p < 0.01$) and purchase intention ($\beta = 0.62$, $p < 0.01$). The direct effects of the type of influencer on brand attitude and purchase intention were not significant. However, the results showed that the conditional indirect effects were significant for brand attitude (index of moderated mediation = -0.2609 [-0.46 , -0.07]) and for purchase intention (index of moderated mediation = -0.3495 [-0.58 , -0.11]). The indirect effect of the type of influencer on brand attitude and purchase intention was positive for individuals with low levels of healthy lifestyle concern (DV: brand attitude: $\beta = 0.40$ [0.03 , 0.79]; DV: purchase intention: $\beta = 0.54$ [0.39 , 1.03]) and negative for individuals with high levels of healthy lifestyle concern (DV: brand attitude: $\beta = -0.36$ [-0.76 , -0.01]; DV: purchase intention: $\beta = -0.48$ [-0.97 , -0.01]) (see Table 2). Thus, Instagram posts by microcelebrities led to a more positive brand attitude and higher purchase intention through post relevance when the individuals had low healthy lifestyle concern. In contrast, the indirect effect was higher when the post was created by microinfluencers for individuals with high healthy lifestyle concern. Table 3 summarizes the results of the hypotheses testing.

6. Conclusions

Social media conveys what others eat via pictures, with influencers being one of the most important information sources about healthy food. This study highlights microcelebrities' and microinfluencers' importance in promoting healthy food brands. Both types of influencers have different effects depending on the extent to which consumers are aware of a healthy lifestyle. Microinfluencers are more persuasive for individuals with higher concern about maintaining a healthy lifestyle. However, individuals who are less aware of a healthy lifestyle prefer to follow microcelebrities' recommendations. The study's theoretical contributions and our findings' practical implications are discussed below.

6.1 Theoretical implications

First, this study contributes to the literature by analyzing the different effects of microcelebrities versus microinfluencers on consumers' healthy food decisions. The results indicate that post relevance was higher for products endorsed by a microcelebrity than by a

microinfluencer for healthy food brands. While previous results have shown a higher influence of social media influencers in comparison with celebrities (Jin *et al.*, 2019; Schouten *et al.*, 2021), this study found that microcelebrities could be a good option for healthy food brands. In fact, young people have been found to view healthy food advertising posts from celebrities for longer than those from peers (Murphy *et al.*, 2020). Many authors have shown that influencers' perceived genuineness results in a higher purchase intention toward endorsed products because consumers identify with the influencers and try to imitate them (Sicilia and López, 2023). However, the imagery associated with celebrities may be important in the consumption of healthy food brands (Dutta and Singh, 2013). Logically, microcelebrities may have some of the same imagery associated with celebrities, as well as some characteristics of social media influencers, such as a higher identification with their followers or a closer relationship with them. Thus, the meaning transfer model (McCracken, 1989) represents a useful framework to analyze the meanings and imagery that microcelebrities and -influencers transfer to a product category, such as healthy products. In this sense, this study discusses the three-stage meaning transfer process and shows that the endorsement stage, when the influencer posts content about the healthy food brand, helps us to explain why individuals consume the product endorsed by microcelebrities or microinfluencers.

Second, microcelebrities' and microinfluencers' effect on consumers depends on consumers' concern about a healthy lifestyle. Higher relevance of microcelebrities' Instagram posts was found specifically for individuals with low healthy lifestyle concern. The positive effect reversed for individuals with high healthy lifestyle concern. Thus, consumers' healthy lifestyle concern is a key aspect when considering celebrities' or influencers' influence on healthy food product promotion. Previous research has found that attractive influencers are more effective in convincing consumers with low involvement in healthy nutrition to further improve their diet (Von Mettenheim and Wiedmann, 2021). Our results agree to the extent that microcelebrities may be considered more attractive than microinfluencers. In this sense, the present research demonstrates the importance of consumers' motivations and behaviors in the influence exerted by influencers and highlights that influencer selection should consider aspects related not just to the brand (e.g. congruency between the brand and the influencer) but also to the consumer (e.g. concern about maintaining a healthy lifestyle).

6.2 Practical implications

From a managerial perspective, this study provides strategic recommendations for the food industry when using influencers in communication campaigns. The results underline that matching influencer types with customers' healthy lifestyle concerns is important to maximize marketing impacts (brand attitude and purchase intention). Brands that target consumers who have low healthy lifestyle concerns should collaborate more with microcelebrities, as their aspirational influence can motivate these individuals to emulate their behavior. On the contrary, brands that are targeting health-conscious consumers should collaborate with microinfluencers, as their perceived authenticity and closer connection with their audience make them more credible sources of health-related advice. This strategy would align with health-focused consumers' preferences and generate deeper trust and engagement with the brand. Therefore, managers should analyze the consumer motivations that may influence consumption in their product category.

Our results highlight the importance for food companies to segment their audience based on healthy lifestyle levels. Using data analytics and consumer insights, marketers can identify which segments are more likely to respond to microcelebrities versus microinfluencers and tailor their influencer marketing strategies accordingly. Besides selecting the appropriate category of influencer, healthy food enterprises can sharpen their marketing activities based on recent data about customer behavior and also flexibly adjust their campaigns. In addition, the evolution of the symbolic values associated with the influencers by key audience segments should be monitored when designing an influencer marketing campaign.

The fact that this study demonstrates that post relevance mediates the effect of influencer type on brand attitude and purchase intention means that marketers should not only choose the appropriate influencer type but also make sure that the content created is highly relevant to the target audience. Such content should be personalized and relatable and resonate with the audience's lifestyle and preferences.

6.3 Limitations and future research

The present study is not without limitations, which open up many possibilities for future research. Owing to the difficulty of obtaining a real sample case study and finding influencers who were willing to participate in the research, only one microcelebrity and two microinfluencers were considered. From this perspective, future research may incorporate different types of influencers, including macrocelebrities, microcelebrities, and microinfluencers. In addition, we used microinfluencers that generate content about lifestyle. Previous studies have shown that the influencer's expertise on the topic at hand determines their influence on consumers (Hudders and Lou, 2023).

We are also conscious of the limited sample size but want to highlight that we worked with a real brand and real influencers. Another limitation is that the research focused on only one product category; the endorsement of other product categories should be analyzed to determine whether the effect is the same or if there are differences based on the product category. Additionally, the data's cross-sectional nature might constitute a limitation. Finally, the type of publication posted by the celebrity and the influencers in this study was a story. It would be interesting to analyze the influence of other content types, such as reels or text. In this vein, previous studies have shown that a visually appealing post may be more influential than plain text (Ki and Kim, 2019). This should be tested in future research in this field.

To conclude, as a future research line, considering the steady growth of consumer interest in health and wellness products, it would be interesting to analyze whether brands could benefit from partnering not only with microinfluencers but also especially with key opinion leaders who are medical professionals or nutrition experts. Building brand partnerships with these influential individuals holds the possibility of adding credibility and relevance to their brand messaging among targeted consumers who value health consciousness. This might take the form of specialty services, such as their own personal organic nutritionist or a cardiologist with expertise in supporting specific heart-healthy dietary habits – areas in which brands can connect and build very targeted marketing campaigns. Related to this, companies could segment their target market by generations, knowing the younger cohorts, such as millennials, have different behaviors from older generations when faced with a professional's advice. These strategies would help the brands increase their market saturation in the ever-growing health food sector.

Notes

1. Number of followers at the moment of data collection.

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What drives consumers to use P2P payment systems? An analytical approach based on the stimulus–organism–response (S-O-R) model

P2P payment systems

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Abstract

Purpose – Traditional payment systems based on cash and bank cards are being replaced by new innovative formats. This research analyzes the success factors in the adoption by customers of Bizum, a peer-to-peer (P2P) mobile payment system widely used in Spain. This study proposes a theoretical framework based on the Stimulus–Organism–Response (S-O-R) model and includes the analysis of the moderating effect of perceived risk and the mediating effect of perceived trust.

Design/methodology/approach – To achieve the proposed objectives, an online questionnaire was administered to 701 Spanish smartphone users, potential users of the proposed P2P payment systems.

Findings – The results show that perceived usefulness is the most important predictor of intention to use. Additionally, a medium predictive relevance performance of the proposed model is found.

Originality/value – This research contributes to a more holistic understanding of the adoption of P2P payment systems and provides new business opportunities that companies can exploit through the use of this technology.

Keywords P2P payment systems, Intention to use, S-O-R model, Perceived risk

Paper type Research paper

1. Introduction

Mobile payments refer to making payments through the use of mobile devices (cell phones, personal digital assistants, radio frequency devices and near field communication-based

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devices) (Patil *et al.*, 2020). In addition, other new payment methods using encrypted networks, such as e-wallets and cryptocurrency for alternative payment modes to issued currency, are replacing cash on a regular basis (de Blanes Sebastián *et al.*, 2023). This fact is bringing about important changes in the financial sector as well as in the behavior of users in relation to these new technologies.

The growth of the Paytech sector is partly due to the adoption of the Revised Payment Services Directive 2 (hereinafter, PSD2) that came into force in all EU member states in 2018. The PSD2 created a legal framework for two new types of payment services: 'payment initiation services' (PIS) and 'account information services' (AIS). Since then, Fintech companies started to develop new business models by offering new ways to pay or view account information. As of the entry into force of the PSD2 regulation, banks are obliged to have and maintain Application Programming Interfaces (APIs) that allow other applications and services to access bank accounts, if the user wishes, in order to expand the possibilities of online payments (Hartmann *et al.*, 2019). Thus, entities with online services have the possibility of offering their customers immediate payment for their online reservations or purchases on the Internet, granting independence from the bank (Carbó-Valverde *et al.*, 2021). That is why both Verse and Twyp have their own virtual wallets to store money, without having to have a bank account. Thus, both applications can be used independently of the bank account, in contrast to Bizum, which is only available to users of 27 associated Spanish banks.

Currently, multiple classifications are used to analyze payment systems. Liébana-Cabanillas *et al.* (2021b) summarize the main classification criteria according to the type of service, technology used and purpose. Firstly, with regard to the type of service, the most important are the marketing of ticketing services for shows (mobile ticketing), payments for parking spaces (mobile parking), sending money by means of cash remittances (mobile remittances) and payment at the point of sale [mobile point of sale (PoS)]. Secondly, in relation to the type of technology, we highlight payment by sending an SMS (short message service), payment by WAP applications (wireless application protocol), payment by proximity (NFC), payment by predefined messages [unstructured supplementary service data (USSD)] and payment by voice recognition technology. Finally, depending on the purpose, it is also possible to classify the tools into m-payment, which refers to the actual payment of the purchase made, m-order, which manages mobile orders, m-banking, which refers to access to electronic banking via the device, m-delivery and m-contract, which refers to the delivery of the services acquired by the cell phone.

On the other hand, peer-to-peer (P2P) payments are becoming more popular as consumers switch from traditional physical payment methods, such as cash and bank cards, to new digital alternatives. It was precisely the financial institutions which, aware of this new trend, decided to embrace this paradigm shift, favoring joint business with Fintech companies (Palmié *et al.*, 2020; Luo *et al.*, 2022). Moreover, the COVID-19 pandemic has accelerated the adoption of new mobile payment formats among users themselves (Rodríguez-López *et al.*, 2023), to the point that P2P systems are now seriously threatening the use of classic purchasing systems for regular purchases (Insider Intelligence, 2022).

According to the latest report by Mordor Intelligence (2022), the global value of digital payment transactions was USD 7.36tn in 2021, with a forecast higher than USD 15tn for 2027. Along the same lines, according to Statista (2022), the total value of global cross-border P2P money transfer transactions is €59bn in 2018, which is projected to grow to €121bn by 2022. In addition, the value of the average transaction per user will increase from €327 in 2018 to €644 in 2022 globally.

This study examines the Spanish P2P payment service Bizum. This tool was created in mid-2016 by 27 banking institutions to make secure and immediate money transfers to

trusted individuals, whereby it was only necessary to know the recipient's cell phone number to send the money.

Today, Bizum is an integrated service in almost all the banks that founded the company. It is very simple to use since it is only necessary a bank account, the app of the bank where Bizum is integrated and a cell phone. It currently has more than 19mn users and has carried out 666mn transactions since its creation. Moreover, its expansion as a means of online payment is unquestionable, due to its current use in 30,000 associated online merchants and in purchases worth 480mn euros. It is also employed by more than 5,600 NGOs that have received almost 1mn euros (Bizum, 2022).

Given the importance that this type of payment system currently has and will probably have in the coming years, it is more than appropriate to analyze its research (Liébana-Cabanillas *et al.*, 2021a). From a scientific point of view, as indicated by Liébana-Cabanillas *et al.* (2021b), previous work on mobile payment has focused on other technologies, e.g., smart card payment systems, mobile point-of-sale payments, mobile wallets, when, in reality, P2P systems have very different characteristics (Li *et al.*, 2021), being simpler, faster and more convenient (Zhao, 2021).

This study is one of the first to address the adoption of P2P payment systems in particular, using the Stimulus–Organism–Response (S-O-R) model (Mehrabian and Russell, 1974). According to Chang *et al.* (2011), based on Bagozzi's (1986) proposals, when consumer behavior is represented as an S-O-R system, the stimuli (S) consist of both marketing mix variables and other environmental elements. In our research, we propose the inclusion of subjective norms, the perceived quality of the Bizum payment system itself as well as the user's level of innovativeness. The organism (O) refers to the internal processes involved between the stimuli and the final actions, reactions or responses emitted. Our proposal includes perceived usefulness and perceived trust as antecedents of the intention to use Bizum (R). Additionally, we include the analysis of the moderating effect of perceived risk, as it is considered by the scientific literature as one of the most influential variables in the adoption of innovations, reducing the intention of individuals to use P2P payments by mitigating the positive effect of other antecedents (Schmidhuber *et al.*, 2020).

In this sense, the purpose of this research is five-fold: firstly, to address a gap in the current literature on P2P payment systems; secondly, to propose the application of the stimulus-organism-response (S-O-R) framework to analyze the importance of various factors in explaining the intention to use P2P payment systems; thirdly, to explore the moderating effect of perceived risk in determining the intention to use; fourthly, to analyze the mediating effect of the perceived quality of P2P payment systems and finally, the results can be used by Fintech firms' decision-makers to strengthen the understanding of P2P payment adoption processes and to improve marketing strategies for P2P payment systems.

The remainder of the paper is structured as follows. Section 2 explains the importance of P2P payment systems and, namely, the case of Bizum. Section 3 presents the proposed research model as well as the proposed hypotheses. The methodology applied, the data collection, and the description of the sample are described in Section 4 whilst the analyses carried out are included in Section 5. The final section extracts the main contributions, limitations, implications and future lines of research.

2. Peer-to-peer mobile payment system: Bizum

P2P payments are Peer to Peer applications that facilitate mobile money transactions to be sent anywhere immediately. According to Mastercard's latest Small and Medium Business Payment Barometer (2002), an analysis of businesses with a turnover of between EUR 1mn and EUR 100mn, 83% of these businesses already support contactless payment by card or cell phone. This figure reflects a growth of 21 percentage points in the last four years, as data

from the same study in 2017 indicated that, in that period, the acceptance rate of contactless payments was 62%. This increase has also been reflected in the average amount of card transactions compared to cash purchases. The former is 290 euros, which is 50% more than cash purchases, 194 euros.

On the other hand, P2P payments, which were already widespread in the private sphere for transfers between friends, relatives or work colleagues, are also beginning to spread to the commercial sphere to pay for purchases made in physical establishments. In fact, more and more consumers are using P2P payment applications to pay for their purchases in shops. This is being helped by the fact that a growing number of merchants have started to accept P2P payments. This type of payments at the retail or hospitality level is occurring thanks to the rise of mobile applications for this purpose (Funcas, 2021). The success of these apps is reflected in the number of users.

Bizum is a mobile payment solution for sending money instantly and universally. To use this service, just a bank account in any of the banks offering the service, a cell phone and that both (payer and recipient) are registered for the service is necessary. Bizum currently allows money transfers between individuals, payments in shops, donations and even betting and collecting prizes through an innovative QR code system.

Although there are several companies that provide these services globally, Bizum is the leading company in Spain due to the dominant position of the banks that constitute this application. Despite this, there are other competitors, such as PayPal, Twyp and Verse. PayPal is the world's leading company in online payments, as it offers a system for sending or requesting money from other users through PayPal.me, as well as being able to send money to users in the list of contacts. Twyp is a payment service created by ING Direct but can be used by anyone regardless of their bank account. Finally, Verse is the clearest alternative to Bizum, improving some of its functionalities as it allows creating groups of friends to share expenses in a simpler way, dividing expenses automatically or even sending money at a European level, accepting banks from countries such as Germany, France, Italy, the Netherlands, Portugal and the United Kingdom, among others.

3. The stimulus–organism–response (S-O-R) framework and hypotheses development

3.1 S-O-R framework

Numerous behavioral models have been proposed in the previous scientific literature to explain the antecedents of intention to use and the behavior of the users regarding the adoption of different financial technologies as well as in mobile payment systems (Irimia-Diéguez *et al.*, 2023; Liébana-Cabanillas *et al.*, 2022). Most research has employed classical theories such as the theory of reasoned action (TRA) (Fishbein and Ajzen, 1977), technology acceptance model (TAM) (Davis, 1989), theory of planned behavior (TPB) (Ajzen, 1991), diffusion of innovation (DOI) (Rogersà Rogers, 2003), unified theory of acceptance and use of technology (UTAUT) (Venkatesh *et al.*, 2003) as well as its subsequent modifications (Lee *et al.*, 2022; Goel *et al.*, 2022; Shaikh *et al.*, 2023). Although previous studies have made important contributions in the field of mobile payments by applying these theories and have improved knowledge (Al-Okaily *et al.*, 2023; Dash *et al.*, 2023), we consider that the use of the S-O-R model would enrich both theory and practice in this field of study where, so far, few authors have used it as a reference in their research (Yuan *et al.*, 2020).

The S-O-R model was proposed by Mehrabian and Russell (1974) and later used by Donovan and Rossiter (1982) to define the environment as a stimulus, which causes an evaluation by the consumer, and consequently some behavioral responses. This psychological model explains human behavior through a three-stage process as shown in Figure 1; the perceptions of external or environmental stimuli associated with a purchase

decision (S) influence the individual's emotional and cognitive states resulting from perceptions, psychological factors, feelings and thoughts (O), which drive conscious or unconscious responses (R).

This model has been used in numerous investigations in many different scientific fields such as e-commerce (Le *et al.*, 2022), website design (Molinillo *et al.*, 2021), social commerce (Herzallah *et al.*, 2021), showrooming (Shankar *et al.*, 2021), online reviews based on text and photos using automatic processing patterns and conscious perceptions (Bigne *et al.*, 2020) and even in the analysis of consumer behavior in payment systems (e.g., Yuan *et al.*, 2020; Sun *et al.*, 2021; Zhou *et al.*, 2022).

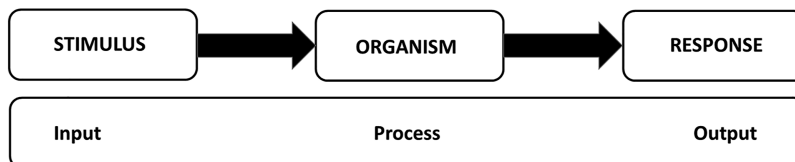
3.2 Research model and hypotheses

3.2.1 Subjective Norms (SN). Subjective norms are defined as the individual's beliefs about whether significant others think he or she should or should not use a system or take some action (Fishbein and Ajzen, 1977). Subjective norms are assumed to capture the extent of perceived social pressures exerted on individuals to engage in a certain behavior (Shneor and Munim, 2019). In our study, we consider that the perceived quality of P2P payment services maybe influenced by subjective norms since word-of-mouth strategy is being currently applied in the Paytech industry. On the other hand, a direct relationship between subjective norms and perceived trust has also been proposed by several authors (Kalinic *et al.*, 2019). Finally, according to Yasin *et al.* (2019), there is a direct and positive link between subjective norms and perceived usefulness. Therefore, the following hypotheses are proposed:

- H1. Subjective norms positively influence perceived quality.
- H2. Subjective norms positively influence perceived trust.
- H3. Subjective norms positively influence perceived usefulness.

3.2.2 Personal innovativeness in information technology (PII). Personal innovativeness is considered an important construct in the study of individual behavior toward innovations (Agarwal and Prasad, 1988) and has had a long-standing tradition in innovation diffusion research. Personal Innovativeness can be defined as the willingness to try new information technology. Rogers (2014), in the innovation diffusion theory, explains that individuals who are more innovative are also early-adopters. Consequently, these individuals become more technically competent than others. According to Liébana-Cabanillas *et al.* (2017), it is conceptualized as a trait, i.e., the individual is not influenced by environmental or internal variables. On the other hand, previous studies (Leong *et al.*, 2015) found personal innovativeness to be a significant predictor of both perceived usefulness and perceived trust. Therefore, we state the following hypotheses:

- H4. Personal innovativeness positively influences perceived quality.
- H5. Personal innovativeness positively influences perceived usefulness.
- H6. Personal innovativeness positively influences perceived trust.



Source(s): Own elaboration

Figure 1.
Conceptual framework
of S-O-R theory

3.2.3 Perceived quality (QUAL). Perceived quality was defined by Zeithaml (1996) as the consumer or user's judgment of a product's superiority or excellence. Perceived quality comes from users' subjective comparison between the desired quality of the service and what is actually perceived (Lara-Rubio *et al.*, 2021).

According to Almarashdeh (2018), Perceived quality is a good predictor to measure the user acceptance of new technology. Namely, in online services, quality reflects aspects such as the response speed of the system, reliability, reduction of uncertainty, ease of use, adaptation to the users' needs and the fulfillment of their expectations, among other things (Ahn *et al.*, 2007).

Perceived quality communicates to the user the provider's ability to comply with the requirements of service provision, which fosters their trust. The results of Gao and Waechter (2017) show that information quality is positively related to initial trust. Therefore, we propose the following hypothesis:

H7. Perceived quality positively influences perceived usefulness.

H8. Perceived quality positively influences perceived trust.

3.2.4 Perceived usefulness (PU). Perceived usefulness was defined by Davis (1989) as the degree to which a person believes that the use of a particular system would improve their job performance. This influential factor is important regarding the final decision since many of the routine processes are already fulfilled by the users themselves in mobile apps (Pousttchi and Dehnert, 2018). Over the years, many researchers have provided evidence on a significant and direct effect of perceived usefulness on the intention to use a new system or technology (Hu *et al.*, 2019; Meyliana and Fernando, 2019; Ryu *et al.*, 2018). In accordance with S-O-R model, it is hypothesized that perceived usefulness would have a significant positive influence on the intention to adopt Paytech services, as we state in the following hypothesis:

H9. Perceived usefulness positively influences the intention to use P2P payment services.

3.2.5 Perceived trust (TR). According to Ennew and Sekhon (2007), perceived trust is defined as "an individual's willingness to accept vulnerability on the grounds of positive expectations about the intentions or behavior intentions or behavior of another in a situation characterized by interdependence and risk". Due to the inherent characteristics of Paytech services, perceived trust plays a key role owing to the high volume of data involved in the service offered (Hu *et al.*, 2019; Higuera-Castillo *et al.*, 2023). Meanwhile, Liébana-Cabanillas *et al.* (2019) point out that in the initial stage of implementation of a new online payment system, users may not trust without the protection provided by appropriate regulations and the use of modern technologies. In addition, ongoing branch bank closures and, consequently, less personal contact will have a further impact of perceived trust on intention to use Paytech services as Bizum, since online communication with banks is becoming the usual way. Thus, the following hypothesis is proposed:

H10. Perceived trust positively influences the user's intention to adopt P2P payment services.

3.2.6 Moderating effect of perceived risk (PR). Perceived risk was defined by Bauer (1960) as the customers' perception of the uncertainty and the possible negative consequences arising from the purchase of a product or service. In a Paytech context, Featherman and Pavlou (2003) define perceived risk as "the potential for loss in the search for the desired outcome of using an electronic service". According to Lara-Rubio *et al.* (2021), perceived risk is considered "a multidimensional construct composed of various factors that jointly explain the global risk associated with the adoption and use of a payment service". Regarding financial and private information risks, perceived risk is a negative factor that affects customer confidence in

online financial transactions if the online providers will not meet their security or money transfer requirements (Rouibah *et al.*, 2016). Hence, an online user may incur personal losses while managing payments transactions over the Internet (e.g., stealing secured personal information, theft of credit card information, false identity information and the disclosure of private consumer data or privacy information). Perceived usefulness and perceived quality have been confirmed to significantly improve users' trust in mobile systems as both reduce risk perceptions in terms of errors, complexity, etc., particularly in mobile payment services (Zhou, 2022).

H11. Perceived risk moderates the effect of both perceived usefulness and perceived trust on the user's intention to adopt P2P payment services.

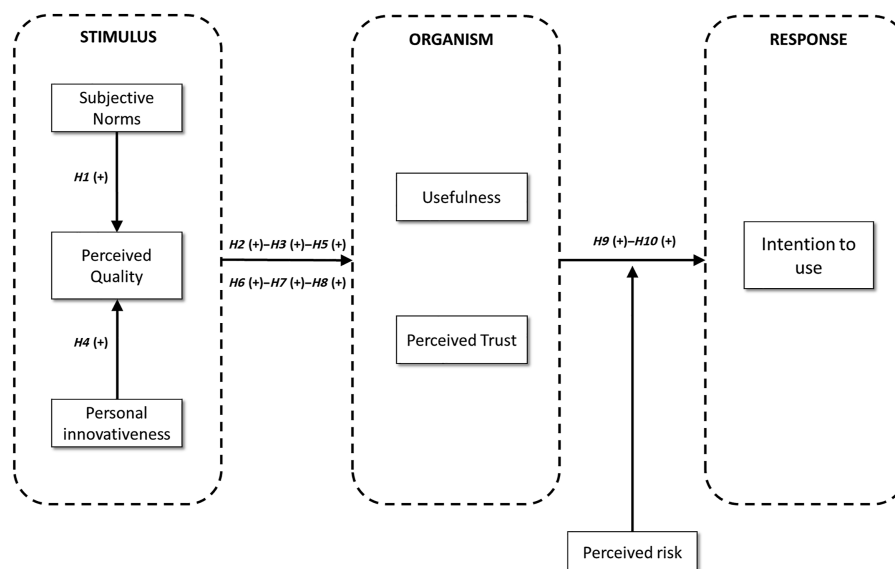
Figure 2 depicts the study research model.

4. Research methodology

4.1 Data collection

In this work, we use a primary source of data obtained from a survey made with 701 Spanish smartphone users, who are considered potential users of the P2P payment systems. All the users who participated in the survey had experience in using their cell phone for commercial activities, either for shopping or payment. To collect the data, non-probability snowball sampling was employed through a mailing list and social networks.

The final sample, after eliminating questionnaires that took too little time or exceeded the recommended time, amounted to 701 participants, of whom 46.22% were male and 53.78% were female. 42.37% were between 18 and 24 years old, 51.21% were between 25 and 44 years old and 6.28% were over 44 years old. 4.28% had doctoral studies, 49.93% had university studies, 26.68% had secondary school studies, 15.83% had primary school studies and the remaining 3.28% had no studies at all.



Source(s): Own elaboration

Figure 2.
Research model

To confirm whether our sample was suitable, the inverse square root method (Kock and Hadaya, 2018) was applied. The minimum sample size required for this study is 249 (where the significance value = 0.05 and a minimum path coefficient = 0.10, potential power = 90%). Therefore, the estimation for sample size confirms that the sample size is adequate for this kind of research.

4.2 Measures

The data for the empirical evaluation of the research model were collected through a self-administered online survey. The constructs of the model were measured through reflective measurement scales validated in previous research and adapted to the proposed payment context. Subjective norms were measured using 4 items adapted from Agarwal and Prasad (1998) and Taylor and Todd (1995). Perceived quality was measured with 7 items from Parasuraman *et al.* (1988) and Lai *et al.* (2007). Personal innovativeness was measured with 4 items adapted from Agarwal and Prasad (1998) and Ramos-de-Luna *et al.* (2016). Perceived usefulness was measured with 4 items from the research of Bhattacharjee and Premkumar (2004). Perceived trust was measured with 5 items adapted from Pavlou (2002). Perceived risk was measured with 4 items adapted from Jarvenpaa *et al.* (2000) as well as Wakefield and Whitten (2006). Finally, intention to use was measured with 3 items adapted from Venkatesh and Bala (2008). In all the cases, 7-point Likert-type scales were used (1 = strongly disagree; 7 = strongly agree) (see Table A2). As the original scales were in English, and the target population was Spanish, in order to maintain the accuracy of the original scales, the questionnaire was translated into Spanish by a professional service so that the level of comprehension was guaranteed.

Finally, two focus groups were set up, the first with the heads of the payment methods departments of five Spanish financial institutions and the second with ten customers who regularly use mobile payment systems. After these meetings, the questionnaire was established and proposed to a group of users as a pre-test to analyze the validity and reliability of the proposed scales.

4.3 Statistical methodology

Due to the characteristics of the indicators obtained from the survey, we have the opportunity of building constructs that can be related to the indicators by using PLS-SEM. Due to its maximum interest and applicability, PLS-SEM has been employed and recommended in previous studies which focused on the prediction of the constructs and the complex interrelationships between latent variables (Hair *et al.*, 2011). To this end, Smart PLS 3.2.7 software was used to conduct the research model (Ringle *et al.*, 2015).

The analysis and interpretation of PLS results has two main stages. The first stage, the measurement model, determines whether the indicators and constructs have been measured correctly (outer model) and the second stage, the structural model (inner model), determines whether the relations between the constructs are significant or not.

5. Results

5.1 Common method bias

Common method bias (CMB) happens when variations in responses are caused by the instrument rather than the actual predispositions of the respondents that the instrument attempts to uncover (Kock, 2015). A full collinearity test based on variance inflation factors (VIFs) was used to detect a potential CMB situation (Kock, 2015) following the guidelines described by Kock and Lynn (2012). Kock (2015) indicates that when a VIF achieves a value

greater than 3.3, there would be an indication of pathological collinearity. The present model, with a maximum VIF of 2.352 (Table 1), may be considered free of CMB.

5.2 Measurement (outer) model assessment

The measurement model section assesses the reliability and validity to prove the feasibility of the individual items and constructs employed in the research model. The results, reported in Table 2, display that all the standard factor loadings are larger than 0.7. Thus, all the items are considered satisfactory. In addition, the descriptive statistics of all the items are shown in

	Intention to use	Perceived usefulness	Perceived trust	Perceived quality
Perceived usefulness	1.693			
Perceived trust	1.693			
Subjective norms		1.800	1.800	1.638
Perceived quality		2.300	2.300	
Personal innovativeness		2.352	2.352	1.638

Source(s): Own elaboration

Table 1.
Variance inflation
factor (VIF) values

Constructs	Items	S.L.	Cronbach's Alpha	rho_A	C.R.	AVE
Subjective norms (SN)	SN1	0.900	0.931	0.933	0.951	0.830
	SN2	0.930				
	SN3	0.885				
	SN4	0.928				
	QUAL1	0.844				
Perceived quality (QUAL)	QUAL2	0.822	0.953	0.953	0.961	0.780
	QUAL3	0.896				
	QUAL4	0.917				
	QUAL5	0.901				
	QUAL6	0.916				
	QUAL7	0.882				
	PII1	0.908	0.955	0.955	0.967	0.880
Personal innovativeness (PII)	PII2	0.946				
	PII3	0.947				
	PII4	0.951				
Perceived usefulness (PU)	PU1	0.910	0.943	0.945	0.959	0.855
	PU2	0.958				
	PU3	0.900				
	PU4	0.929				
Perceived trust (TR)	TR1	0.927	0.974	0.975	0.980	0.907
	TR2	0.963				
	TR3	0.966				
	TR4	0.959				
	TR5	0.894				
Intention to use (IU)	IU1	0.964	0.969	0.969	0.980	0.942
	IU2	0.974				
	IU3	0.974				

Note(s): S.L. = Standard loadings; rho_A = Cronbach's Alpha; C.R. = Composite reliability; AVE = Average variance extracted

Source(s): Own elaboration

Table 2.
Measurement model
results

Table A1 in the Appendix. As can be observed, all the values show that the data are not extremely non-normal since the absolute values of skewness and kurtosis are under /2/.

As shown in Table 2, all the constructs comply with Cronbach's Alpha, Dijkstra-Henseler's rho (rho_A) and composite reliability (C.R.) due to having figures over the critical 0.7 level, showing that all the constructs have convergence or internal consistency. Finally, it can be observed that all the constructs satisfy the criterion of 0.5 points (equal to or above) demanded by the average variance extracted (AVE), fulfilling the convergent validity of the constructs and dimensions.

Nevertheless, it is also necessary to assess the discriminant validity of the constructs. Under the Fornell-Larcker framework, the AVE should be greater than the variance shared between the construct and other constructs in the model. As shown in Table 3, the diagonal elements are significantly greater than the off-diagonal elements in the corresponding rows and columns for all the constructs obtaining an adequate discriminant validity (Hair *et al.*, 2021). Additionally, Table 3 also shows that all the constructs have a Heterotrait-Monotrait ratio of correlations (HTMT) value lower than 0.85 which indicates the existence of discriminant validity for all the constructs.

5.3 Structural (inner) model assessment

The evaluation of the structural model is based on the sign, magnitude and significance of the structural path coefficients and on the R2 values (Hair *et al.*, 2021). In order to ascertain the statistical significance of the path coefficients, a bootstrapping procedure is performed with 5,000 resamples (Hair *et al.*, 2011). A percentile bootstrap 95% confidence interval is also employed. As can be seen in Table 4, all the hypotheses were supported.

Table 3.
Discriminant validity

	IU	PU	TR	SN	QUAL	PII
Intention to use (IU)	<i>0.971</i>	0.801	0.656	0.739	0.670	0.670
Perceived usefulness (PU)	0.767	<i>0.925</i>	0.667	0.763	0.765	0.768
Perceived trust (TR)	0.638	0.640	<i>0.953</i>	0.644	0.733	0.633
Subjective norms (SN)	0.702	0.715	0.614	<i>0.911</i>	0.647	0.661
Perceived quality (QUAL)	0.646	0.728	0.707	0.613	<i>0.812</i>	0.757
Personal innovativeness (PII)	0.644	0.729	0.610	0.656	0.624	<i>0.938</i>

Note(s): The square roots of the AVEs are in italic on the main diagonal. The Fornell-Larcker criterion is depicted below the main diagonal. The heterotrait-monotrait (HTMT) ratio is above the main diagonal

Source(s): Own elaboration

Table 4.
Significant testing
results of the structural
model path coefficients

Hypotheses	β (path coeff.)	<i>t</i> -values	<i>p</i> -values	Confidence intervals	Sign	Decision
H1: SN→QUAL	0.265	18,252	0.000	(0.176; 0.353)	Yes	Supported***
H2: SN→ TR	0.258	9,908	0.000	(0.180; 0.332)	Yes	Supported***
H3: SN→PU	0.345	7,010	0.000	(0.277; 0.413)	Yes	Supported***
H4: PII→QUAL	0.557	7,690	0.000	(0.475; 0.641)	Yes	Supported***
H5: PII→PU	0.294	9,248	0.000	(0.210; 0.381)	Yes	Supported***
H6: PII→TR	0.110	6,832	0.015	(0.021; 0.201)	Yes	Supported**
H7: QUAL→PU	0.304	6,653	0.000	(0.227; 0.384)	Yes	Supported***
H8: QUAL→TR	0.469	5,929	0.000	(0.370; 0.566)	Yes	Supported***
H9: PU→IU	0.608	2,441	0.000	(0.540; 0.671)	Yes	Supported***
H10: TR→IU	0.249	13,165	0.000	(0.180; 0.319)	Yes	Supported***

Note(s): Significant at $p^{***} \leq 0.001$ and $p^{**} < 0.05$

Source(s): Own elaboration

The results of the structural model reveal that all the hypotheses have significant relationships with their respective variables. The direct relationships are robust and acceptable because they have t -values greater than 0.226 and p -values lower than 0.10 except H8 whose level of significance is slightly lower. Due to this fact, the mediator effect of perceived quality in the relationship between personal innovativeness and perceived trust was analyzed as shown in Figure 3.

According to Nitzl *et al.* (2016), a complementary partial mediation of perceived quality in the relationship between personal innovativeness and perceived trust is found, due to the fact that both the direct effect ($c' = 0.110$) and the indirect effect ($a \times b = 0.261$) are significant and the sign of the mediation ($a \times b \times c'$) is positive. The strength of this partial mediation can be evaluated by calculating the VAF value which determines the extent to which the mediation process explains the dependent variable's variance. Since the $VAF = 70.35\%$ a partial mediation is confirmed.

Figure 4 shows the significance of the hypothesized relationships and the explanatory capacity of the proposed model. A large portion of the variance of the latent variance is

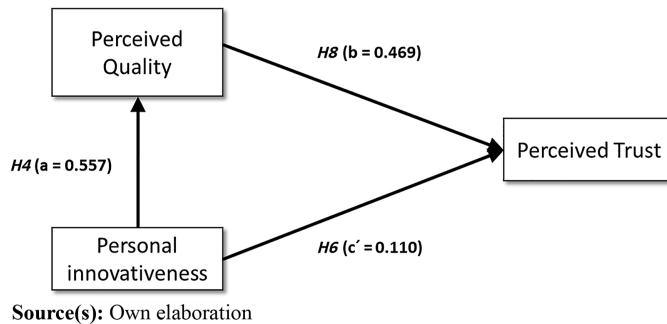
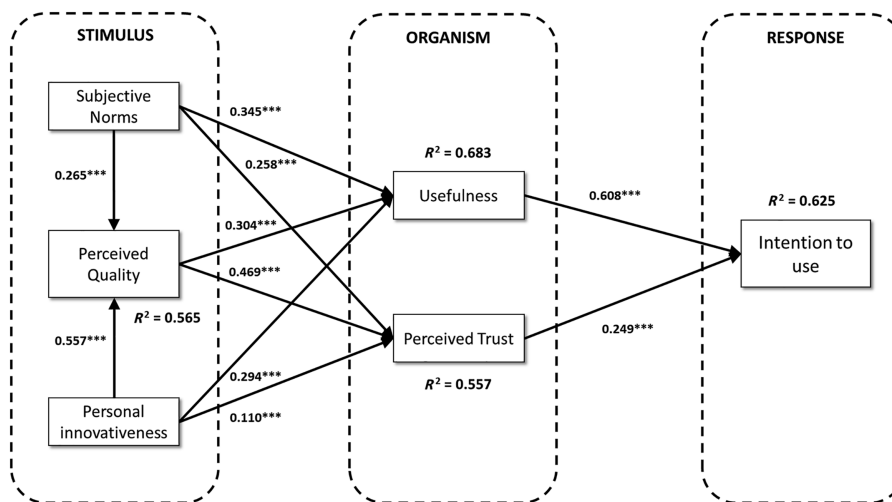


Figure 3.
The mediator role of
perceived quality



Note(s): Significant at $p^{***} = < 0.001$
Source(s): Own elaboration

Figure 4.
Assessment of the
structural model

explained. Additionally, the standardized root mean square residual (SRMR) value was 0.043 (lower than the maximum acceptable value of 0.08 recommended by Schubert *et al.*, 2022). Thus, the proposed model has goodness of fit.

5.4 Assessment of the predictive validity

This study also performs a predictive analysis to verify the predictive ability level of the proposed research model. According to Shmueli and Koppius (2011), this analysis has the capacity to generate accurate predictions of new observations, temporal, interpretable or transversal. The current PLS predict algorithm of the SmartPLS software version 3.2.7 (Ringle *et al.*, 2015) was applied to value the proposed research model's predictive ability. The values obtained through these statistics are root mean squared error (RMSE), the mean absolute error (MAE) and the Q^2 predict values. These enable assessing the predictive performance of their PLS path model for the constructs (LV Prediction Summary) and indicators (MV Prediction Summary).

In the PLS predict routine, firstly a k-fold cross-validation was executed, setting $k = 24$ subgroups, with the aim of meeting the minimum size of $N = 30$ for the hold-out sample (Hair *et al.*, 2021), repeating this procedure ten times. Since all the values of the skewness for prediction errors of result indicators were under $/1/$, both for the PLS and the LM analyses, RMSE was selected as a basis of the predictive power assessment. Hence, since over half of the RMSE values of PLS-SEM are lower than those of the LM analysis, a medium predictive relevance performance is found (Table 5).

5.5 Importance-performance map analysis (IPMA)

The Importance-Performance Map Analysis, also known as the Importance-Performance Matrix, is a complementary analysis to let us know which constructs and items are most important and have a higher performance when determining a construct (Ringle and Sarstedt, 2016). Thus, this analysis allows for prioritizing the constructs as well as the

	RMSE	PLS Q^2_{predict}	LM RMSE	PLS-LM RMSE	Skewness Predic. errors
IU1	1.155	0.515	1.132	0.022	-0.264
IU2	1.158	0.508	1.142	0.016	-0.093
IU3	1.171	0.520	1.154	0.017	-0.219
QUAL1	0.974	0.457	0.974	-0.001	0.027
QUAL2	1.068	0.424	1.070	-0.002	-0.026
QUAL3	1.139	0.406	1.138	0.000	-0.214
QUAL4	1.058	0.484	1.065	-0.007	-0.142
QUAL5	1.014	0.468	1.009	0.006	-0.081
QUAL6	1.104	0.378	1.092	0.011	-0.019
QUAL7	1.045	0.423	1.025	0.019	0.120
TR1	1.033	0.408	1.038	-0.005	0.078
TR2	1.022	0.407	1.030	-0.007	0.203
TR3	1.024	0.415	1.021	0.003	0.114
TR4	1.036	0.418	1.041	-0.005	0.157
TR5	1.071	0.419	1.078	-0.007	0.157
PU1	1.070	0.581	1.081	-0.011	-0.285
PU2	1.175	0.520	1.187	-0.012	-0.266
PU3	1.193	0.505	1.177	0.016	-0.360
PU4	1.070	0.576	1.076	-0.006	-0.141

Table 5.
PLS predict
assessment of
indicators and
Skewness of Prediction
Errors

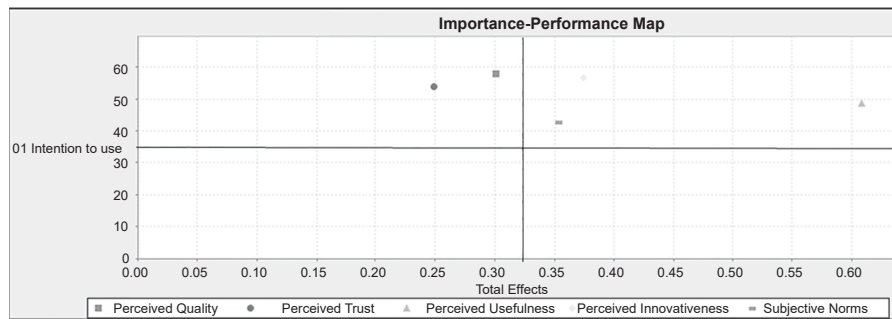
Source(s): Own elaboration

corresponding items to improve the targeted construct. In our current research model, IPMA was performed employing intention to use Paytech services as the target endogenous construct and this was established before executing the IPMA analysis.

Figures 5 and 6 display the diagrams that will let us analyze these relations from a more practical and intuitive approach. The first diagram focuses on the construct and the second one on the items of the proposed research model. To better understand the figures, it incorporates two supplementary lines that divide the importance-performance graph into four spaces or quadrants (Ringle and Sarstedt, 2016). The horizontal line represents the performance and the vertical line the importance represented by the average values of both dimensions. Hence, the graph has 4 quadrants that include the values above and below the mean: 1) Upper-right quadrant (+Importance; + Performance); 2) Lower-right quadrant ((+Importance; – Performance); 3) Lower-left quadrant (– Importance; – Performance) and 4) Upper-left quadrant (–Importance; + Performance).

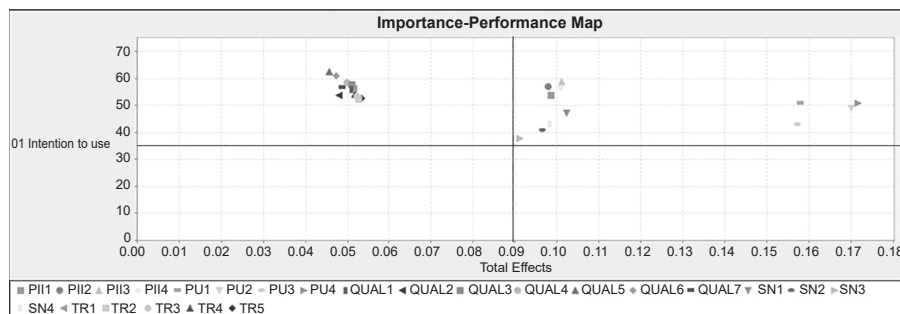
As may be observed in Figure 5, the variables perceived usefulness, subjective norms and personal innovativeness are in quadrant 1 (upper-right). Therefore, this analysis reveals that these constructs have the greatest (namely, over the average) levels of importance and performance. They can be considered as key factors in influencing consumer intention to use Paytech services. The variables perceived quality and perceived trust are in quadrant 3 (upper-left) meaning that users are paying little attention to them although they have a high performance for the target construct.

In Figure 6, we can see which indicators are the most important and have the highest performance. All the items are in the same quadrant as their construct. Thus, we reach the same conclusion.



Source(s): Own elaboration

Figure 5.
IPMA: Constructs' standardized effects



Source(s): Own elaboration

Figure 6.
IPMA indicators' standardized effects

5.6 The moderating effect of perceived risk

In order to analyze the moderator effect of perceived risk on the relationship between usefulness and intention to use and trust and intention to use, the following procedure was applied. First, the measurement invariance assessment procedure (MICOM) (Henseler *et al.*, 2016) was applied to determine whether, under different conditions of observation and study of the phenomena, the measurement models yield measurements of the same attribute. The MICOM procedure comprises three steps: (1) configural invariance, (2) compositional invariance and (3) the equality of composite mean values and variances.

Configurational invariance is the condition that both the items and the model in both groups are the same. If this condition is not met, it is not possible to conduct a multi-group analysis. Compositional invariance seeks to assess that respondents in both groups understood the same meaning to each question when answering the questionnaire. If this condition is met, "partial measurement invariance" is established, which is a sufficient condition for conducting a multi-group analysis. In our research, partial invariance is confirmed because steps 1 and 2 conform to the limits established in the literature, while step 3 does not find optimal values for all the variables. However, in practical applications, the full measurement invariance is often not fulfilled (Steenkamp and Baugartner, 1998).

Once the measurement invariance was verified, the structural model was estimated, using the PLS multigroup analysis method (Henseler *et al.*, 2009). To this end, the sample was divided into two groups, users with low perceived risk and those with a high perceived risk. Table 6 shows the results of the test of differences between the two groups for the relationships proposed in H11. As shown in Table 6, both relationships differ significantly between the two groups created ($p < 0.10\%$). Therefore, the results indicate that the risk perception moderates the relationships between both usefulness and trust with the intention to use the proposed P2P payment system.

We observe that, on the one hand, users with high perceived risk have a lower intensity in the relationship between perceived usefulness and intention to use ($\beta_{\text{HIGH RISK}} = 0.572$; $p = 0.000$; $\beta_{\text{LOW RISK}} = 0.684$; $p = 0.000$) as they probably value other elements derived from their own experience. On the other hand, for users with a high perception of risk, the relationship between trust and intention will have a greater intensity than in the case of users with a low perception of risk ($\beta_{\text{HIGH RISK}} = 0.298$; $p = 0.000$; $\beta_{\text{LOW RISK}} = 0.144$; $p = 0.012$).

6. Discussion

6.1 Conclusion

Fintech is considered by many researchers and practitioners as one of the most important innovations in the financial sector, due to its significant potential for change and disruption as well as its implications for all players in that sector (Bajwa *et al.*, 2022). Within these technological improvements, the use of cell phones and their practical applications in the financial sector are crucial. In this vein, mobile applications have generated new opportunities, such as improvements in the provision of advice and customer services,

Table 6.
Moderating effect of
Perceived Risk

	High-risk perceived		Low-risk perceived		Path difference β	T test	p -value
Hypotheses	β (path coeff.)	p -value	β (path coeff.)	p -value			
PU→IU	0.572	0.000	0.684	0.000	0.112	1.628	0.100
TR→IU	0.298	0.000	0.144	0.012	0.154	2.145	0.032
Source(s): Own elaboration							

access to almost any financial service and an increase in the number of PoS terminals due to the use of smartphones incorporating NFC technologies.

In this sense, as reported, mobile payment systems in general (Balachandran *et al.*, 2022) and P2P in particular (Lara-Rubio *et al.*, 2021), seriously threaten the use of banking and cash for everyday purchases. This fact should imply an effort in analyzing users' behavior as well as their background and barriers (Belanche *et al.*, 2022).

Among the different P2P payment systems, it is proposed to analyze the case of Bizum due to the growing interest that this new P2P payment system has aroused not only among users and Fintech companies, but also in previous academic studies. Due to this huge interest, we consider the research carried out to be innovative and timely.

This research proposes the development of a conceptual framework using the S-O-R model, where the proposed stimuli are subjective norms, the perceived quality of Bizum itself, as well as the user's level of innovation, while the body is identified with perceived usefulness and perceived trust as antecedents of the response, identified as the intention to use Bizum.

6.2 Theoretical implications

Our contributions to the research on P2P payment systems are, firstly, to better understand the crucial role of P2P payment systems nowadays. Their economic and social significance in our society is highlighted due to the enormous development of smart phones and the advantages that their use entails.

Secondly, many different theories have been extensively applied in the adoption of technology but not yet in Fintech services adoption studies. Our work is one of the first to propose and empirically evaluate a behavioral model that uses the S-O-R framework to study the intention of individuals about the use of a specific P2P payment tool. Consequently, this is a contribution to the improvement of the scientific knowledge and the academic literature on consumer behavior.

Thirdly, this study also performs an analysis of the out-of-sample predictive power of the proposed research model. From a methodological view, not only explanatory analyses but also predictive studies on fintech adoption are required to validly extrapolate the results. Thus, our work seeks to advance within this emerging line of research.

Fourthly, this study improves the understanding of the effects on perceived usefulness and perceived trust through three fundamental aspects in the analysis of technology adoption: Subjective norms through the influence of the potential user's immediate environment of P2P payment systems, perceived quality through the potential user's evaluation of the tool itself, as well as the individual's level of personal innovativeness toward Bizum. The best antecedents on perceived usefulness and on perceived trust were shown to be, respectively, subjective norms and perceived quality, which reinforces the findings of previous works in other online contexts (i.e., Yasin *et al.*, 2019; Gao and Waechter, 2017). The present study shows that both characteristics had a considerable influence and of a similar intensity. Thus, this research contributes to improving the understanding of the importance of both perceived usefulness and perceived trust by extending the results of previous studies to the P2P context. In addition, our results demonstrate the importance of perceived usefulness as the main antecedent of intention to use. This relationship corroborates the importance of this variable in innovations related to financial technologies (i.e., Singh *et al.*, 2021; Saheb *et al.*, 2022). Consequently, we can affirm that utility aspects have been decisive in assessing potential users' intention to use this type of payment systems. This result is also corroborated by the IPMA analysis where perceived usefulness, subjective norms and personal innovativeness are shown to have the greatest importance and performance.

Fifthly, the proposed model shows the moderating effect of perceived risk. Namely, this moderating effect was demonstrated in the two proposed relationships. Our results show that

perceived usefulness has more influence on intention among users who have a lower perception of risk, whilst in the relationship between trust and intention, the effect is higher for users who have a higher perception of risk. This is an important contribution that improves the understanding of the effect of risk on payment systems and addresses a gap identified in previous studies. The results are in line with recent work that identified the effect of risk related to intention (Daragmeh *et al.*, 2021; Mehta *et al.*, 2021; Qalati *et al.*, 2021; Poon and Tung, 2022).

Finally, the mediating effect of perceived quality on the relationship between personal innovativeness and perceived trust was analyzed. This conclusion is fundamental to understand the important role that the innovation of potential users plays in the adoption of a technology and, more specifically, the importance that it has on trust.

6.3 Managerial implications

This research also has important implications for the different sectors involved in the design, marketing and sale of these banking services. This P2P payment sector is a highly competitive market with great growth and potential; these financial solutions will reach out to the next generations since the majority are “digital natives” ready for innovative payment services. In addition, these P2P solutions are highly appreciated among end users due to involving a perception of belonging to a digital community. As a consequence of the networking effects, the various competitors are trying to win the race to dominate this “winners-take-all” market (Wirtz *et al.*, 2018). Furthermore, the knowledge of the factors fostering the adoption of these payment services would allow an international expansion of the financial providers without the inconvenience of establishing offices or companies in other countries. Other significant advantage is that P2P services can promote financial inclusion by allowing access to financial services to the entire population regardless of their location (e.g. rural areas) or of their age (e.g. elder people).

Thus, financial providers need to identify the competitive advantages that will allow them to lead P2P services in their markets. To this vein, firstly, P2P payment systems need to improve usability among users by ensuring that the agility and speed of transactions is adequate through the applications designed for this purpose.

Secondly, in order to improve user confidence, it will be essential to pay attention to the perceived quality of the payment system analyzed, through the reliability, accuracy and information provided, which are fundamental aspects for the potential users of the payment tools studied. As trust is the second most important factor influencing take-up, promotional campaigns should also focus on activities aimed at building consumer trust.

Thirdly, the results showed significant differences in perceived risk in the relationships between usefulness and trust with intention to use. In this respect, it will be necessary for P2P payment tools to implement rigorous security measures to keep not only users’ transactions protected but also their personal data by ensuring the integrity of the information.

Finally, companies must take into account the changes in consumer behavior that are occurring due to social changes in the face of the COVID-19 pandemic (Daragmeh *et al.*, 2021; Liébana-Cabanillas *et al.*, 2022). In recent months, new payment systems have been established to reduce the contact between buyer and seller, which has improved the growth prospects of contactless payment systems and P2P systems themselves, so companies should encourage their use because of the advantages that they offer compared to other traditional payment systems.

6.4 Limitations and further research

Like any research, this study also has some limitations that can be considered a justified starting point for future research. Firstly, with regard to the sample, only cell phone users

with experience of purchasing through these terminals were used, but their experience with payment systems prior to P2P payment systems was not assessed. It would be interesting to contrast the effect of usage experience in future research and to analyze its importance in the decision process for a continuous use, as well as to review the drivers and barriers between users and non-users in a more exhaustive way.

Additionally, the research was conducted at a single point in time, which means that the study lacks the dynamism of including observations and measuring them at consecutive time intervals. To overcome this limitation, it is proposed to carry out a longitudinal study and to analyze over time the variations that may occur. A longitudinal approach would make it possible to check the robustness of the relationships and constructs established and to verify, from a temporal perspective, the evolution of the effects of the variables analyzed.

Regarding the proposed theoretical framework, in spite of being adequate due to the empirical evidence that numerous studies have obtained from it, it would be interesting to introduce new drivers in the analysis of the users' intentions, as well as in the measurement of the real behavioral use of P2P payment systems.

In addition, we propose a comparative analysis between the different services offered by Bizum, such as payments to merchants or donations among others.

To close, it would be also interesting to analyze the possible moderating effects of other variables related to payment systems included by other, recent research, as well as the effects of different cultural factors through a cross-national study.

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Constructs	Items	Mean	S.D.	Excess kurtosis	Skewness
Subjective norms (SN)	SN1	3.832	1.510	−0.269	−0.126
	SN2	3.459	1.550	−0.503	0.040
	SN3	3.275	1.652	−0.854	0.120
	SN4	3.595	1.557	−0.557	−0.046
Perceived quality (QUAL)	QUAL1	4.348	1.320	0.287	−0.272
	QUAL2	4.227	1.475	−0.283	−0.328
	QUAL3	4.464	1.471	−0.061	−0.488
	QUAL4	4.512	1.388	0.275	−0.519
	QUAL5	4.755	1.398	0.456	−0.684
	QUAL6	4.658	1.373	0.412	−0.573
	QUAL7	4.407	1.406	0.050	−0.352
Personal innovativeness (PII)	PII1	4.215	1.581	−0.391	−0.299
	PII2	4.419	1.486	−0.037	−0.411
	PII3	4.521	1.479	0.019	−0.434
	PII4	4.408	1.412	0.244	−0.348
Perceived usefulness (PU)	PU1	4.066	1.695	−0.725	−0.260
	PU2	3.943	1.641	−0.679	−0.180
	PU3	3.591	1.694	−0.830	0.046
	PU4	4.051	1.652	−0.645	−0.293
Perceived trust (TR)	TR1	4.365	1.337	0.302	−0.261
	TR2	4.144	1.356	0.212	−0.163
	TR3	4.211	1.326	0.443	−0.193
	TR4	4.255	1.340	0.308	−0.210
	TR5	4.153	1.403	0.093	−0.158
Intention to use (IU)	IU1	3.499	1.656	−0.779	0.083
	IU2	3.508	1.649	−0.792	0.058
	IU3	3.553	1.687	−0.807	0.094

Source(s): Own elaboration

Table A1.
Descriptive statistics of
all items

Table A2.
Constructs and
measurement items

	<p><i>Perceived usefulness</i></p> <p>Peer-to-peer mobile payment systems are useful payment methods (PU1)</p> <p>Using peer-to-peer mobile payment systems makes it easier to handle payments (PU2)</p> <p>Peer-to-peer mobile payment systems allow quick use of mobile applications (PU3)</p> <p>In general, peer-to-peer mobile payment systems could be useful for me (PU4)</p> <p><i>Perceived trust</i></p> <p>I believe the peer-to-peer mobile payment system will keep its promises and commitments (TR1)</p> <p>The peer-to-peer mobile payment system is trustworthy (TR2)</p> <p>I would describe peer-to-peer mobile payment system as honest (TR3)</p> <p>I believe the peer-to-peer mobile payment system is responsible (TR4)</p> <p>In general, I trust the peer-to-peer mobile payment system (TR5)</p> <p><i>Personal innovativeness</i></p> <p>If I find out about new information technology, I seek ways to experience it (PII1)</p> <p>I am usually one of the first among my colleagues/peers to explore new information technology (PII2)</p> <p>In general, I am reluctant to try new information technologies (PII3)</p> <p>I like to try new information technologies (PII4)</p> <p><i>Subjective norms</i></p> <p>The people whose opinions I value would approve of me using peer-to-peer mobile payment system (SN1)</p> <p>Most of the people I have in mind think that I should use a peer-to-peer mobile payment system (SN2)</p> <p>They expect me to use a peer-to-peer mobile payment system (SN3)</p> <p>The people who are close to me would agree with me in using a peer-to-peer mobile payment system (SN4)</p> <p><i>Perceived quality</i></p> <p>When peer-to-peer mobile payment systems promise they will do something, they do (QUAL1)</p> <p>I consider peer-to-peer mobile payment systems to be dependable (QUAL2)</p> <p>Peer-to-peer mobile payment systems provide the services they promise when they are supposed to (QUAL3)</p> <p>Peer-to-peer mobile payment systems accurately maintain the statement (QUAL4)</p> <p>It is easy to obtain related service information (QUAL5)</p> <p>It feels safe to do business with the company (QUAL6)</p> <p>The statement is clear and ease to understand (QUAL7)</p> <p><i>Intention to use</i></p> <p>Given the opportunity, I will use mobile peer-to-peer mobile payment systems (IU1)</p> <p>I am likely to use peer-to-peer mobile payment systems in the near future (IU2)</p> <p>I am open to using peer-to-peer mobile payment systems in the near future (IU3)</p> <p>Perceived risk</p> <p>Other people can get information about my online transactions if I use this tool (PR1)</p> <p>There is a high potential for money wasted if I make purchases on the Internet/social networks using this tool (PR2)</p> <p>There is significant risk in making purchases on the Internet/social networks using this tool (PR3)</p> <p>I think that making purchases on the Internet/social networks with this tool is a risky choice (PR4)</p>
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The common welfare human resource management system and innovativeness: the mediating role of altruism

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Abstract

Purpose – The paper analyzes and develops Chiva's (2014) proposal on the common welfare HRM system and uncovers its relationship with innovativeness, using altruism as a mediator.

Design/methodology/approach – The common welfare HRM system implies a certain human and organizational development of the classic control and commitment HRM systems, and its main goal is to promote innovation through a prosocial approach. To this end, the authors investigated its HRM practices, developed a measurement instrument and provided initial illustrative evidence of some of its main implications for innovativeness and altruism. They tested these relationships on a sample of 269 Spanish firms using structural equations and bootstrapping to confirm the significance of the mediated effect.

Findings – Results confirm the study's hypotheses, thus supporting the common welfare HRM system as a relevant tool for developing innovativeness through the power of altruism. This paper therefore provides empirical evidence of these relationships.

Practical implications – This study has implications that can help managers to increase innovativeness through a specific HRM system. The findings reveal that a coherent set of HRM practices based on common welfare principles and a high level of consciousness creates a climate of altruism that results in innovativeness.

Originality/value – This research shows that humanistic HRM practices also have an impact on performance variables such as innovativeness, through altruistic employees' behaviors. It also develops a measurement instrument for the common welfare HRM system and provides some initial illustrative evidence of some of its main implications.

Keywords Human resource management systems, Control and commitment HRM systems, Innovativeness, Altruism

Paper type Research paper

1. Introduction

In the last decade, some scholars have pointed to the relevance of an emerging management approach that stresses the importance of concepts such as altruism, compassion or trust (e.g. Karakas, 2010). This view, considered as more humanistic and removed from the traditional, hierarchical and individualistic approach to management, has also been related to the emergence of a new type of organization associated with the growing importance of innovation and self-management, and with a higher level of consciousness (e.g. Laloux, 2014).

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Some of the more outstanding examples or case studies examining organizations that seem to follow this view find they are particularly innovative, egalitarian, prosocial and democratic. Examples include Semco (Semler, 1989), Johnsonville Foods (Stayer, 1990), Irizar (Casadesus-Masanell and Mitchell, 2007), Valve (Valve, 2012) and Morning Star (Gino and Staats, 2014). Although these examples are not completely new, the recent attention to them suggests a renewed interest among practitioners (Lee and Edmondson, 2017, p. 38). In fact, these authors confirm this shift with evidence of, for instance, hundreds of organizations that are now adopting Holacracy (Robertson, 2015), a model that helps organizations to follow a self-management strategy. There is, therefore, considerable evidence of a paradigm shift in human resources management (HRM), and the need to understand and help organizations to invest in conscious HRM systems to further the interests of humanity, common welfare and innovation (Aust *et al.*, 2020).

Although the spiral dynamics literature (e.g. Laloux, 2014) has identified at least seven stages or consciousness levels, which tend to be linked to organizational stages, we draw on the philosophical writings of Han (2015, 2017) on society types, and on managerial typologies such as those proposed by Mintzberg (1989), to simplify these stages into three main types of workplaces or organizations: disciplinary, achievement and conscious organizations. The latter represents the highest level of consciousness and might be associated with the new management paradigm.

Given that these three organization types – disciplinary, achievement and conscious – follow different worldviews or management perspectives, they use different HRM systems to manage their employees (Chiva, 2014; Lee and Edmonson, 2017). Accordingly, we can relate each of these organizations to particular HRM systems or bundles of internally consistent HRM practices. The HRM literature has traditionally identified two systems, control and commitment (Arthur, 1994). In this paper, we add a third system, the common welfare HRM system (Chiva, 2014), which could be related to conscious organizations. Therefore, the common welfare HRM system is mainly based on the analysis of conscious organizations and on Chiva's (2014) proposal, and on the literature of sustainable HRM (e.g. Aust *et al.*, 2020), which underline the importance of HRM practices to the development of human, social and environmental issues, in addition to economic ones. In response to this call, our work aims to empirically validate a set of HRM practices previously theorized as forming the common welfare HRM system.

The common welfare HRM system implies a certain human and organizational development of both the classic control and the commitment of HRM systems (Arthur, 1994; Walton, 1985), and its main goal is to promote innovation with a prosocial approach. Indeed, the concept of "common welfare" (Felber, 2010) stresses that these HRM systems care for every stakeholder: employees, shareholders, organization, society and the environment. Despite the increasing importance of this new approach (Lee and Edmonson, 2017), little research has been carried out in the field, with the exception of some descriptive case studies or theoretical papers that analyze the concepts involved.

In this paper, we aim to develop Chiva's (2014) proposal on common welfare HRM by investigating the HRM practices, developing a measurement instrument and providing some initial illustrative evidence of some of its main implications. To this end, we first analyze and compare the three HRM systems. Second, we link the common welfare HRM system to innovativeness and altruism through our research hypotheses. We then describe the empirical research and report the main results. Finally, we discuss the key implications for the HRM literature and managers.

2. The three organization types and their three HRM systems

As the three HRM systems are based on the three types of organizations, in this section we link them and develop their HRM practices, focusing mainly on the new approach: conscious organizations and common welfare HRM systems.

Table 1 summarizes the main characteristics of the common welfare HRM system and compares it to control and commitment HRM systems (Arthur, 1994; Walton, 1985).

2.1 *Disciplinary organizations and control HRM system*

Disciplinary organizations are autocratic and bureaucratic, which could be associated with Mintzberg's (1989) entrepreneurial and machine bureaucracy configurations, as their coordinating mechanisms are usually direct supervision and standardization of work, respectively. Their focus is on power, domination, rules, bosses, efficiency and conformism.

In terms of HRM, these organizations tend to implement the control HRM system (Heinsman *et al.*, 2008), designed to lower labor costs by enforcing employee obedience through specific rules and procedures (Arthur, 1994). The aim of the control HRM system is to maximize individual performance through hierarchical control, based on the idea that employees will avoid work if they can. The organizational culture is typically individualistic, authoritarian and bureaucratic; top-down communication tends to predominate, and decision-making is centralized (Chiva, 2014). Consequently, change, creativity and innovation are not promoted.

These organizations select employees with demonstrated job-specific skills, so they require no training. They also consider that environmental and organizational stability means employees do not need to learn. They prioritize technical selection criteria, which implies that social, emotional or motivational attributes are downplayed.

	Control HRMS	Commitment HRMS	Common welfare HRMS
Recruitment and selection	Selecting employees with demonstrated job-specific skills. Emphasis on technical selection criteria	Selecting employees that fit into the culture. Emphasis on social selection criteria	Selecting employees who are eager to learn and to challenge their own and other people's ideas. Emphasis on learning capability selection criteria
Training and development	Individual competencies. Improve the tasks employees do. Seniority and job performance as criteria for promotion. Vertical promotion	Social or shared competencies. Learning new job skills. Job performance and competences as criteria for promotion. Vertical and horizontal promotion	Focus on human development and growth. Contribution to the company and humanistic traits (compassion, altruism, etc.) as criteria for promotion. Horizontal promotion
Evaluation	Job performance appraisal.	Job performance (goals achieved) and individual competences appraisal.	Self-appraisal and peer reviews. People are assessed by their general contribution to the company. Importance of evaluating altruism, compassion and empathetic behaviors
Compensation	Individual based. Carried out by managers. Wages based on seniority and job performance (and formal ranking). Dispersed pay structure. No salary transparency. Individual incentives	Individual- and group-based. Carried out by managers, subordinates and peers. Wages based on job performance and individual competences (and formal rank). More compressed pay structures. Partial transparency. Individual and team incentives	Wages based on contribution to the company and humanistic traits. Equity and retributive justice. Full salary transparency. Organisational incentives

Table 1.
HRM practices

Source(s): Based on Chiva (2014)
Table by authors

Seniority and job performance are the main criteria for promotion, which follows the traditional vertical career-ladder model. Managers in disciplinary organizations assess individuals on their job performance, or on how well they do their jobs according to their subjective criteria. Salaries tend to be linked to seniority, job performance and formal rank. Pay structures in such organizations are usually dispersed, and salaries are not transparent. When incentives are in place, they are individual or linked to individual job performance.

2.2 Achievement organizations and commitment HRM systems

Achievement organizations focus on standardizing outputs or management by objectives (Drucker, 1954) or even standardizing skills, depending on the organization. They could therefore be related to Mintzberg's (1989) diversified and professional configurations. They are usually related to concepts like achievement, engagement, passion, incentives and meritocracy, which, in terms of HRM systems, have been associated with the commitment HRM system: strategic HRM system and high performance or high involvement work systems (e.g. Heinsman *et al.*, 2008) designed to achieve employee engagement and financial and market outcomes (Kramar, 2014). Although these systems might achieve some good innovation results (e.g. Park *et al.*, 2019), this does not seem to happen through prosocial behaviors. Additionally, as Pink (2011) states, individual incentives and rewards, which are so important in this system, are barriers to promoting creativity and innovation through employees. Hence, these systems might achieve innovation goals, but without fostering innovative and creative attitudes among the employees.

The commitment HRM system shapes desired employee behaviors and attitudes by forging psychological links between organizational and employee goals (Arthur, 1994). To this end, it fosters close and harmonious bonds across the organization, thus strengthening the importance of organizational culture in this HRM system. This system therefore underlines the importance of the group and also of attitudes and competences other than technical skills, usually being engaged, committed, extroverted, optimistic, positive and so on (Davies, 2021). According to this author, this is the best way to be sure that employees will be productive.

Through commitment HRM systems, achievement organizations select employees that fit into their competitive culture; they stress not only technical but social selection criteria. They tend to hire highly motivated, competitive and optimistic people.

Because of the importance given to cultural issues, these organizations attempt to train individuals' social or shared competencies, such as teamwork skills.

Job performance and individual competences are the most important criteria for promotion. Not only are job outcomes – achieving goals – important, but also how jobs are done and the competences used in them. These competences tend to be associated with competitiveness, self-motivation or engagement. Although climbing the ladder through vertical promotion is important, horizontal promotion is also sometimes used.

Commitment HRM systems tend to assess job performance through the goals attained, and also employees' competences through tools such as 360-degree feedback. Evaluation is both individual- and group-based, meaning that individuals and teams are evaluated by managers, but also by subordinates and peers, especially when evaluating employees' competences. Accordingly, salaries are mostly based on job performance (goals achieved), individual competences and formal rank as in the control system. Generally speaking, organizations that implement this HRM system have more compressed pay structures than those following the control system, and are also more transparent. Incentives are essential in these organizations; while most incentives are individual, social or team aspects are important, and therefore team incentives are also valued.

2.3 Conscious organizations and common welfare HRM systems

Finally, conscious organizations are related to concepts like compassion, learning, harmony, sustainability, humanism, systemic thinking and self-management. Their coordinating mechanism is usually mutual adjustment, which could be linked to Mintzberg's ad-hocracies or innovative organizations (1989) or self-managing organizations (Lee and Edmondson, 2017). According to these authors, self-managing organizations are based on post-bureaucratic approaches, humanistic management and organizational democracy. They are therefore more aware of many more aspects, points of view and approaches than other organizations, which makes them more concerned about their stakeholders and increases their inquiring, learning and innovating capabilities. In this paper, we propose that such organizations tend to use a common welfare HRM system (Chiva, 2014). This approach attempts to encompass other similar proposals such as sustainable HRM (e.g. Kramar, 2014), green HRM (Dumont *et al.*, 2017) and socially responsible HRM (Shen and Zhu, 2011).

Conscious organizations aim to care for every stakeholder -employees, shareholders, organization, society and environment and to promote transparency, justice, autonomy, learning, creativity, change and innovation throughout the organization (e.g. Casadesus-Masanell and Mitchell, 2007; Valve, 2012). Concerning human capital, individuals are fully autonomous, so self-management is integral to the organization (Gino and Staats, 2014). For this to occur, people need to be critical or eager to learn, and have humanistic traits like compassion or altruism. In conscious organizations, through the common welfare HRM system, people are trusted, and secrecy of any kind is avoided by making all information about the organization freely available to everyone (e.g. Gino and Staats, 2014).

Common welfare HRM system organizations select employees who are eager to learn and challenge their own and other people's ideas and inquiry, and questioning and generative learning are therefore essential.

Monotony and boredom are uncommon in these organizations because each person performs a variety of tasks and roles (Valve, 2012). Promotion is either completely absent (Casadesus-Masanell and Mitchel, 2007) or it is horizontal (Valve, 2012); in other words, there is a constant readjustment of roles and tasks among employees, with their agreement, enabling them to take on more responsibilities without climbing a hierarchical ladder. Contribution to the company and humanistic traits (compassion, altruism, etc.) are very important criteria for promotion.

Evaluation is carried out through self-appraisal and peer reviews. People are assessed on their general contribution to the company (e.g. Stayer, 1990), although altruism, compassion or empathetic behaviors are also valued. Differences in salaries are minimal, and earnings tend to be transparent (e.g. Gino and Staats, 2014). Only organizational incentives, not individual and team incentives, are used (Stayer, 1990). Under the common welfare HRM system, colleagues evaluate each other's contributions to the team, so that those with more experience or talent, or who make a greater effort, score higher and earn more as a result (Valve, 2012). To a certain extent, therefore, salaries can depend on contribution, but there is little difference between those who contribute the most and the least (Stayer, 1990). In some common welfare HRM system organizations, employees decide what their own salaries should be (Semler, 1989). This decision is taken in light of all the information about what other members of the organization earn and contribute, the financial health of the organization and other relevant data. Often a committee is also set up to advise employees. There is a certain retributive justice and full salary transparency.

In sum, the common welfare HRM system tends to be implemented in organizations with high innovation capacity, where creativity, inquiry and self-management are promoted, and where economic results are not the only aim, but also social, environmental or human outcomes. These features can be developed when human beings are regarded as important, when humanity is integral to the organization and when individuals are supportive,

empathetic and helpful: altruism, or the importance of the other, is therefore essential. The contention of our model is that the effect of the common welfare HRM system on innovativeness is mediated by altruism within organizations. Accordingly, we develop and test three hypotheses representing (a) the relationship between the common welfare HRM system and altruism, (b) the relationship between altruism and innovativeness and (c) the relationship between the common welfare HRM system, altruism and innovativeness.

3. Hypotheses

3.1 *The common welfare HRM system and altruism*

Conscious organizations and their common welfare HRM system are associated with a high level of consciousness, reflected in their attention to all stakeholders and their concern for human beings. When individuals are generally more attentive or mindful, they are also more observant of others' needs or problems, so they are more predisposed to be altruistic (Wilber, 2001). Thus, higher attention, consciousness and mindfulness could be associated with higher levels of altruism. In a common welfare HRM system, individuals show unselfish caring for others, notice other people's suffering, feel others' pain and behave in a way intended to ease that suffering. Therefore, this system entails people acting to improve others' welfare or situation.

Altruism within organizations, considered as a prosocial behavior, refers to voluntary behaviors that have the effect of helping another person with a relevant task or problem (Organ, 1988). Altruism consists of thinking about the welfare of others, feeling concern for them and behaving in a way that helps them (Emmerik *et al.*, 2005). It involves behaviors directed toward the end-state goal of increasing the other's welfare or reducing their distress, although one's own welfare may be also increased by such altruistic helping (Batson *et al.*, 1981). According to Batson *et al.* (1981, p. 291), although altruism may have a personal gain for the helper, it "must be an unintended by-product and not the goal of the behavior." This distinguishes the conception of altruism from egoism, that is, when helping is directed toward increasing the helper's own welfare. In organizational settings, altruism is considered as all the "discretionary behaviors that have the effect of helping a specific other person with an organizationally relevant task or problem" (Organ, 1988, p. 8). Examples of altruism in organizations are behaviors such as "helping others who have been absent," "orienting new people even though it is not required," "helping others who have heavy workloads" and "assisting [the] supervisor with his or her work" (Smith *et al.*, 1983, p. 657).

Organizations with a common welfare HRM system recruit and select people based on their learning capability. Individuals who are eager to learn and who tend to be more aware or attentive to other things and people are more empathetic and predisposed to serve others, which can encourage altruism in organizations (Vieten *et al.*, 2006).

Moreover, the common welfare HRM system focuses on personal development and growth of employees, and stresses the importance of humanistic traits as criteria for promotion. Thus, this system promotes individuals that develop collaborative, compassionate and altruistic attitudes. These attitudes are related to self-transcendent values that focus attention away from the self and towards helping others (Sosik, 2005). Accordingly, the practices of training and promotion in this common welfare HRM system may foster the overall presence of altruism within organizations.

On the other hand, the common welfare HRM system fosters horizontal promotion by encouraging people to multi-task and take on several job functions (Chiva, 2014). In such a situation, helping behavior among employees becomes essential to successful management of multiple tasks and new job demands (Smith *et al.*, 1983). Moreover, in organizations applying a common welfare HRM system, evaluation of altruism and empathetic behaviors is important (Chiva, 2014), and thus reinforces such behaviors among employees. Likewise, both wages and appraisal are based on the employee's overall contribution to the company, customers and/or users, which is evaluated through self-appraisal and peer reviews.

Since bonuses tend to be organizational, rather than individual- or team-based, employees may be more predisposed to help others in order to improve organizational functioning, by, for example, teaching others new tasks. Furthermore, willingness to behave altruistically may depend on the degree to which an employee considers that the organization treats them fairly (Organ, 1988). Thus, when a climate of equality and collective justice is created, people would be less likely to have self-defensive attitudes and behaviors and would be more predisposed to help others altruistically. Based on these arguments, we suggest that evaluation and compensation in organizations with a common welfare HRM system may encourage altruism.

In short, the common welfare HRM system embraces HRM practices that may contribute to the emergence of a climate of altruism in organizations. Accordingly, we propose the following hypothesis:

H1. The common welfare HRM system has a positive effect on altruism.

3.2 Altruism and innovativeness

Altruism in organizations helps to create an emotional and affective bond between individuals and entails positive interaction and cooperation between parties (Guinot *et al.*, 2016). The literature indicates that when people experience positive interaction, they are more likely to engage in creative behaviors, generate creative ideas and solve problems creatively (e.g. Isaksen and Ekvall, 2010). Moreover, people tend to participate in more innovative actions and generate more ideas when they have previous experiences of positive responses from others (e.g. Ellonen *et al.*, 2008). Innovativeness or innovation capacity is considered as the openness of an organization to new ideas, new ways to do things, creativity and so forth which gives the organization the opportunity to be the first to market new products and services (Calantone *et al.*, 2002).

Altruism therefore seems to be linked to employee behaviors that promote innovativeness. In fact, the literature finds that the overall presence of altruism in organizations fuels some organizational processes directly related to innovation and innovativeness. For example, Lin (2007) found that employees motivated by altruism are more favorable to and oriented toward knowledge sharing, and are more inclined to share knowledge, which leads to superior firm innovation capability. Similarly, Akgün *et al.* (2007) showed that when people demonstrate care, concern for others and empathy, the organization can develop a climate for accepting new ideas and points of view, openness and experimentation, joint actions, exchange of information and the creation and acquisition of knowledge, which, in turn, increase new product development and innovativeness.

Therefore, employees may create an organizational climate of creativity and innovation through helping and supportive behaviors based on altruism. Thus, when employees assist others with a difficult or novel task, or provide support by sharing knowledge and expertise, they build up a helpful and supportive work environment in which creative ideas and significant knowledge are shared, suggestions for improvement are accepted, new ways of doing things and work procedures are more easily introduced and creativity is high (Zhou and George, 2001). Therefore, a climate of altruism may boost innovativeness in the organization.

Based on the above arguments, we propose the following hypothesis:

H2. Altruism has a positive effect on innovativeness.

3.3 The common welfare HRM system and innovativeness: the explaining role of altruism

The common welfare HRM system is a channel for spreading innovation and creativity throughout the organization. The main aim of a common welfare HRM system is “to foster

innovation, incremental and radical, all around the organization” (Chiva, 2014, p. 945). In these terms, conscious organizations could be related to Mintzberg’s (1989) innovative configuration or ad-hocracy, self-management organizations and humanistic management, among other post-bureaucratic approaches (Lee and Edmondson, 2017).

The common welfare HRM system includes HRM practices that underline the importance of employees’ learning. Examples are the emphasis on learning capability selection criteria to hire employees who are eager to learn and to challenge their own and other people’s ideas, or the focus on human development and growth. In this sense, leveraging human capital can be conducive to innovative activities in the firm as employees could become more flexible, risk-taking, tolerant of uncertainty and ambiguity, open to new ideas and predisposed to engage in challenging work (Chen and Huang, 2009). These organizational processes, such as learning capability and questioning ideas, for example, have been positively linked to organizational innovation (Chiva *et al.*, 2014).

Horizontal promotion implies that employees are increasingly involved in multiple tasks and several job functions. Evidence indicates that multifaceted employees innovate more than single-task employees, because when employees are able to mix tasks and skills they tend to be more creative and innovative (Mellahi and Wilkinson, 2008).

On the other hand, the appraisal mechanisms and compensation systems that the firms use play a critical role in motivating employees and influencing and reinforcing individual behavior. Firms that apply a common welfare HRM system evaluate behaviors such as altruism or compassion, thus reinforcing these behaviors in the organization. In turn, these behaviors have been shown to help develop and generate creative ideas and innovation (e.g. Domínguez-Escrig *et al.*, 2016). Accordingly, evaluation and compensation practices linked to the common welfare HRM system would lead to greater innovativeness.

In sum, all the common welfare HRM system practices aim to foster innovation within the organization. These practices encourage an organization to be open to new ideas, new ways of doing things, being creative and so on, which give them the chance to be highly innovative. Based on the above arguments, we propose the following hypothesis:

- H3.* The relationship between the common welfare HRM system and firm innovativeness is positively mediated by altruism.

4. Research methodology

4.1 Data collection

The study population consisted of 11,594 Spanish firms (this list was provided by the Spanish Ministry of Economy and Competitiveness). Approximately 900 companies were randomly chosen, contacted by telephone and invited to participate in this research. From those that agreed to collaborate, we finally gathered 269 complete questionnaires (a response rate of 29.9%). Nonrespondent bias was assessed to check for any differences between companies that took part in the study and those which declined. To this end, annual turnover, number of employees and firm age from early and late respondents were compared by means of an independent sample *t*-test, which led us to conclude that none of the companies’ characteristics showed significant differences ($p > 0.05$).

In order to prevent common method variance, a multiple-respondent approach was adopted (e.g. Mackenzie and Podsakoff, 2012). Therefore, questions related to the common welfare HRM system and altruism were addressed to human resources managers whereas questions about innovation were answered by the organization’s CEO. They were chosen to participate in the study because their position and professional experience give them an overall picture and in-depth knowledge of the organization. *Measurement instruments*

Common welfare HRM system: From the concept of the common welfare HRM system adopted in our theoretical review and based on Chiva's (2014) conceptual paper, we proceeded to develop a measurement instrument. In this model, the common welfare HRM system is conceptualized following other HRM system scales (e.g. Snell and Dean, 1992) as a higher-order construct composed of several first-order factors representing the main HRM policies: recruitment–selection, training–promotion and evaluation–compensation. The items were based on Chiva's (2014) description of the main HR practices of this system described in Table 1 set of 16 items was initially considered. First, and following Fokkema and Greiff's (2017) recommendations, the sample was randomly split into two groups. An exploratory factor analysis (EFA) was run with the first group, and a confirmatory factor analysis (CFA) was conducted with the second.

After the EFA analysis, eight items and three factors were finally selected: (1) recruitment and selection, (2) training and promotion and (3) evaluation and compensation.

The reliability analysis of the common welfare HRM system measure was 0.82, exceeding Nunnally's reliability criterion of 0.70 (Nunnally, 1978). The Cronbach's alphas for each individual dimension were also acceptable: 0.85 for recruitment and selection, 0.79 for training and promotion and 0.71 for evaluation and compensation.

Finally, a CFA was also conducted (Figure 1). The overall fit of the second-order factor model we tested was satisfactory (chi-square = 53.35, df = 16, p value = 0.000, chi-square/df = 3.33, NFI = 0.933, NNFI = 0.915, CFI = 0.952, RMSEA = 0.075).

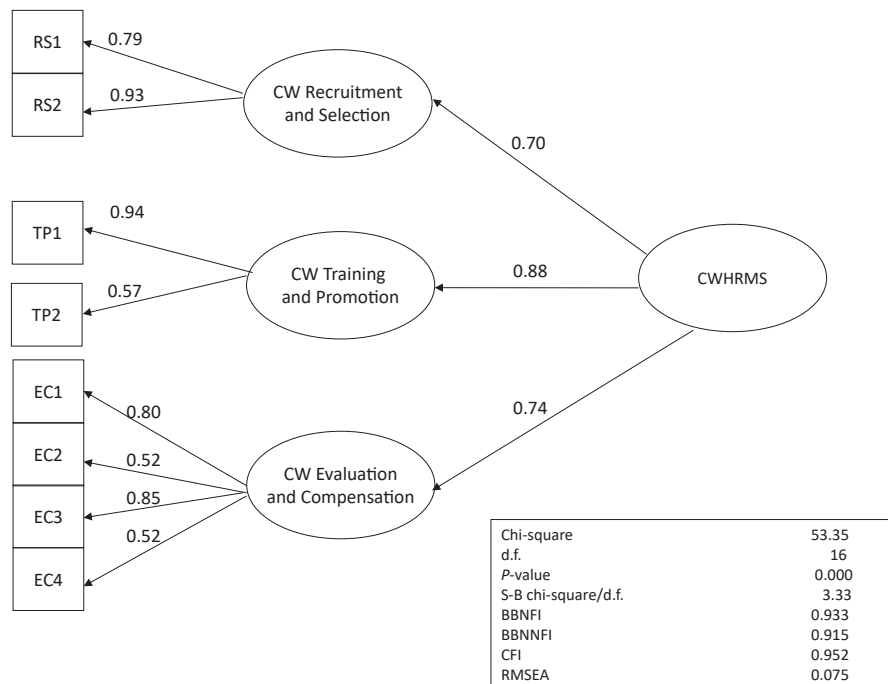


Figure 1.
Common welfare HRM
system: second-
order CFA

Note(s): All factor loadings are significant at $p < 0.001$

Source(s): Figure by authors

Altruism: Altruism was measured using the 5-item scale proposed by Podsakoff *et al.* (1990). The reliability for this construct is excellent, with a Cronbach's alpha of 0.95.

Firm innovativeness: The measure of innovativeness, which comprises four items, is based on Calantone *et al.* (2002) and yields a Cronbach's alpha value of 0.80.

Control variables: Based on previous research (e.g. Cabello-Medina *et al.*, 2011), annual turnover, number of employees and age of the company (measured in years since foundation) were used as control variables since they may be related to firm innovation. More specifically, because large firms may have access to more resources that affect their ability to innovate, annual turnover and number of employees were used to control for firm size. The age of the firm was also included to control for any advantages associated with increased time to adopt HRM practices and for them to evolve (Guthrie, 2001).

The items finally considered for each construct are presented in the Appendix. All the items were measured on a seven-point Likert scale.

4.2 Analyses

Structural equations, maximum likelihood estimation method and the statistical software AMOS 23 were used to empirically validate the model.

5. Results

5.1 Descriptive statistics and psychometric properties of the measurement scales

Table 2 shows the descriptive statistics of the control variables (annual turnover, number of employees and firm age), summarizing the main characteristics of the companies that participated in the study.

The descriptive statistics (means, standard deviations and factor correlations) for the data analysis are shown in Table 3. Accepted practices (Anderson and Gerbing, 1988) were followed to assess the psychometric properties of the measurement scales: dimensionality, reliability, and content, convergent and discriminant validity.

In the case of the common welfare HRM system construct, confirmatory factor analysis (CFA) of the second-order factor model (Figure 1) supported multidimensionality (chi-square = 53.35; p value = 0.00; Chi-square/df = 3.33; NFI = 0.924; NNFI = 0.933; CFI = 0.915; RMSEA = 0.08).

Apart from CFA, we followed the approach advocated by Anderson and Gerbing (1988) to assess a full measurement model, which in our case included all the variables (chi-square = 216.52; p value = 0.00; chi-square/df = 1.93; NFI = 0.924; NNFI = 0.953; CFI = 0.961; RMSEA = 0.059). All the standardized estimates were significant and in the expected direction.

Annual turnover		Number of employees		Firm age	
Up to 500,000 euros	4.8%	Up to 25	30.9%	Up to 10 years	13.2%
From 500,001 to 2,000,000	23.4%	26–50	40.5%	11–25	50.6%
From 2,000,001 to 5,000,000	43.1%	51–100	20.4%	26–50	27.9%
More than 5,000,000	28.6%	101–250	7.1%	More than 50	8.3%
		More than 250	1.1%		
Mean	8,829,926.4		58.8		26.5

Source(s): Table by authors

Table 2.
Descriptive statistics of
the control variables

Table 3.
Means, standard
deviations and factor
correlations

[illegible]

The results of the reliability analysis (Table 4) were also satisfactory. Cronbach's alpha coefficient and composite reliability were obtained and showed satisfactory results, above the recommended cut-off values of 0.7 (Nunnally, 1978).

Since all the scales used in the study were grounded in the academic literature, content validity is supported.

Confirmatory factor analyses were conducted to evaluate convergent validity. Altruism, common welfare HRM system and innovativeness CFA showed that all factor loadings were significant and presented an NFI value higher than 0.9, which suggests strong convergent validity.

According to the approach proposed by Fornell and Larcker (1981), our data also meet the requirements for discriminant validity (the square root of the average variance extracted is greater than the construct correlations).

5.2 Testing the research hypotheses

A direct effect model was tested to detect any direct relationship between the common welfare HRM system and innovativeness (Figure 2). The overall fit statistics for this model were satisfactory (chi-square: 92.33; p value: 0.000; df: 49; chi-square/df: 1.88; NFI: 0.927; NNFI: 0.951; CFI: 0.964; RMSEA: 0.057). The standardized direct effect was significant. Therefore, a second model was run to test for mediation.

Figure 3 shows the indirect causal model tested and includes standardized parameter values for the various linkages. The overall fit statistics of this causal model were good (chi-square: 216.52; p value: 0.000; df: 112; chi-square/df: 1.93; NFI: 0.924; NNFI: 0.953; CFI: 0.961; RMSEA: 0.059).

The standardized estimates were significant and in the expected direction, except for the control variables (annual turnover, number of employees and firm age), which were nonsignificant.

Results show a decrease in the previous direct relationship between common welfare HRM system and innovativeness (although it remained significant) when the mediator –altruism– was included; mediation is therefore partial. In addition, the indirect effect model shown in Figure 3 points to (1) a positive relationship between the common welfare HRM system and altruism, and (2) a positive relationship between altruism and innovativeness. Finally, the mediated model shows a higher explained variance for innovativeness than the direct effect model (23% vs 19%). The significance of the mediated effect was tested using bootstrapping (Hayes, 2017). The estimated bias-corrected confidence interval (5,000 samples) did not include zero (0.088–0.460). Therefore, the null hypothesis of no mediation effect can be rejected.

In sum, all our hypotheses are supported, and, according to our results, the effects of the common welfare HRM system on firm innovativeness are mediated by altruism.

Construct	Cronbach's alpha	Composite reliability
CWHRMS: recruitment and selection	0.85	0.87
CWHRMS: training and promotion	0.79	0.82
CWHRMS: evaluation and compensation	0.71	0.73
Altruism	0.95	0.95
Firm innovativeness	0.80	0.83
Note(s): CWHRMS: common welfare HRM system		
Source(s): Table by authors		

Table 4.
Reliability of the
measurement scales

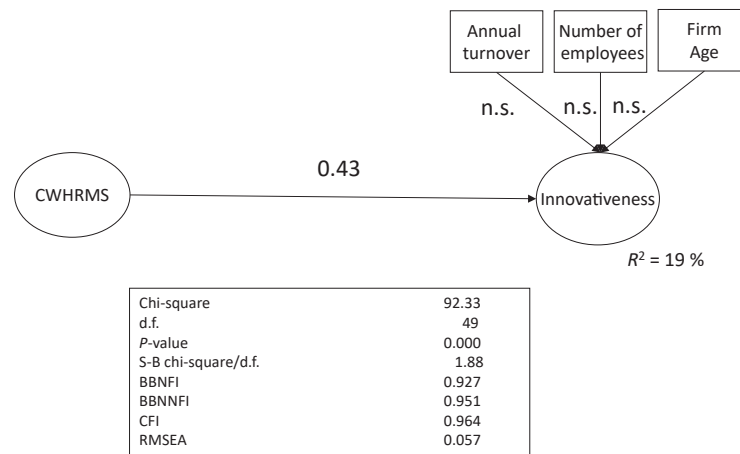


Figure 2.
Direct effect model

Source(s): Figure by authors

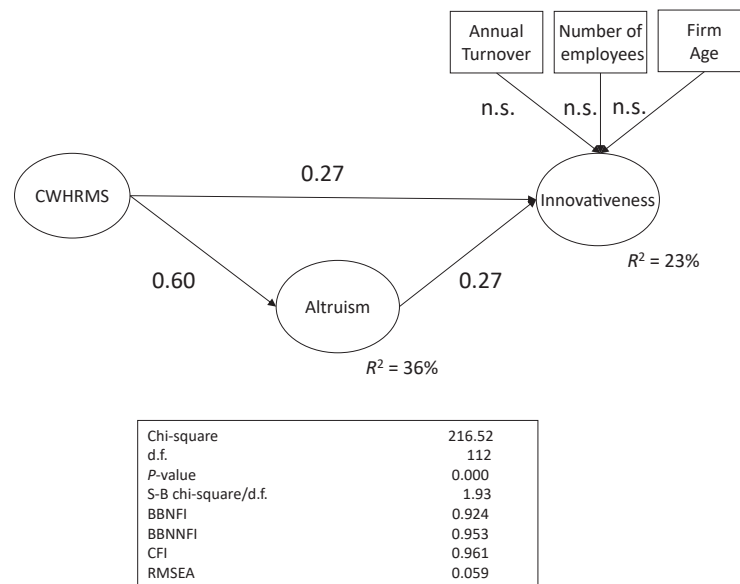


Figure 3.
Causal model and
hypotheses

Source(s): Figure by authors

6. Discussion

This study aimed to empirically analyze a new approach related to a higher level of consciousness in management, specifically in human resource management. Beyond disciplinary and achievement organizations, and their control and commitment HRM systems, respectively, organizations and society in general are calling for more conscious and compassionate organizations concerned not only with financial performance, or even innovation, but also with the common welfare of employees and stakeholders. This research

delves into the HRM–innovation relationship and tests the link between the common welfare HRM system and innovativeness through altruism.

The empirical findings presented in this paper suggest that this system, explained by three dimensions (common welfare recruitment and selection, common welfare training and promotion, and common welfare evaluation and compensation), has an impact on innovativeness through altruism. The common welfare HRM system, which represents a significant departure from the traditional control and commitment HRM systems, aims to increase the learning, flexibility, humanity, consciousness, self-management and innovation capability within organizations. The main goal of the common welfare HRM system is to foster innovation through a prosocial approach.

Hence, results show how the common welfare HRM system promotes a climate of altruism in organizations that, in turn, affects organizational innovativeness.

6.1 Theoretical and practical implications

On a theoretical level, our paper represents a step forward in the study of a new HRM system based on common welfare principles grounded on higher levels of consciousness, and its organizational outcomes such as innovation.

This study therefore responds to the call for a paradigm shift in the social sciences, and especially in HR management. This paradigm shift is based on the need to build organizations whose key values are caring for others (all stakeholders) and humanity (e.g. Rynes *et al.*, 2012). This is what we previously described as conscious organizations, which are strongly related to common welfare HRM practices, and are defined as innovative organizations that care for all stakeholders and underline the importance of humanity and self-management.

The study therefore provides empirical evidence for the common welfare HRM system and fills the gap in HRM research in empirical testing of alternative HRM systems in line with more conscious and humanistic values, such as sustainable HRM (Aust *et al.*, 2020; Kramar, 2014), green HRM (Dumont *et al.*, 2017) or socially responsible HRM (Shen and Zhu, 2011), rather than an exclusively performance-based focus. Indeed, HRM systems that are only concerned with performance, such as high performance HRM systems, have been shown to have a dark side as they do not sufficiently take employees into account (Jensen *et al.*, 2013).

In their literature review, Seeck and Diehl (2017) found that the potential mediators considered in the HRM–innovation relationship are somewhat scattered, concluding that explanatory mechanisms have received limited attention in the literature. The present paper contributes to fill these gaps by empirically analyzing the relationship between the common welfare HRM system, altruism and innovativeness.

As well as bridging the gap in the existing HRM literature, our study also provides empirical support for a common welfare HRM system linked to innovation through altruism. It clearly shows the positive impact that this system has on innovativeness by promoting the generalized presence of altruism within organizations. These findings align with previous research showing that altruism plays an important role in organizations (e.g. Domínguez-Escrig *et al.*, 2016). Altruism acts as a catalyst for common welfare practices, and, in turn, employees are willing to help colleagues when the need arises. This atmosphere of others-oriented behavior will lead to a more creative and innovative outcome (Akgün *et al.*, 2007). Although the mediating role of others-oriented behavior (such as prosocial behavior) in organizational outcomes has been tested in previous studies (Grant and Berry, 2011), research on this topic is still scarce. Therefore, our study makes a meaningful contribution to understanding the key role of altruism in the HRM system–innovation link. We also contribute to the literature that analyzes the antecedents of innovation (e.g. Alegre and Chiva, 2008; Chiva *et al.*, 2014; Jiménez-Jiménez and Sanz-Valle, 2011).

This study has implications that can help managers to increase innovativeness through a specific HRM system. Our findings reveal that a coherent set of HRM practices based on common welfare principles and a high level of consciousness create a climate of altruism that results in innovativeness. Managers who want to increase altruistic behaviors in their organizations should pay attention to a range of HRM practices characterized by these values.

6.2 Limitations and future research

Specific methodological limitations must be recognized in the present study. First, a multiple-respondent approach was adopted, and informants were chosen because of their position in the company and their knowledge about it. This method has some drawbacks, such as low response rates, higher data collection costs or social desirability bias. In addition, recent research (e.g. Jensen *et al.*, 2013) suggests that employees' experience of HR systems has the most direct influence on their behaviors, thus revealing a need for research exploring the impact that employees' experience of HR systems has on their outcomes. Therefore, future research could usefully extend the results of this paper by considering the employees' point of view. Second, we only included one subjective measure of innovativeness. Including an objective measure of innovation may have lent stronger support to our findings. However, the outcomes of innovation are sometimes difficult to objectively identify and measure in organizations (Dewangan and Godse, 2014). Future research should also explore the effects of the common welfare HRM system on different types of innovation (radical/incremental) innovation and different phases of the innovation process (idea generation, promotion, realization or implementation).

7. Conclusions

Although the relevance of human resources has sometimes been neglected, few organizations will gain a competitive advantage based solely on financial resources (Haynes *et al.*, 2015). Therefore, human capital and prosocial behavior are some key factors in opening doors to innovation. Attending to human resources through conscious practices that pursue common welfare and humanity might enable organizations to nurture an atmosphere that prioritizes caring for others (through altruistic behavior, for example), which, in turn, will lead to more innovation. This idea clearly aligns with the paradigm shift in the social sciences that appears to be initiating permanent change in the sphere of management and organizations.

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Appendix

Common Welfare HRM System scale

CW Recruitment and selection

- RS1. In our company, people are selected for their eagerness to learn.
- RS2. Our company hires people who inquire, experiment or attempt new things.

CW Training and promotion

- TP1. Personal development and growth are an essential part of the company's philosophy.
- TP2. In our company people carry out multiple tasks and job functions, so they are very versatile.

CW Evaluation and compensation

- EC1. In our company people are assessed on their general contribution to the company and/or the customers/users.
- EC2. In our company people are appraised by their peers or they simply self-appraise.
- EC3. Our company places a high value on altruistic, compassionate and empathic behaviors.

EC4. In our company people feel that the salary difference between the highest and lowest earners is fair.

Altruism scale (Podsakoff *et al.*, 1990)

AL1. The people of our company help others who have been absent.

AL2. The people of our company help others who have heavy work loads.

AL3. The people of our company help orient new people even though is not required.

AL4. The people of our company willingly help others who have work related problems.

AL5. The people of our company are always ready to lend a helping hand to those around him/her.

Innovativeness scale (*based on Calantone et al.*, 2002)

IN1. Our Company frequently tries out new ideas.

IN2. Our company seeks out new ways to do things.

IN3. Our company is creative in its methods of operation.

IN4. Our company is often the first to market with new products and services.

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Exploring the roles of self-determined motivation and perceived organizational support in organizational change

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Self-determined
motivation

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Abstract

Purpose – The primary purpose of this study is not only to examine the connections between self-determined motivation, attitudes toward change and participation in change, but also to explore the moderating impact of perceived organizational support on organizational change, and the mediating role of attitudes toward change in the link between perceived competence and participation in change.

Design/methodology/approach – The data were collected from one semiconductor manufacturing company (study 1) and one logistics service company (study 2). Employees who experienced organizational change before were invited to finish the survey. The partial least squares-structural equation modelling (PLS-SEM) technique and SPSS PROCESS (model 14) were utilized to analyze the data.

Findings – The study findings indicated that the perceived autonomy and relatedness were positively connected with perceived competence, which in turn would lead to better attitude toward change. Additionally, it was found that the perceived competence and attitude toward change would positively predict participation in change. More importantly, perceived organizational support would reinforce the positive relationship between attitude toward change and participation in change.

Originality/value – Although there are many organizational change reports, relatively little attention has been paid not only to the mediating role of attitudes toward change in the implication of organizational change but also to the moderating impact of perceived organizational support on the final success of organizational change.

Keywords Attitudes toward change, Change management, Self-determination, Perceived organizational support, Organizational change

Paper type Research paper

Introduction

Several researchers have placed much emphasis on the key role of self-determined motivation in previous research, probably due to its impact on role identity (Güntert and Wehner, 2015), job satisfaction (Lam and Gurland, 2008), organizational outcomes (Gagné and Deci, 2005), psychological well-being (Perreault *et al.*, 2014), learning effectiveness and efficiency (Akbari *et al.*, 2015). For example, an early report by Lam and Gurland (2008) suggested self-determined work motivation positively influences job satisfaction. Another recent review by Güntert and Wehner (2015) found self-determined motivation positively predicts general role identity and

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organization-specific role identity. In light of this, although some researchers have intensely concentrated on the pivotal role of self-determined motivation in organizations (Gagne *et al.*, 2000; Sheldon *et al.*, 2003; Shin and Jung, 2021), there is a lack of research looking into the impact of self-determined motivation on organizational change. Specifically, whether self-determined motivation, containing three innate psychological needs: perceived autonomy, perceived relatedness, and perceived competence, facilitates better attitude toward change and participation in change has not yet been fully explored in previous reports.

In addition, recently, there has been growing interest in the roles of perceived organizational support and attitudes toward change in organizational studies, probably because perceived organizational support and attitudes toward change are closely associated with individual performance and organizational outcomes. For example, in a hospitality and tourism management report, Akgunduz and Sanli (2017) revealed perceived organizational support is positively related to job embeddedness, but negatively connected with turnover intention. In another vocational behavior study, Ocampo *et al.* (2018) showed perceived organizational support is closely related to career adaptability. With particular respect to the role of perceived organizational support in change participation, Fuchs and Prouska (2014) suggested perceived organizational support is one of the critical antecedents of change participation.

More importantly, several reports revealed positive attitudes toward change play a key role in implementing successful organizational change (Drzensky *et al.*, 2012; Ming-Chu and Meng-Hsiu, 2015). Although there are many organizational change reports, relatively little attention has been paid not only to the mediating role of attitudes toward change in the implication of organizational change, but also to the moderating impact of perceived organizational support on the final success of organizational change. To close this research gap, the primary purpose of this study is not only to examine the connections between self-determined motivation, attitudes toward change and participation in change, but also to explore the moderating impact of perceived organizational support on organizational change, and the mediating role of attitudes toward change in the link between perceived competence and participation in change.

In a nutshell, the significance of this study is closely and critically related to three major contributions. Specifically, one main contribution has been made by identifying the key relationship between self-determined motivation, attitudes toward change and participation in change. Another pivotal contribution is made by verifying the mediating role of attitudes toward change in the connection between perceived competence and participation. More importantly, the third major contribution is made by proving the moderating impact of perceived organizational support on the success of organizational change. The theoretical reflections and practical suggestions are provided to facilitate researchers and practitioners to improve the effectiveness and efficiency of organizational change.

Literature review and hypothesis development

Organizational change management and drivers of change

Although there is no universal definition as to the concept of organizational change, Hussain *et al.* (2018) suggested “the organizational change explains the movement of an organization from the known (current state) state to the unknown (desired future state) state” (p. 123). Actually, successful organizational change is often very difficult, because change management is closely related not only to “the process of continually renewing an organization’s direction, structure, and capabilities to serve the ever-changing needs of external and internal customers” (Moran and Brightman, 2000, p. 66), but also to managing different people in organizations. With particular respect to managing people during change, Moran and Brightman (2000) identified three central drivers of organizational change, including purpose, identity and mastery. In the process of organizational change, purpose is important, mainly because “people are goal-oriented” (Moran and Brightman, 2000, p. 66).

Specifically, the new vision and goal are regarded as key intangible forces motivating people to accomplish work requirements during change (Hussain *et al.*, 2018).

In addition, identity refers to personal identification with organizational change. Moran and Brightman (2000) revealed “Change that strikes at the core of a person’s sense of who they are will activate powerful motivations to return things to the status quo” (p. 67). In other words, whether people really identify and agree with organizational change plays a key role in determining the successful implementation of organizational change (Todnem, 2005). Finally, mastery is closely connected with personal competence and ability to deal with requirements of organizational changes. Moran and Brightman (2000) indicated since “survival depends on one’s ability to manage oneself and the environment effectively” (p. 67), it is critical to provide employees during change with training supports to help them handle possible changes and challenges in the future.

Attitudes toward change and employee participation in organizational change

Attitude, which is described as “a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (Eagly and Chaiken, 1993, p. 1), is one of the key factors influencing behavior intention and actual behavior. An early review by Yadav and Pathak (2016) revealed attitudes toward buying green products play a key role in determining purchase intention. Another recent report by Minibas-Poussard *et al.* (2018) demonstrated that saving attitudes are key predictors of saving behavior. Additionally, Casaló and Escario (2018) showed environmental attitudes are key determinants of pro-environmental behavior.

With particular respect to the role of attitudes toward change in organizational change, many studies have focused on the pivotal impact of employee attitudes toward change in organizational change, mainly because it has been shown to be closely connected with the successful implementation of organizational change (Ming-Chu and Meng-Hsiu, 2015). For example, Kwahk and Lee (2008) suggested “positive attitudes toward behavior – readiness for change – the extent to which organizational members hold positive views about the need for organizational change, as well as their belief that changes are likely to have positive implications for them and the organization” (p. 475). Additionally, Kwahk and Kim (2008) revealed the more positive attitudes toward change employees have, the less likely they are going to resist organizational change. In an early change management study, Drzensky *et al.* (2012) indicated beliefs and attitudes toward change played a key role in implementing successful organizational changes. In another management report, Ming-Chu and Meng-Hsiu (2015) added that employees’ positive attitudes toward change should be one of the central elements propelling successful organizational change.

Although numerous studies have explored organizational change, limited efforts have been devoted to examining the association between attitudes toward change and participation in change, which generally “refers to allowing employees to have input during the process of organizational change” (Chiang, 2010, p. 160). To clarify the link between these two variables, this study proposes the following hypothesis.

H1. Attitudes toward change will have a positive influence on participation in change.

Self-determined motivation, attitudes toward change and participation in change

The self-determination theory (SDT), initially proposed by Deci and Ryan (1985), has been gradually applied to psychological research (Deci *et al.*, 2001; Philippe and Vallerand, 2008), educational reports (Roca and Gagné, 2008; Sørebo *et al.*, 2009), aging studies (Custers *et al.*, 2012), food research (Schösler *et al.*, 2014), information management reports (Lee *et al.*, 2015), sport review (Brickell and Chatzisarantis, 2007), business research (Leung and Matanda, 2013)

and organizational studies (Kuvaas, 2009; Lam and Gurland, 2008; Gagné and Deci, 2005). Nevertheless, there is still a lack of research examining the role of self-determined motivation in the implementation of organizational change. Previous studies suggested perceived competence, relatedness and autonomy, three intrinsic motivators, are central elements facilitating more positive learning achievement, affective commitment, information technology adoption, psychological well-being and organizational outcomes (Akbari *et al.*, 2015; Baerdemaeker and Bruggeman, 2015; Deci *et al.*, 2001; Gagné and Deci, 2005; Lee *et al.*, 2015; Vandenberghe and Panaccio, 2012). A work and stress report by Elst *et al.* (2012) showed the frustration of autonomy, competence and belongingness make emotional exhaustion worse.

Additionally, in terms of the connections between perceived competence, user satisfaction, behavioral intention, learning achievement and organizational outcomes, it has been shown perceived competence, which refers to a requirement for “succeeding at optimally challenging tasks and attaining desired outcomes” (Deci *et al.*, 2001, p. 931), is one of the key determinants of readiness for change (Kwahk and Lee, 2008), user satisfaction (Rezvani *et al.*, 2017), behavioral intention (Khan *et al.*, 2018) and learning outcomes (Akbari *et al.*, 2015). Especially for implementing the enterprise resource planning (ERP) systems in organizations, Kwahk and Lee (2008) found perceived personal competence positively impacts readiness for change, which in turn leads to better perceived usefulness of ERP systems. More importantly, in regard to total quality management (TQM) implementation, Iqbal and Asrar-ul-Haq (2018) indicated individual attitudes toward change are closely linked to the successful implementation of organizational change. In the same vein, it is likely employees with higher levels of perceived competence have better attitudes toward change, which in turn will lead to more positive participation in change. Accordingly, this study proposes the following hypotheses.

- H2. Perceived competence will have a positive influence on attitudes toward change.
- H3. Perceived competence will have a positive influence on participation in change.
- H4. Attitudes toward change will mediate the link between perceived competence and participation in change.

Connections between perceived autonomy, relatedness and competence

In terms of the pivotal role of perceived relatedness in organizational outcomes, an early review by Gagné and Deci (2005) suggested “the need for relatedness plays a central role in internalization of values and regulations” (p. 355). Another aging study by Custers *et al.* (2012) found residents of nursing homes regard perceived relatedness, which refers to a requirement for “a sense of mutual respect, caring, and reliance with others” (Deci *et al.*, 2001, p. 931), as more important than perceived competence and autonomy, especially in caring relationships. Moreover, several reports indicated perceived relatedness plays a key role not only in reducing work strain (Cho and Yang, 2018), but also in predicting job outcomes (Lam and Gurland, 2008), organizational commitment and psychological well-being (Gagné and Deci, 2005).

With particular respect to the roles of perceived autonomy and relatedness in previous research, several researchers indicated a positive relationship between perceived autonomy, relatedness and competence. For example, an early review by Leung and Matanda (2013) demonstrated perceived autonomy, which refers to a requirement for “experiencing choice and feeling like the initiator of one’s own actions” (Deci *et al.*, 2001 p. 931), is closely connected not only with better adoption of self-service technologies, but also with perceived competence (Huang *et al.*, 2017). Another recent report by Martela and Riekkari (2018) indicated perceived relatedness is positively associated with perceived competence. Based on previous suggestions, similarly, it is possible employees with higher levels of perceived autonomy

and relatedness are likely to have more positive perceived competence. Consequently, this study proffers the following hypotheses.

H5. Perceived autonomy will have a positive influence on perceived competence.

H6. Perceived relatedness will have a positive influence on perceived competence

Perceived organizational support

Perceived organizational support, which refers to “the general belief that the organization cares for the contributions and welfare of its employees” (Akgunduz and Sanli, 2017, p. 119), has received much attention in previous research, mainly because it is closely linked to organizational performance. First, an early review by Baranik *et al.* (2010) demonstrated perceived organizational support is positively connected not only with job satisfaction but also with organizational commitment. Another recent study by Duan *et al.* (2019) suggested perceived organizational support is highly associated with organizational helping behaviors, which in turn leads to better employee workplace well-being. Second, Akgunduz and Sanli (2017) revealed perceived organizational support plays a key role in determining job embeddedness and turnover intention. Ocampo *et al.* (2018) added perceived organizational support positively predicts career adaptability. Third, in terms of the central impact of perceived organizational support on organizational change, several reports demonstrated perceived organizational support is one of the key elements propelling successful organizational change. For example, Neves (2009) showed lack of management support leads to failures in organizational change. Additionally, Fuchs and Prouska (2014) showed perceived organizational support and change participation play a key role in determining more positive change evaluation. With particular respect to the role of perceived organizational support in readiness for change, an early management review by Ming-Chu and Meng-Hsiu (2015) demonstrated perceived organizational support is positively connected to readiness for change. More importantly, another recent change management study by Gigliotti *et al.* (2019) indicated a positive relationship between perceived organizational support and change readiness.

Moreover, in regard to the moderating role of perceived organizational support in prior research, several reports revealed perceived organizational support plays a moderating role in determining individual outcomes (Choi, 2020). For example, Wang *et al.* (2017) suggested perceived organizational support moderates the link between a person’s proactive personality and work engagement. Cheng and O-Yang (2018) indicated “furthermore, perceived organizational support moderates the relationships among job crafting, burnout, and satisfaction” (p. 78). In the context of organizational change, likewise, it is possible perceived organizational support plays a moderating role in determining the link between change attitudes and participation. More precisely, people with higher levels of perceived organizational support are likely to have a more positive connection between attitudes toward change and participation in change. Although there are numerous organizational change reports, limited efforts have been devoted to examining the moderating role of perceived organizational support in organizational change. Accordingly, to further understand the moderating impact of perceived organizational support on the connections between attitudes toward change and participation in change, this study proposes the following hypothesis (see Figure 1).

H7. Perceived organizational support will moderate the link between attitudes toward change and participation in change. Specifically, people with higher levels of perceived organizational support will have a stronger relationship between attitudes toward change and participation in change.

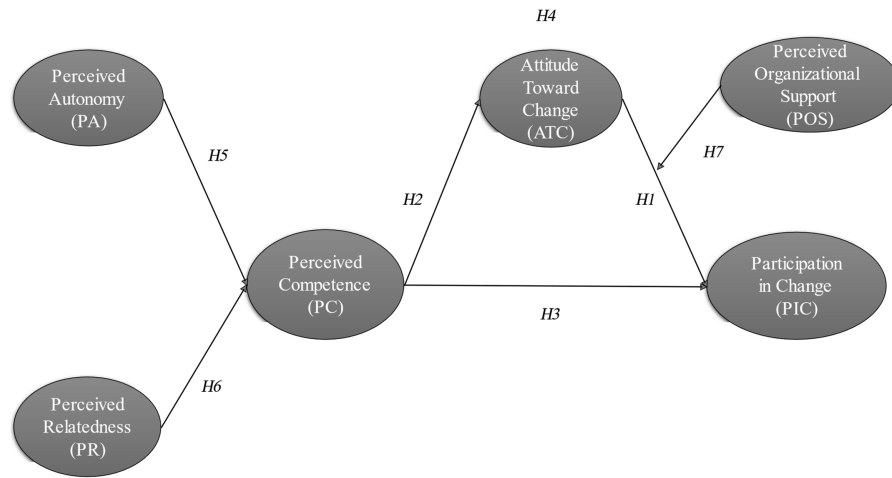


Figure 1.
Research framework of
the study

Research methodology

Demographic data for respondents for study 1

A total of 359 employees from one semiconductor manufacturing company took part in study 1. Excluding 7 missing data, 271 males and 81 females participated in this study. As shown in Table 1, married and single employees accounted for 204 and 142 of respondents, respectively, and the majority of employees held a bachelor's degrees ($n = 253$; 70%). Moreover, the mean and median ages of participants were 35.87 and 35, respectively. Finally, the mean tenure of participants was 6.03 (with standard deviation = 5.59).

Demographic data for respondents in the study 2

A total of 179 employees from one logistics service company participated in study 2. Excluding 2 missing data, 98 males and 79 females participated in study 2. As shown in Table 2, married and single employees accounted for 81 and 93 of the respondents,

Demographics	Items	Number	Percentage of respondents
Gender	Male	271	75
	Female	81	23
	Missing data	7	2
Marital status	Married	204	57
	Single	142	40
	Missing data	13	3
Education	High school	7	2
	Bachelor	253	70
	Master	79	22
	Missing data	20	6
Age	Mean age	35.87	
	Median	35	
	Standard deviation	7.887	
	Mean	6.030	
Tenure	Median	5	
	Standard deviation	5.59	

Table 1.
Demographic data for
respondents

Demographics	Items	Number	Percentage of respondents	Self-determined motivation
Gender	Male	98	55	199
	Female	79	44	
	Missing data	2	1	
Marital status	Married	81	45	
	Single	93	52	
	Missing data	5	3	
Education	High school	8	5	
	Bachelor	122	68	
	Master	41	23	
	Missing data	8	4	
Age	Mean age	33.97		
	Median	33		
	Standard deviation	9.156		
Tenure	Mean	6.27		Table 2. Demographic data for respondents in the study 2
	Median	3		
	Standard deviation	6.678		

respectively, and the majority of employees held bachelor's degrees ($n = 122$; 68%). Moreover, the mean and median ages of participants were 33.97 and 33, respectively. Finally, the mean tenure of participants was 6.27 (with standard deviation = 6.678).

Data collection for study 1 and 2

The data were collected from one semiconductor manufacturing company in study 1, and from one logistics service company in study 2. More precisely, in study 1, employees who experienced changes during a merger were invited to finish the survey. In study 2, employees who experienced changes regarding implementing new information systems in an organization were requested to finish the survey. In order to allow participants to feel free to complete the survey, study 1 and 2 adopted both online surveys and paper-based surveys to collect the data. After incomplete surveys were screened out, this study finally acquired 359 useable data for study 1, and 179 useable data for study 2.

Common method bias

In order to probe into the existence of common method bias in these two studies (Podsakoff *et al.*, 2003), the Harman's single-factor test was used to examine whether there was any common method bias in the reports. Because the study findings revealed that one single factor in study 1 only explained 43.2% of total variances, and one single factor in study 2 only interpreted 42.3% of total variances, common method bias should not be considered a severe problem.

Instrumentation

We utilized 25 survey items, which were rated on a seven-point Likert scale, to investigate the impact of self-determined motivation and perceived organizational support on organizational change. As shown in Table 3, 12 items, which evaluated the constructs of perceived autonomy, competence and relatedness, were developed from Deci *et al.* (2001). Sample items of perceived autonomy, competence and relatedness were, "I feel like I can make a lot of input to decide how my job gets done", "People at work tell me I am good at what I do", and "I really like the people I work with". Second, this study adopted four items from Chiang (2010) to evaluate the construct of attitude toward change. Sample items were, "The changes are needed and are for the better", and "I am willing to support any further changes". Additionally, six items, which examined the construct of perceived organizational support,

Items	S1	S2	S1	S2	Factor loading		S1	S2	S1	S1	S1	S2
					S1	S2						
ATD1	0.87	0.85										
ATD2	0.90	0.87										
ATD3	0.90	0.86										
ATD4	0.90	0.89										
α	0.92	0.89										
CR	0.94	0.92										
AVE	0.80	0.75										
VIF	1.44	1.18										
PA1			0.86	0.85								
PA2			0.88	0.83								
PA3			0.88	0.87								
PA4			0.86	0.86								
α			0.89	0.88								
CR			0.93	0.91								
AVE			0.76	0.73								
VIF			2.62	2.27								
PC1					0.86	0.88						
PC2					0.78	0.80						
PC3					0.81	0.73						
α					0.75	0.73						
CR					0.86	0.85						
AVE					0.67	0.65						
VIF					1.95	2.11						
PIC1							0.93	0.89				
PIC2							0.93	0.91				
PIC3							0.93	0.92				
α							0.92	0.89				
CR							0.95	0.93				
AVE							0.86	0.82				
VIF							1.36	1.39				
POS1									0.87	0.84		
POS2									0.90	0.92		
POS3									0.88	0.92		
POS4									0.77	0.71		
POS5									0.84	0.85		
POS6									0.84	0.85		
α									0.93	0.92		
CR									0.94	0.94		
AVE									0.73	0.73		
VIF									2.65	2.20		
PR1											0.87	0.91
PR2											0.87	0.94
PR3											0.86	0.89
PR4											0.86	0.81
PR5											0.84	0.85
α											0.91	0.93
CR											0.94	0.94
AVE											0.74	0.78
VIF											1.73	1.69

Table 3.
Confirmatory factor
analysis

Note(s): S1: study 1; S2: study 2; ATC: attitude toward change; PA: perceived autonomy; PC: perceived competence; PR: perceived relatedness; POS: perceived organizational support; PIC: participation in change; CR: composite reliability; AVE: average variance extracted; α : Cronbach's alpha; VIF: variance inflation factors

were adopted from Eisenberger *et al.* (1986). Sample items were, “My organization really cares about my well-being”, and “My organization cares about my opinions”. Finally, this study adopted three items from Chiang (2010) to evaluate the construct of participation in change. Sample items were, “I have been able to participate in the implementation of the changes”, and “I have input into the decisions being made about the changes”.

Data analysis

The partial least squares-structural equation modelling (PLS-SEM) technique was utilized to examine the relationship between self-determined motivation and attitudes toward change and participation in change. Moreover, this study adopted the SPSS PROCESS (model 14) and 5,000 bootstrap samples to evaluate the moderated mediation effect (Hayes, 2013).

Multicollinearity, convergent and discriminant validity for study 1 and study 2

First, the reliability and internal consistency of the survey instrument were assessed using composite reliability (CR) and factor loadings. In Table 3, it was demonstrated that the CR values, in study 1 and 2, were all larger than 0.80. Moreover, because all factor loadings in different constructs were all above 0.70, the reliability and internal consistency of the survey instrument were considered to be acceptable (Fornell and Larcker, 1981). Second, the multicollinearity issue for study 1 and 2 was further addressed by using the variance inflation factors (VIF) for different variables in studies 1 and 2. As shown in Table 3, the values of variance inflation factors (VIF) were all lower than 5, which indicates that multicollinearity is not a severe problem in this study (Hair *et al.*, 2019). Third, the convergent and discriminant validity of the measurement models in both studies were examined using the average variance extracted (AVE) and square root of AVE. Tables 3 and 4 show that the AVE values, in both studies, were in line with the suggested criteria (higher than 0.50), and the square root of AVE on the diagonal exceeded off-diagonal correlation values (Fornell and Larcker, 1981). Consequently, it was shown that the convergent and discriminant validity in both studies were satisfactory and in accordance with the recommended standards.

Construct	M	SD	ATC	PA	PC	PIC	POS	PR
<i>The correlations of each construct for study 1</i>								
ATC	4.98	1.086	0.89					
PA	4.99	1.049	0.37	0.87				
PC	4.89	0.945	0.40	0.65	0.82			
PIC	4.21	1.26	0.47	0.39	0.47	0.93		
POS	4.97	1.052	0.45	0.74	0.64	0.45	0.85	
PR	5.41	0.936	0.50	0.55	0.50	0.24	0.53	0.86
<i>The correlations of each construct for study 2</i>								
ATC	5.22	1.00	0.87					
PA	5.20	1.11	0.18	0.85				
PC	5.04	0.951	0.28	0.67	0.80			
PIC	4.44	1.21	0.61	0.34	0.39	0.90		
POS	4.88	1.08	0.35	0.65	0.62	0.52	0.85	
PR	5.53	1.00	0.19	0.57	0.56	0.25	0.56	0.88

Note(s): ATC: attitude toward change; PA: perceived autonomy; PC: perceived competence; PR: perceived relatedness; POS: perceived organizational support; PIC: participation in change; Diagonal elements are the square root of average variance extracted

Table 4.
The correlations of each construct

T-values, path coefficients, R-square and SRMR values for study 1 and study 2

This study adopted *t*-values, path coefficients and *R*-square values to evaluate the structural model and hypotheses (Hair *et al.*, 2019). Figure 2 shows that the findings of study 1 supported H1, H2, H3, H5 and H6. More precisely, the study findings indicated perceived autonomy (H5; $\beta = 0.532$; $t = 10.906$) and relatedness (H6; $\beta = 0.212$; $t = 4.069$), which explain a total of 45.1% of variance in perceived competence, were positively connected with perceived competence. Additionally, perceived competence (H2; $\beta = 0.397$; $t = 6.718$), which explained a total of 15.8% of variance in attitudes toward change, play a key role in attitudes toward change. More importantly, it was demonstrated that perceived competence (H3; $\beta = 0.345$; $t = 5.557$) and attitudes toward change (H1; $\beta = 0.318$; $t = 4.749$), which accounted for a total of 30.8% of variance in change participation, had a positive impact on participation in change.

Second, it was shown that the findings for study 2 also buttressed H1, H2, H3, H5 and H6. Specifically, in Figure 3, the study findings revealed that perceived autonomy (H5; $\beta = 0.530$; $t = 9.757$) and relatedness (H6; $\beta = 0.259$; $t = 4.629$), which explained a total of 50.5% of variance in perceived competence, were positively associated with perceived competence. Additionally, perceived competence (H2; $\beta = 0.283$; $t = 3.103$), which accounted for a total of 8.0% of variance in attitudes toward change, were a key determinant of attitudes toward change. Third, it was found that perceived competence (H3; $\beta = 0.243$; $t = 3.952$) and attitudes toward change (H1; $\beta = 0.546$; $t = 9.767$), which explained a total of 43.3% of variance in change participation, positively predicted participation in change. Finally, the standardized root mean square residual (SRMR) value was adopted to assess the model fit. The SRMR values for study 1 (0.058) and study 2 (0.066) were all less than the suggested criteria (<0.08), which revealed acceptable model fit (Hair *et al.*, 2019; Henseler *et al.*, 2016; Hu and Bentler, 1999).

Moderated mediation effect for study 1 and study 2

In order to evaluate the moderated mediation effect for study 1 and 2, hypothesis 4 and 7 were assessed using SPSS PROCESS (model 14) and 5,000 bootstrap samples (Hayes, 2013).

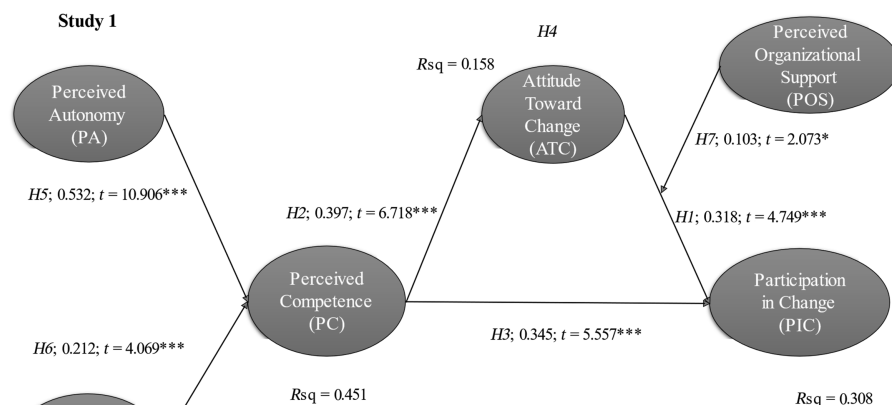
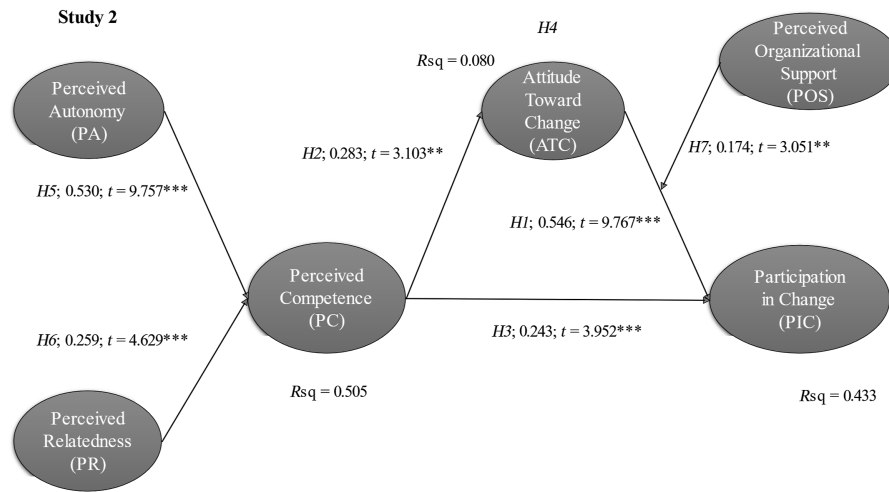


Figure 2.
The path coefficient,
R-square and *t*-values
for study 1

Note(s): $*p < 0.05$, $**p < 0.01$, $***p < 0.001$



Note(s): * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 3.
The path coefficient,
 R -square and t -values
for study 2

In Tables 5 and 6, it was found study findings for study 1 ($\beta = 0.103, t = 2.073$) and for study 2 ($\beta = 0.174, t = 3.051$) all supported hypothesis 7, which indicated that perceived organizational support would moderate the relationship between attitudes toward change and participation in change. Moreover, in Tables 7 and 8, the study findings, which supported hypothesis 4, demonstrated attitudes toward change would mediate the link between perceived competence and participation in change, mainly because 95% confidence interval (95% CI) did not contain 0 (Hayes, 2013).

Discussion and implication

Theoretical contributions

First, the study results not only indicated perceived relatedness and autonomy are positively related to perceived competence, but also revealed perceived competence plays a key role in determining more positive attitudes toward change, and participation in change. The study

	β	SE	t	p	LLCI	ULCI
<i>Mediator variable model (ATC)</i>						
Constant	-2.2278	0.4041	-5.5126	0.0000	-3.0226	-1.4330
PC	0.4551	0.0792	5.7479	0.0000	0.2994	0.6109
<i>Dependent variable model (PIC)</i>						
Constant	2.4734	0.4666	5.3014	0.0000	1.5558	3.3910
ATC	0.3514	0.0812	4.3256	0.0000	0.1916	0.5112
PC	0.3434	0.0934	3.6778	0.0003	0.1598	0.5271
POS	0.1899	0.0853	2.2277	0.0265	0.0223	0.3576
ATC*POS	0.1033	0.0498	2.0738	0.0388	0.0053	0.2012

Note(s): ATC: attitude toward change; PA: perceived autonomy; PC: perceived competence; PR: perceived relatedness; POS: perceived organizational support; PIC: participation in change; LLCI: low limit confidence interval; ULCI: upper limit confidence interval

Table 5.
Moderated mediation
model for study 1

Table 6.
Moderated mediation
model for study 2

	β	SE	<i>t</i>	<i>p</i>	LLCI	ULCI
<i>Mediator variable model (ATC)</i>						
Constant	-1.4790	0.4618	-3.2029	0.0016	-2.3904	-0.5677
PC	0.2933	0.0912	3.2151	0.0015	0.1133	0.4733
<i>Dependent variable model (PIC)</i>						
Constant	4.0096	0.4653	8.6177	0.0000	3.0913	4.9280
ATC	0.5849	0.0754	7.7564	0.0000	0.4360	0.7337
PC	0.0733	0.0898	0.8164	0.4154	-0.1039	0.2505
POS	0.2943	0.0983	2.9953	0.0031	0.1004	0.4882
ATC*POS	0.1748	0.0573	3.0519	0.0026	0.0618	0.2879

Note(s): ATC: attitude toward change; PA: perceived autonomy; PC: perceived competence; PR: perceived relatedness; POS: perceived organizational support; PIC: participation in change; LLCI: low limit confidence interval; ULCI: upper limit confidence interval

Effect	SE (Boot)	<i>t</i>	<i>p</i>	Boot LLCI	Boot ULCI
<i>Direct effect of PC on PIC</i>					
0.3434	0.0934	3.6778	0.0003	0.1598	0.5271
Mediator	POS	Effect	SE (Boot)	Boot LLCI	Boot ULCI
<i>Conditional indirect effects</i>					
ATC	-1.0522	0.1105	0.0467	0.0323	0.2200
ATC	0.0000	0.1599	0.0467	0.0820	0.2700
ATC	1.0522	0.2094	0.0562	0.1119	0.3351
Mediator	Index	SE (Boot)		Boot LLCI	Boot ULCI
<i>Index of moderated-mediation</i>					
ATC	0.0470	0.0211		0.0073	0.0894

Table 7.
Conditional direct and
indirect effects for
study 1

Note(s): Values for POS are the mean and plus/minus one SD from mean; ATC: attitude toward change; PA: perceived autonomy; PC: perceived competence; PR: perceived relatedness; POS: perceived organizational support; PIC: participation in change; LLCI: low limit confidence interval; ULCI: upper limit confidence interval

suggestions add to the body of knowledge in organizational change by proving the key relationship between self-determined motivation, attitudes toward change and participation in change. Specifically, the change management model, further considering the key connections between perceived autonomy, perceived relatedness and perceived competence in the effectiveness and efficiency of organizational change, will shed more light on how to carry out a successful organizational change (Deci *et al.*, 2001; Iqbal and Asrar-ul-Haq, 2018; Rezvani *et al.*, 2017).

Additionally, the study results indicated attitudes toward change will play a key role not only in mediating the link between perceived competence and participation in change, but also in implementing the successful organizational changes (Drzensky *et al.*, 2012; Iqbal and Asrar-ul-Haq, 2018; Kwahk and Kim, 2008; Ming-Chu and Meng-Hsiu, 2015). The study suggestions contributed to the body of knowledge in the field of organizational change by verifying the pivotal influence of attitudes toward change on organizational change. More precisely, the theoretical framework, incorporating the mediating role of change attitudes into the organizational change model, provides the researchers and practitioners in organizational

Effect	SE (Boot)	<i>t</i>	<i>p</i>	Boot LLCI	Boot ULCI
<i>Direct effect of PC on PIC</i>					
0.0733	0.0898	0.8164	0.4154	−0.1039	0.2505
Mediator	POS	Effect	SE (Boot)	Boot LLCI	Boot ULCI
<i>Conditional indirect effects</i>					
ATC	−1.0865	0.1158	0.0464	0.0393	0.2228
ATC	0.0000	0.1715	0.0591	0.0599	0.2938
ATC	1.0865	0.2273	0.0787	0.0776	0.3874
Mediator	Index	SE (Boot)	Boot LLCI	Boot ULCI	
<i>Index of moderated-mediation</i>					
ATC	0.0513	0.0241	0.0124	0.1078	

Note(s): Values for POS are the mean and plus/minus one SD from mean; ATC: attitude toward change; PA: perceived autonomy; PC: perceived competence; PR: perceived relatedness; POS: perceived organizational support; PIC: participation in change; LLCI: low limit confidence interval; ULCI: upper limit confidence interval

Table 8. Direct and conditional indirect effects for study 2

change with theoretical underpinnings to evaluate the mediating role of attitudes toward change in change management.

Finally, the study suggestions, expanding the body of knowledge in change management, revealed perceived organizational support plays a key role in moderating the link between attitudes toward change and participation in change. Specifically, perceived organizational support, one of the key drivers in organizational change, helps institutions and organizations to implement successful organizational change. It is hinted more research is needed to verify the moderating impact of perceived organizational support on the effectiveness and efficiency of organizational change (Cheng and O-Yang, 2018; Fuchs and Prouska, 2014; Ming-Chu and Meng-Hsiu, 2015; Wang *et al.*, 2017).

Empirical implications

The primary purpose of this study is not only to examine the connection between self-determined motivation, attitudes toward change, and participation in change, but also to explore the moderating impact of perceived organizational support on organizational change, and the mediating role of attitudes toward change in the link between perceived competence and participation in change. First, the study findings, consistent with previous suggestions (Akbari *et al.*, 2015; Deci *et al.*, 2001; Iqbal and Asrar-ul-Haq, 2018; Deci *et al.*, 2001), indicated self-determined motivation will be closely connected with attitudes toward change. That is, individuals with higher levels of perceived autonomy and relatedness are likely to have better perceived competence, which in turn leads to more positive attitudes toward change. It is implied more efforts should be devoted to satisfying individuals' need for autonomy, competence and relatedness. For example, considerably more attention should be paid to offering support for autonomy, relatedness and competence to help employees have better attitudes toward change and participation in change (Deci *et al.*, 2001; Iqbal and Asrar-ul-Haq, 2018; Rezvani *et al.*, 2017).

Moreover, the study findings, consistent with previous reports (Drzensky *et al.*, 2012; Iqbal and Asrar-ul-Haq, 2018; Kwahk and Kim, 2008; Ming-Chu and Meng-Hsiu, 2015), indicated attitudes toward change play a key role not only in mediating the link between perceived competence and participation in change, but also in implementing successful organizational changes. In other words, perceived competence has a positive impact on attitudes toward

change, which in turn will result in better participation in change. Accordingly, to improve outcomes of organizational change, it is critical top management focus on key factors that lead to better attitudes toward change, mainly because change attitudes play a key role in improving the outcomes of organizational change.

Last but not least, the study results are in line with previous suggestions (Cheng and O-Yang, 2018; Fuchs and Prouska, 2014; Ming-Chu and Meng-Hsiu, 2015; Wang *et al.*, 2017), which indicate perceived organizational support has a moderating impact on organizational change. More precisely, perceived organizational support will reinforce the positive link between attitudes toward change and participation in change. It is implied more attention should be paid to improving perceived organizational support, mainly because perceived organizational support facilitates better attitudes toward change and participation in change. For example, to improve the outcomes of organizational change, it is suggested training and management support play a pivotal role in helping people have better attitudes toward change, which in turn leads to better change participation (Akbari *et al.*, 2015).

Limitations and future research

There are several research limitations worthy of further discussion in this report. First, in regard to the control variables, research and sampling design, the study results of self-determined motivation should be interpreted with caution, mainly because this study gathered data from one semiconductor manufacturing company (study 1) and another logistics service company (study 2) in Taiwan. Specifically, in study 1, employees who experienced changes during a merger were invited to finish the survey. In study 2, employees who experienced changes regarding implementing a new information system in an organization were asked to finish the survey. Control variables such as types of organizational change, transformational change or trans-organizational change should be incorporated into future research design, and more studies from different countries and industries are needed to verify the generalizability of study findings. Second, employees' previous experiences of change implementation and management were neglected in this report. Specifically, whether prior experience plays a key role in determining successful change implementation has not yet been fully explored in previous change management research. It is suggested that future studies incorporate prior experience of change implementation into the research design. Third, because this study did not address the key impact of employees' tenure and resistance to participation in change in successful organizational change, it is critical for future studies to incorporate these key control variables into the change model to further measure the effectiveness and efficiency of organizational change. Finally, although the connections between self-determined motivation, attitudes toward change and participation in change have been further discussed in this report, this study does not examine the role of training support in organizational change. Specifically, whether training for organizational change is closely linked to attitudes toward change and participation in change deserves more attention in future studies (Akbari *et al.*, 2015). Accordingly, it is critical more efforts be devoted to the impact of training for organizational change on the effectiveness and efficiency of organizational change.

In conclusion, three major contributions can be found in this study. One significant contribution has been made by verifying the central impact of self-determined motivation on attitudes toward change. Another pivotal contribution has been made by proving the mediating role of attitudes toward change in the link between perceived competence and participation in change. Last but not least, the study findings contribute to the body of knowledge in change management by demonstrating the moderating impact of perceived organizational support on the relationship between attitudes toward change and participation in change. In fact, change management plays a pivotal role in determining future organizational competitiveness, mainly because "employees who have experienced

poor change management in the past are more likely to resist new changes” (Fuchs and Prouska, 2014, p. 361). Accordingly, it is important to pay more attention to the impact of perceived organizational support and self-determined motivation on organizational change.

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Rule with an iron hand: powerful CEOs, influential shareholders and corporate performance in Russia

Powerful CEOs
and corporate
results in
Russia

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Abstract

Purpose – This study examines whether CEO power influences the book-based and market-based performance of Russian companies when it is restricted by the presence of essential shareholders, namely, state and influential businessmen.

Design/methodology/approach – Managerial power is divided into structural, ownership, expert and prestige. The proposed power metrics include not only CEOs but also the board of directors' characteristics that may restrict or enhance CEO power. The empirical analysis is based on the sample of 90 large traded Russian firms, which shares are included in the Moscow Stock Exchange Broad Market Index (MICEX BMI), observed from 2012 to 2019.

Findings – Panel data analysis suggests that higher board ownership and tenure may restrict CEO power, which in turn would be beneficial for corporate performance. The authors also see that in companies owned by influential businessmen, CEO power influence on M/B value is more negative, while state ownership does not moderate it. CEO power metrics, based on political experience and tenure, affect corporate performance differently in companies affiliated with extractive industries.

Originality/value – First, the authors consider two channels through which a company in emerging markets may get additional resources: CEOs and influential owners. Second, the authors develop power metrics based on Finkelstein's managerial power classification (1992) and the idea of relative power proposed by Bebchuk *et al.* (2011). It allows identifying whether the board of directors' may constrain or enhance CEO power to raise corporate performance. Third, the authors analyze developing Russian markets that represent a good ground for testing the question, whereas empirical research on Russia is relatively scarce (Grosman and Leponen, 2018). Fourth, the authors pay particular attention to the CEO power in the extractive industry, strategically important for the Russian economy.

Keywords Russia, Power, CEO, Board of directors, State ownership, Oligarch

Paper type Research paper

1. Introduction

Emerging economies are usually characterized by underdeveloped formal institutions and market (Enikolopov and Stepanov, 2013; McCarthy *et al.*, 2014). Firms have to use informal channels to get resources. According to the resource dependency view, directors' knowledge, expertise and relationships can provide a firm with needed resources (Pfeffer and Salancik, 1978). The literature describes plenty of personal traits of CEOs that may enable corporate

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cooperation and monitoring (Grosman and Leiponen, 2018), bring resources or commitments outside the firm (Lynall *et al.*, 2003). For example, a director with influential connections may provide access to external financing (Durbach and Parker, 2009) and share the best business practices (Renneboog and Zhao, 2011). More experienced directors better understand a company and industry and create “mutual knowledge” inside the firm (Cramton, 2001). Foreign directors are characterized by a global mindset and foreign expertise that provide high social competence and monitoring capability (Gregorič *et al.*, 2009).

The ability of a CEO to bring additional resources can be regarded from the other side. Those CEOs who know their company well, have essential connections, and are characterized by greater self-confidence can deviate from corporate goals in favor of personal ones more easily. The concept of managerial power can aggregate these factors: the more professional advantages a CEO has, the more decision-making power they get compared to other managers. Power gives a more significant stimulus to maximize personal welfare and more knowledge of how to do it. While power consequences are twofold, the performance of companies managed by a powerful CEO is still unclear and should be studied.

CEOs are not the only informal channel that brings resources to a firm. Influential owners can be even more critical resources providers on emerging markets, especially when they participate in decision-making processes and day-to-day management. Thus, state-owned companies are believed to be protected from bankruptcy and have a competitive advantage (Enikolopov and Stepanov, 2013). Other influential owners are large shareholders who have financial and non-financial resources that develop a business even in a very hostile environment (Guriev and Rachinsky, 2005). Influential owners can diminish the positive and negative outcomes of CEO power: to prevent personal welfare maximization and decrease the director's stimulus to maximize firm value. The importance of state and large shareholders on emerging markets raises the necessity to study relative CEO power: an ability of a CEO to use professional advantages in decision-making that is conditional on the presence of influential owners.

This paper aims at identifying the outcomes of relative CEO power. We study the performance of companies ruled by a powerful CEO considering the influence of state and large private shareholders. In contrast to previous studies that analyze CEO power influence in developed countries, we study the emerging Russian market. The Russian business environment provides a good context for exploring CEOs' personalities and power distribution. First, Russia is still classified as an emerging economy with insufficient economic freedom, weak legal protection of property rights and non-transparent companies (Lazareva *et al.*, 2008; McCarthy *et al.*, 2013). It raises the necessity to use directors and influential owners to get resources. Second, the influence of managerial traits is more substantial in uncertain conditions where directors rely more on their own opinions and experience. Third, Russian corporate culture is hierarchical and authoritarian, raising the importance of managerial power. Finally, Russian business is characterized by a high involvement of the state. According to the Federal Antimonopoly Service of the Russian Federation, by the end of 2016 state controls over 70% of the Russian economy (Mereminskaia, 2016). At the same time, large private owners, so-called oligarchs, still hold a large share of Russian business and are highly involved in day-to-day management.

The empirical part of the study is based on a database of large listed Russian companies included in the Moscow Stock Exchange Broad market index (MICEX BMI). The final sample analyzed consists of 379 firm-year observations between 2012 and 2019. The results show that the Market-to-Book (M/B) value and return on assets (ROA) are lower in those companies ruled by CEOs with ownership power; oligarch ownership reduces CEO expert and ownership power impact. State ownership does not affect the relationship between CEO power and the performance of state-owned companies. The relative indicators of power allow recognizing that raising of CEO ownership and tenure compared to board of directors (BoD)

members harm corporate performance. The additional analysis considers the extractive industry, strategically important for the Russian economy. It shows that company affiliation to an extractive industry decreases the expert power impact on both market and book-based performance, while prestige power raises M/B and ROA.

This paper contributes to the literature in three main ways. First, we consider two channels through which a company in emerging markets may get additional resources: CEOs and influential owners. We suppose that the CEO's power should directly influence corporate performance, and influential owners moderate the relationship between a CEO's power and corporate performance. Second, we develop power metrics based on Finkelstein's managerial power classification (1992). We borrow the idea of Bebchuk *et al.* (2011) to consider board directors' characteristics when calculating CEO power and build metrics of prestige, ownership and expert power. It allows identifying whether the Board of directors' may constrain or enhance CEO power to raise corporate performance. Third, we analyze developing Russian markets that represent a good ground for testing our question, whereas empirical research on Russia is relatively scarce (Grosman and Leiponen, 2018). Fourth, we pay particular attention to the CEO power in the extractive industry, strategically important for the Russian economy. The results show that despite the whole sample results, politically connected CEOs (in other words, having prestige power) can benefit the performance of companies from this industry.

The remainder of this paper proceeds as follows. In the next section, we review the existing literature regarding the upper echelons approach and CEO power research. Then we describe the chosen methodology, particularly the metrics for CEO power and data used. In the empirical part, we report and discuss the results of hypotheses testing. The last section concludes the paper, outlining several implications and suggesting avenues for future research.

2. Theoretical background

The upper echelon theory that was developed by Hambrick and Mason (1984) and subsequently proved by several studies (De Hoogh *et al.*, 2005; Guthrie Datta and Deepak, 1997; Kaplan *et al.*, 2012; Musteen *et al.*, 2006; Patzelt, 2010), suggests that the CEO's characteristics and background affect decisions he or she makes and that this, in turn, affects company performance. However, the extent to which the same trait of a CEO affects corporate outcomes may differ. The reason can be the CEO's level of power; the more powerful a CEO, the stronger the link between his or her personality and a company's outcomes and vice versa. At this point, it is essential to define the word power:

Power – “the potential ability to influence behavior, to change the course of events, **to overcome resistance**, and to convince people to do things that they would not do otherwise” (Pfeffer, 1992).

As underlined by researchers, CEO power is a key for understanding how strategic decisions are made and implemented (Child, 1972; Tushman, 1977). That is why it is crucial to identify the nature of power. Previous studies recognize different power sources, formal and informal and various indicators describing it (Pfeffer, 1992). Finkelstein (1992) attempted to classify different dimensions of power and variables which could reflect them. Numerous authors have used his approach because of its simplicity and universality (Adams *et al.*, 2005; Lewellyn and Muller-Kahle, 2012). According to Finkelstein (1992), managerial power can be divided into four groups: structural, ownership, expert and prestige power.

Structural power is related to the CEO's formal position in the company. A standard measure of structural power is duality when the CEO is also the chairman of the board of directors. Duality has been widely studied, but there is, as yet, no consensus on how this type of power affects performance (Krause *et al.*, 2014). However, in some countries, duality has been abandoned, which forces researchers to look for new measures of structural power.

Informal duality has been suggested (Judge *et al.*, 2003), but it remains so far unobserved and requires research.

Ownership power is primarily associated with the percentage of shares that a CEO possesses. On the one hand, ownership makes agency costs lower (Chikh and Filbien, 2011) and encourages the CEO to make decisions that will maximize shareholders' wealth (Pathan, 2009). On the other hand, it may cause managerial entrenchment and minority shareholders lose their decision-making power (Onali *et al.*, 2016). Researchers have characterized Russia of the late 1990s and early 2000s as a country with comprehensive insiders' ownership in companies (Dolgopyatova, 2015). In terms of performance, investigation shows that poor separation of ownership and control leads to higher profitability (Kuznetsov and Muravyev, 2001). Similar results were noticed in Chinese banks; high CEO ownership power resulted in enhanced performance (Ting *et al.*, 2017).

The third type of power, according to Finkelstein (1992), is expert power. It reflects all CEO experience, skills and social capital, i.e. social ties with other top managers and experts. The most widely-used measure of this type of power is CEO tenure. During a long tenure in the company, the CEO creates solid social ties with the board. It can create more effective communication within the top-management team, which can, in turn, improve corporate governance (Ryan and Wiggins, 2004). However, as some researchers argue, a close connection between the CEO and the board may result in a situation where the CEO becomes involved in the board's decision-making processes yet lobbies his interests (Shivdasani and Yermack, 1999). Long-tenured CEOs tend to be more conservative and risk-averse (Musteen *et al.*, 2006), which leads to success in stable industries. On the contrary, however, in emerging industries, experienced CEOs often fail to improve performance (Henderson *et al.*, 2006).

The last CEO characteristic reflecting power is prestige, which is defined as social status and reputation. As with expert power, it can be measured by social connections, not only with other top managers (Lewellyn and Muller-Kahle, 2012) but also with other elites. Findings from a range of studies demonstrate that prestige is associated with the board of directors' confidence in the CEO's decisions and the (sometimes over-) confidence of the CEO him/herself (Chikh and Filbien, 2011). High confidence levels lead to weaker monitoring of CEO governance and riskier decisions being taken, with little attention being paid to market signals and the board's opinions (Hengartner, 2007). Such decisions can negatively affect a firm's outcomes (Fan *et al.*, 2007). However, it is also possible to find studies that suggest CEO prestige power relates positively to a company's performance (Ting *et al.*, 2017).

Different CEO power components provide CEOs with different incentives to act. It leads to the influence of a CEO's power on a company's outcomes being mixed; according to the agency theory (Jensen and Meckling, 1976), a CEO is likely to be interested in a firm's performance only when he or she is its shareholder, i.e. the CEO has ownership power. Conversely, structural, expert or prestige power can make agency conflict sharper and provoke CEO entrenchment (Ryan and Wiggins, 2004), leading to poor performance. Empirical results gained regarding CEO power investigation indicate no consensus on how different types of power affect performance. In the review of Krause *et al.* (2014), we can see different results of the relationship between CEO duality (structural power) and performance. CEO tenure, which reflects expert power, enhances performance in stable industries and decreases it in emerging ones (Henderson *et al.*, 2006). As for prestige power, it is associated with higher firm performance (Davis *et al.*, 2010; Ting *et al.*, 2017); however, it might be data specific.

The influence of managerial power is believed to be more assertive in authoritarian corporate cultures, for example, in Russian. Thus, Abe and Iwasaki (2010) conclude that the power distance between a CEO and other top managers is higher in Russia than in, for example, the United States or Japan and Russian corporate governance could thus be described as authoritarian and hierarchical. In addition, Vernikov (2009) asserts that formal

corporate governance structures, familiar to foreign investors and based on best Western practices, function entirely differently in Russian companies; in many cases, the board of directors play only a minor role displaying total obedience to the CEO and/or majority shareholders.

Despite the high importance of managerial power in Russian companies, this has not yet received the attention it deserves. That is why the current paper attempts to validate power metrics developed by Finkelstein (1992) using the developing Russian market. We follow the resource-based view and regard managerial power as the mechanism of providing a company with needed resources. That is why the first hypothesis is stated as follows:

H1. CEO power increases corporate performance in Russian companies.

Research on Russian corporate governance system usually covers country-specific features like ownership concentration (Dolgopyatova, 2010), “state capitalism”, which implies increasing direct and indirect state ownership in key industries (Djankov, 2015), and particular types of agency problems (Enikolopov and Stepanov, 2013). These papers deliver valuable insights about powerful shareholders who may influence decision-making processes in Russian companies. That is why CEO power may be restricted by other parties of the corporate governance system. The literature allows identification of two essential types of shareholders that can moderate CEO power in Russia: oligarchs and the state.

Guriev and Rachinsky (2005) define a Russian oligarch as “a businessman who controls sufficient resources to influence national politics”. As their research shows, the top 10 wealthiest businessmen or ownership groups owned about 60% of the Russian stock market in 2003. Despite this, oligarchs in the modern Russian Federation are a point of discussion between the government and society. The official position of the Kremlin posits that there are no oligarchs in Russia now [1]. “The phrase ‘Russian oligarchs’ is inappropriate” – Dmitry Peskov, Presidential Press Secretary, told reporters in April 2018 [2]. Arkady Dvorkovich, Deputy Prime Minister, expressed a similar point of view for Bloomberg in January 2018. He believes that “oligarchs are the 90s concept” [3]. However, a poll conducted by The Russian Public Opinion Research Centre (VTsIOM), released in April 2018, indicates that “an overwhelming majority of Russians (94%) do not doubt that Russia has oligarchs” [4]. In addition, the term “oligarch” is still widely used in Russian business media such as Forbes, RBC, Kommersant, and it is applied as a synonym for the wealthiest Russian businessmen. For these reasons, in this paper, oligarchs will be considered as powerful shareholders. They are usually characterized by being heavily involved in managing a company, and their companies are more effective (Guriev and Rachinsky, 2004). They can also foster the value-maximizing behavior of a powerful CEO. We formulate the second hypothesis as follows:

H2. Oligarch ownership positively moderates the influence of powerful CEOs on a company’s performance.

As for the Russian government that is highly involved in corporate activity, especially in large companies that produce strategically important goods like gas, oil, metal and chemicals. Sometimes the government acts as a stakeholder and can directly influence, but more often, the control is less direct, through state-controlled pyramids (Enikolopov and Stepanov, 2013). Since the government does not have the maximization of profits as one of its goals (Lazareva *et al.*, 2008), the management of such companies may differ from traditional styles. We believe that state ownership decreases the ability of a CEO to use power, so the third hypothesis is as follows:

H3. State ownership decreases the influence of CEO power on a company’s performance.

The research framework of the paper is represented in Figure 1. Note that the moderation effect of influential shareholders is supposedly different for the state and oligarchs.

3. Empirical design

3.1 Measuring CEO power

We build our metrics of power based on Finkelstein's classification (Finkelstein, 1992). Many empirical studies provide solid verification of the Finkelstein framework on CEO power (Adams *et al.*, 2005; Lewellyn and Muller-Kahle, 2012; Pathan, 2009; Ting *et al.*, 2017). However, they ignore a vital point in the definition of power: the overcoming of resistance. Without taking into consideration the effect of other powerful actors in a management team, it is impossible to determine whether the CEO is powerful or not. Hence, a recent development is the use of relative indicators of a CEO's power that consider board members' power. Thus, Bebchuk *et al.* (2011) developed the CEO Pay Slice index (CPS). CPS is defined as "the fraction of the aggregate compensation of the top-five executive team captured by the CEO". Despite receiving the overall support of researchers (Dutta *et al.*, 2011; Jiraporn and Chintrakarn, 2013), the CPS index has some limitations. For example, it cannot be applied to non-transparent companies where managers' remuneration is not disclosed. Additionally, it applies a strong assumption about the ability of compensation to reflect directors' personal traits. In practice, companies may use remuneration schemes to stimulate directors to reach a particular goal, so the amount paid cannot reflect power distribution in a company. That is why the idea of using relative indicators for measuring some types of CEO power should be further developed and tested.

We follow the idea of Bebchuk *et al.* (2011) and include the board of directors directly or indirectly in the indicators of power:

- (1) A CEO's duality usually measures *structural power*. However, according to Russian legislation, a CEO cannot be a board chairman in the same company. So, we propose using a weaker indicator that equals one if a CEO is a member of the BoD of the same company. Such an indicator considers the ability of a CEO to overcome the resistance of directors because he/she participates in meetings and influences decisions.
- (2) A CEO's tenure reflects *expert power*. Long-tenured CEOs know their company well, so they are more entrenched and experience less board monitoring (Cook and Burress, 2013). The tenure of board members may decrease the expert power of a CEO. So, we propose to base the calculation method on Bebchuk's CEO Pay Slice.

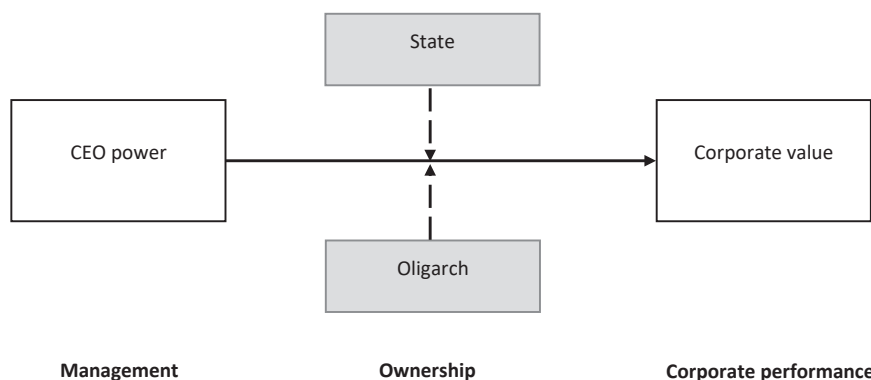


Figure 1.
Research framework

$$CEO\ expert\ power = \frac{CEO\ tenure}{CEO\ tenure + most\ experienced\ directors\ tenure} \quad (1)$$

Where CEO tenure – the number of years a CEO has worked in his/her position in a particular company; Most experienced directors' tenure – the sum of tenures of the four most experienced board members.

- (3) *Prestige power* reflects the social status and reputation of a CEO. We follow the paper of Ting *et al.* (2017) and consider CEO political connections as a metric of prestige. It allows to regard the importance of government in the Russian corporate environment. A CEO with a political background is regarded as a valuable source of information and can mediate between a company and the government. The prestige power of a CEO is higher if he/she is the only politically connected manager. So, we correct the indicator by the political background of BoD members:

CEO prestige power = CEO political background

$$- \frac{Number\ of\ BoD\ members\ with\ a\ political\ background}{Total\ number\ of\ directors\ in\ a\ Board} \quad (2)$$

Where the CEO's political background – a binary variable equals one if the CEO has working experience in a governmental body.

- (4) *Ownership power* is traditionally measured by the number of shares. In order to correct it by BoD ownership, we suggest following the Bebchuk and co-authors' CEO Pay Slice idea:

$$CEO\ ownership\ power = \frac{CEO's\ \%\ of\ shares}{CEO's\ \%\ of\ shares + BoD\ \%\ of\ shares} \quad (3)$$

where CEO's percentage of shares – the percentage of this company's shares a CEO own; BoD % of shares – the sum of this company's shares, owned by the four board members with the highest ownership.

Note that all of the metrics are constructed in such a way that their maximum value is 1. It indicates the largest possible relative CEO power. If CEO power is adjusted by a Board power, the indicators' values are less than 1.

3.2 Variables

Given the hypotheses of our research, our dependent variable is corporate performance. We measure it by market-based indicator, *M/B*, and book-based one, *ROA*. *M/B* is calculated as the equity market value and equity book value ratio. *ROA* is calculated as the net profit and assets ratio. We test the effect of a CEO's power on *M/B* value and *ROA* using the four indicators described above: *structural*, *expert*, *prestige* and *ownership power*.

To test hypotheses 2 and 3, we use two characteristics of a company's ownership structure: oligarch and state ownership. *Oligarch ownership* is a binary variable equal to 1 if an oligarch owns a share in a company. To identify an oligarch, we used the Forbes recent annual list of Russia's 25 wealthiest businessmen. A person needs to have at least \$4.5 billion to be included in the list. All of the persons included there are known not only by their wealth but also by their political "weight". Thus, we assume the people in this list to be oligarchs. *State ownership* is a binary variable equal to 1 if the Russian state owns a share in a company.

The control variables include usual corporate finance determinants such as firm age, financial leverage, firm size, the board size and tangibility. *Firm age* is defined as the number

of years since the company was established. *Financial leverage* is the ratio of debt to equity. *Firm size* is measured as the log of sales. *Board size* is the number of board of directors' members listed in the annual report of a particular year. *Tangibility* is the ratio of fixed to the book value of assets. ROA is used as a control variable in models with M/B as a dependent variable. M/B is used as a control variable in models with ROA as a dependent variable. We also control on the state and oligarch ownership. All variables are described in Appendix.

3.3 Sample

The database used in this research includes companies, whose shares are included in Moscow Stock Exchange Broad Market Index. It consists of 100 shares of 90 large listed Russian companies where shares are selected by liquidity, capitalization, and free float. We consciously limit our sample to traded companies to ensure homogeneity. Listed companies with non-actively traded shares have other goals on the capital market that reflect in their corporate governance system. They also disclose less information about their board members. The initial sample consists of 720 firm-year observations from 90 firms between 2012 and 2019 [5].

The Russian stock market is usually regarded as being underdeveloped, and there are few companies with actively traded shares (Adams *et al.*, 2005; Pathan, 2009; Davis *et al.*, 2010; Lewellyn and Muller-Kahle, 2012). As a result, our sample is very representative of the population of listed firms since it refers to approximately 80% of the total market capitalization of Russian companies. The sample structure reflects the Russian financial market structure, characterized by the predominance of the manufacturing, oil and gas sectors (Lazareva *et al.*, 2008). Thus, the potential for sample selection bias can be ruled out.

Several different sources were used to collect the data. Financial information was gathered using the Ruslana database provided by *Bureau van Dijk*. Information on CEOs and board compositions was collected from the companies' websites and annual reports. The personal data of directors were hand-collected from annual reports and websites that contain data on Russian top-managers [6]. State and oligarch ownership data were collected using the Ruslana database, and oligarchs were identified using the Forbes' journal rating of the 25 wealthiest Russian businessmen published on the Forbes official website.

3.4 Method

We ran two separate analyses. First, we checked the influence of CEO power on corporate performance. We implemented panel data analysis with fixed effects to test the following equation:

$$FinPerformance_{it} = \alpha + \beta * CEOPower_{it-1} + \delta * Controls_{it-1} + \varepsilon_{it} \quad (4)$$

Where *FinPerformance* – the metric of a company's market-based performance (M/B value) and book-based performance (ROA);

CEOPower – the indicators of a CEO's power: structural, expert, prestige and ownership power.

Controls – control variables: firm age, financial leverage, ROA (in regression with M/B as a dependent variable), M/B (in regression with ROA as a dependent variable), firm size, the board size, tangibility, state ownership and oligarch ownership;

ε – the error term.

Note that serving as a CEO in companies with high value may raise CEO power or more successful companies may hire more powerful CEOs, the endogeneity problem may arise. Also, there could be omitted variables, which we do not include in the regression equations. We use fixed effects and the lagged variables to decrease the endogeneity impact. Thus, fixed effects allow consideration of unobserved variables, which decreases the omitted variables problem. The lagged variables allow decreasing the impact of the reverse causality problem.

Then we analyze CEO power outcomes in firms owned by oligarchs and the state. So, we keep the same dependent variables and test hypotheses 2 and 3 by including the interaction effect between CEO power and ownership variables. Thus, the model to be tested is equation (5), and the method of estimation is panel data analysis with fixed effects:

$$\begin{aligned} FinPerformance_{it} = & \alpha + \beta * CEOPower_{it-1} + \delta * CEOPower_{it-1} * Ownership_{it-1} \\ & + \gamma * Controls_{it-1} + \varepsilon_{it} \end{aligned} \quad (5)$$

Where, *Ownership* – the binary variable that characterizes the specific types of ownership: oligarch ownership or state ownership.

4. Results

4.1 Descriptive analysis

Descriptive statistics are presented in Table 1. The sample has been reduced significantly due to missing data, especially regarding variables describing power. They are based on CEO and boards' personal information, which some companies do not publish. Moreover, the ownership structure of Russian companies is complicated; it is difficult to find the ultimate beneficiary and detect whether an oligarch owns it or not. In such cases we deleted the observation from the sample.

Minimum and maximum M/B values show that the sample also includes outperforming and underperforming firms. The average ROA value indicates that companies get approximately six rubles of profit on every 100 rubles of assets invested in a company. Some companies are characterized by a negative ROA.

An overwhelming majority of CEOs from the sample are board members, so they have structural power. As for expert power, on average, this has a value of 0.211. According to the design of expert power measure, in the case of equal tenure of the CEO and the four most experienced board members, this indicator equals to 0.2. Thus, CEOs and boards have roughly the same amount of power in the working sample. It may potentially lead to the insignificance of CEO expert power. The average prestige power is positive and equals to 0.090. It indicates that CEOs, as well as board members, tend to have a political background. The average value of ownership power is 0.212, which means that CEOs usually have less percentage of a company shares than board members.

Variable	Obs	Mean	Std. Dev	Min	Max
ROA	379	0.061	0.071	−0.099	0.352
M/B	379	0.770	0.609	0.006	3.434
Structural power	379	0.879	0.327	0.000	1.000
Expert power	379	0.211	0.225	0.000	1.000
Prestige power	379	0.090	0.458	−0.857	1.000
Ownership power	379	0.212	0.353	0.000	1.000
Financial leverage	379	1.090	1.396	0.017	9.767
Log of firm size	379	14.970	1.682	6.855	18.894
Tangibility	379	0.715	0.148	0.173	0.999
Board size	379	10.340	2.261	5.000	19.000
Log of firm age	379	3.179	0.885	1.609	7.610
State ownership	379	0.599	–	0.000	1.000
Oligarch ownership	379	0.219	–	0.000	1.000
Extractive industry	379	0.400	–	0.000	1.000

Table 1.
Descriptive statistics of
the sample

The ownership structure of companies included in the sample could be described as follows. Oligarchs own approximately 22% of sample companies, and more than half of companies are involved in direct or indirect state ownership. It reflects the tendency of the Russian economy to increase governmental presence in large, strategically important companies.

4.2 Explanatory analysis

We applied panel data analysis with fixed effects and lagged variables to test our hypotheses. Table 2 reports the models (4) and (5) results, which are estimated to test the relationship between CEO power and market-based and book-based performance. Note that the number of observations decreases compared to reported in Table 1 because of the use of lags.

The regressions (1) and (2) represent the results of Equation (4) testing. It shows the effect of CEO power on book-based and market-based corporate performance. We identify that only one type of CEO power, namely, ownership power, negatively impacts both types of company results. An increase of a relative ownership power by 1% leads to a decrease in M/B value of 0.17%. While the average M/B value for the sample is 0.770, it will be diminished by 0.0013. At the same time, a growth of relative ownership power by 1% leads to a decline in ROA value by 0.0002%. Taking the mean value of ROA which equals to 0.061, the absolute value of a decrease is 0.000012. Note that the growth of ownership power relates to the raise of a CEO's shares holding compared with the board members.

Next, regressions (3) and (4), reported in Table 2, are estimated to test hypothesis 3, suggesting that state ownership might interact with CEO power and decrease its impact on performance. We cannot find any direct or indirect effect of state ownership on the corporate value of Russian companies. As a side result, we observe that the CEO expert power has a significant and negative impact on ROA, while ownership power negatively affects M/B value. It indicates that the raise of CEO tenure and shares ownership in comparison to the board members harms book-based corporate results.

The last reported models (5) and (6) test the interaction effect between state ownership and CEO power. Despite the initial idea that oligarch ownership should positively moderate the impact of CEO power on corporate performance, we observe the opposite. In firms, owned by influential businessmen, the expert power of a CEO decreases M/B value: the growth of expert power by 1% leads to a decline of M/B value by 1.01%. The absolute value of M/B change is 0.0078. Also, oligarch ownership strengthens the negative effect of the ownership CEO power. Each increase in ownership power by 1% leads to a decrease of M/B value of oligarch-owned companies by 0.456%, with the absolute value of a decrease of 0.0035.

4.3 Additional analysis

In this section, we introduce additional non-hypothesized CEO power issues which might be related to corporate performance on the Russian market. We propose to observe the CEO power effect on corporate performance in the extractive industry, which represents a large share of a Russian economy and is regarded as strategically important. According to the results of descriptive analysis, 40% of the sample companies belong to it. Because of the strategic importance of such companies, CEO power may be particularly important to raise their performance.

We include in the regressions dummy variable on being belonged to the extractive industry and calculate the interactions of the CEO power variables with it. Since the industry is not changed in years, we implement ordinary least squares (OLS) analysis with control

	(1) MB	(2) ROA	(3) MB	(4) ROA	(5) MB	(6) ROA
Structural power	-0.016 (0.102)	-0.021 (0.016)	0.084 (0.103)	-0.019 (0.016)	0.130 (0.100)	-0.019 (0.016)
Expert power	0.122 (0.155)	-0.028 (0.024)	0.069 (0.166)	-0.053* (0.027)	-0.015 (0.152)	-0.040 (0.025)
Prestige power	-0.024 (0.078)	-0.006 (0.012)	0.025 (0.078)	-0.013 (0.012)	-0.011 (0.075)	-0.011 (0.012)
Ownership power	-0.170** (0.078)	-0.020* (0.012)	-0.146* (0.080)	-0.014 (0.013)	-0.132* (0.076)	-0.013 (0.012)
State ownership	-0.174 (0.115)	0.024 (0.018)	-0.166 (0.115)	0.021 (0.018)	-0.103 (0.111)	0.019 (0.018)
Oligarch ownership	0.056 (0.132)	0.014 (0.020)	0.038 (0.126)	0.014 (0.020)	0.178 (0.139)	0.025 (0.023)
Structural power*State			0.111 (0.099)	-0.012 (0.016)		
Expert power*State			0.095 (0.194)	0.038 (0.031)		
Prestige power*State			-0.113 (0.097)	0.008 (0.016)		
Ownership power*State			-0.005 (0.110)	0.010 (0.018)		
Structural power*Oligarch					-0.013 (0.139)	-0.018 (0.023)
Expert power*Oligarch					-1.011* (0.600)	-0.008 (0.098)
Prestige power*Oligarch					0.219 (0.179)	0.036 (0.029)
Ownership power*Oligarch					-0.324** (0.155)	0.019 (0.025)
Constant	5.886*** (0.995)	0.359** (0.155)	5.362*** (1.025)	0.419** (0.167)	5.487*** (0.972)	0.379** (0.160)
Observations	325	325	315	315	315	315
R ²	0.159	0.087	0.179	0.106	0.203	0.108
Control variables	Included	Included	Included	Included	Included	Included

Note(s): Standard errors are in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 2.
Results of the
regression analysis

variables on year and industry. We also keep the use of lagged variables to reduce the reverse causality problem impact. The results are presented in Table 3.

We observe that both the M/B value and ROA of companies from the extractive industry are higher in comparison to the rest of the sample. It highlights the important role of this industry in the Russian economy. We also see that the CEO power of companies from extractive industries impacts corporate performance differently. Thus, company affiliation to an extractive industry decreases the expert power impact on both market and book-based performance. The size of the effect differs. The raise of the expert power by 1% leads to a 0.0004% increase of M/B value, while companies from the other industries get 0.004% growth in M/B. As for ROA, the increase of the expert power by 1% decreases it by 0.00075%.

Also, affiliation to the extractive industry changes the effect of the prestige power on corporate performance. A 1% increase in prestige power leads to an increase in M/B value of 0.0023%. The same growth is reflected in the 0.0011% growth of ROA.

5. Conclusion

In this paper, we employ the concept of CEO power in the specific case of Russian companies. This topic is new in Russian corporate governance research even though Russian firms are often described as fully hierarchical, authoritarian structures with solid leaders. Using Finkelstein's managerial power framework and Bebchuck's CEO Pay Slice idea, we constructed our relative expert, prestige and ownership power metrics that consider board members' power. Then we analyze whether the CEO, powerful according to Finkelstein, influences the performance in the presence of powerful shareholders. From a Russia-specific viewpoint, oligarchs and the state were defined as powerful shareholders who could reduce managerial power.

The resource-based view, which is the theoretical background of the current study, supposes that CEO power provides a firm with needed resources. So, we expect it to increase market-based and book-based performance. Also, we suggest that the presence of powerful shareholders reduces CEO power, yet only a tiny part of our results supports this. M/B value

	(1) MB	(2) ROA
Structural power	0.111 (0.090)	-0.010 (0.012)
Expert power	0.409*** (0.141)	0.026 (0.019)
Prestige power	0.077 (0.072)	-0.019* (0.010)
Ownership power	0.095 (0.089)	0.015 (0.012)
State ownership	-0.088 (0.062)	0.013 (0.009)
Oligarch ownership	0.247*** (0.073)	0.009 (0.010)
Structural power*Extractive industry	-0.207 (0.169)	-0.026 (0.023)
Expert power*Extractive industry	-0.797*** (0.236)	-0.075** (0.032)
Prestige power*Extractive industry	-0.199* (0.116)	0.077*** (0.016)
Ownership power*Extractive industry	-0.089 (0.150)	-0.032 (0.020)
Extractive industry	0.426** (0.177)	0.055** (0.024)
Constant	0.100 (0.360)	0.019 (0.049)
Observations	325	325
R ²	0.535	0.298
Control variables	Included	Included
Year dummies	Included	Included
Industry dummies	Included	Included

Table 3.
Results of the
regression analysis
(ordinary least squares,
interaction effects with
extractive industry)

Note(s): Standard errors are in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

and ROA are lower in those companies ruled by CEOs with ownership power. Oligarch ownership makes CEO expert and ownership power impact more negative, while state ownership does not cause any effect. In other words, in companies owned by influential shareholders, the raise of CEO power is not beneficial for corporate performance: more experienced CEOs and those who have more company's shares compared to board members, harm market-based performance. Thus, our findings provide new evidence, not only about Russian corporate governance specifically reflected by power distribution between the CEO, board and shareholders but also about differences of CEO power performance between state-owned and private-owned firms.

What is particularly important, we test relative indicators of CEO power. So, our analysis regards not the absolute value of power, but its value, compared to the board of directors. Thus, we observe that raising CEO's shares and tenure in comparison to BoD lead to lower performance. It indicates that higher board ownership and tenure may restrict CEO power, which in turn would be beneficial for corporate performance. Raising board ownership leads to lower board independence. Despite the common knowledge that independent boards provide for better monitoring of CEO and increase corporate results, previous studies on the Russian market show the insignificance of this factor (Berezinets *et al.*, 2017). So probably the specific of the Russian companies lead to the necessity to control CEO by board members, own corporate shares. It may be an avenue for future research.

We also provide additional analysis of the extractive industry, which is strategically important for the Russian economy and characterized by higher M/B value and ROA in comparison to the rest of our sample. Extractive industry affiliation decreases the effect of expert power, which is based on CEO and board experience. At the same time, it raises the effect of prestige power, built on the CEO and board political connections. It may indicate that in this industry the role of political connections is more important than the experience. Nevertheless, this supposition requires further testing.

It is important to note that there are no conclusions from previous research which are similar to the results gained in this paper since new metrics of CEO power were used and that the investigation was built with the consideration of specifically Russian ownership structures. Thus, only the following results could be partially compared with previous results on the investigation of CEO power. First, despite the previous papers, particularly, the study of Judge *et al.* (2003), which is based on Russian companies' data, the metric of CEO structural power is not associated with performance. A similar effect of CEO duality on performance was got by Daily and Jonathan (1997). Note that we analyzed only a weak metric of duality because of the Russian legislature, which forbids CEO duality. Second, based on the agency theory (Jensen and Meckling, 1976), we expected that CEO will benefit the company when he owns a certain number of shares. This assumption has found its empirical support in previous research (Fischer and Pollock, 2004; Ting *et al.*, 2017). However, we find the opposite result. Higher ownership power of CEOs in Russian companies harms both market- and book-based performance. Third, the CEO's expert power enhances a company's outcomes in some of the tested specifications, which was confirmed by Ting *et al.* (2017) and Henderson *et al.* (2006) for stable industries. Nevertheless, despite the previous research, we use metrics corrected for the board members' power.

The limitations of our research include the problem of the latent nature of CEO power. We develop new metrics of relative expert, prestige and ownership CEO power based on the Bebchuk *et al.* (2011) idea of CEO Pay Slice and find relations between them and corporate performance. Nevertheless, they need further validation. What is more, the concern about possible endogeneity remains open, although we have addressed it using fixed-effects analysis and lagged variables. We also lack a theoretical framework for some of our additional analyses.

Our findings suggest new directions for future research and discussion. Developing indicators describing CEO power while considering other powerful stakeholders is essential to research. Bebchuk's CEO Pay Slice considers only the most powerful board members, and this design could be inappropriate for countries with collectivist-oriented cultures. Perhaps, it would be more appropriate to use the average power of the whole board to correct CEO power in Russia. Next, as was revealed in our paper, CEO power measure has a different impact on corporate performance. Therefore, each component of CEO power should be investigated in further detail separately from each other. In addition, as far as managerial power is an agency theory problem, it would be interesting to explore ways in which shareholders could take CEO power under control, for example, by designing contracts.

Notes

1. Article from *The Moscow Times*: <https://themoscowtimes.com/news/there-are-no-oligarchs-in-russia-kremlin-claims-amid-reports-new-us-sanctions-61062>
2. Article from the Russian news agency TASS: <https://tass.ru/ekonomika/5097768>
3. Article from the Russian news agency TASS: <http://tass.ru/ekonomika/4901002>
4. A press release of WTSIOM –located at: <https://wciom.com/index.php?id=61&uid=1526>
5. Some observations were excluded because the company was founded after 2012 or delisted before 2019.
6. We used the following websites: <http://whoiswho.dp.ru>; <https://finparty.ru>; <http://www.forbes.ru>

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Variable name	Explanatory notes on the variable
ROA	Return on assets calculated as net income divided by book value of total assets
M/B	The ratio of the equity market value and equity book value
Structural power	A binary metric that equals one if a CEO is a member of a BoD in the same company
Expert power	CEO tenure divided by the sum of CEO tenure and tenures of the four most experienced board members ^a
Prestige power	CEO prestige is calculated as the difference between the binary metric equals to one if a CEO has a political background and the share of board members with a political background ^b . We recognize that a CEO/director has a political background if he/she has working experience in a governmental body
Ownership power	CEO % of shares divided by the sum of CEO % of shares and % of shares of the four board members ^c
Oligarch ownership	A binary variable equal to 1 if an oligarch owns a share in a company ^d
State ownership	A binary variable equal to 1 if the Russian state owns a share in a company
Extractive industry	A binary variable equal to 1 if a company represents the extractive industry (oil, gas, metals, etc.)
Firm age	Log of the number of years since a company's establishment
Firm size	Company size indicator calculated as the natural logarithm of company total sales
Leverage	Financial leverage is defined as the ratio of total debts to shareholders' funds
Board size	Number of directors on a board
Tangibility	A ratio of fixed assets to the book value of total assets
<p>Note(s): ^a$CEO\ Tenure\ Slice = \frac{CEO\ tenure}{CEO\ tenure + Most\ experienced\ directors\ tenure}$, where CEO tenure – the number of years a CEO has worked in his position in a particular company; Most experienced directors' tenure – the sum of tenures of the four most experienced board members</p> <p>^b$CEO\ Prestige = CEO\ political\ background - \frac{Number\ of\ BoD\ members\ with\ a\ political\ background}{Total\ number\ of\ directors\ in\ a\ board}$, where CEO (board member's) political background equals one if a CEO (board member) has working experience in a governmental body</p> <p>^c$CEO\ Shares\ Slice = \frac{CEO's\ \%\ of\ shares}{CEO's\ \%\ of\ shares + BoD\ \%\ of\ shares}$, where CEO's % of shares – the percentage of this company's shares a CEO own; BoD % of shares – the sum of this company's shares, owned by the four board members with the highest ownership</p> <p>^dAn oligarch is assumed to be a person included in the Forbes' annual list of Russia's 25 wealthiest businessmen</p>	

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The mediating effect of job satisfaction between inclusive leadership and commitment to change: evidence from Brazil and Spain

Mediating
effect of job
satisfaction

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Abstract

Purpose – In the current context of change, leadership is significant in developing employees' commitment to change. In this work, the authors analysed the relationship between inclusive leadership and commitment to change and the mediating effect of job satisfaction between inclusive leadership and commitment to change.

Design/methodology/approach – Through a questionnaire, 256 employees from Brazil and Spain were interviewed. The hypotheses were tested through structural equations.

Findings – The results indicated that inclusive leadership is related to individuals' commitment to change and that job satisfaction mediates the relationship between leadership and commitment to change.

Originality/value – This research contributes to the literature on organisational change behaviour and the relationship between two critical contents – leadership and commitment to change – and points out the role of job satisfaction in this relationship. In addition, this work incorporates the variable country culture into the analysis model; however, it is not found to be statistically significant.

Keywords Inclusive leadership, Change commitment, Job satisfaction, Brazil, Spain

Paper type Research paper

1. Introduction

In the global economy, change has become necessary for an organisation to prosper (Carter *et al.*, 2013). In organisations, managers propose the change, but employees implement it. Therefore, the attitude of employees is critical to the success of the change (Lamm and Gordon, 2010). Thus, employees' commitment to change – which represents a psychological alignment with or an attachment to change that goes beyond reflecting a favourable situation or simple acceptance of the change (Herold *et al.*, 2008) – is the key to making change and represents a



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permanent strategy of searching for new opportunities. For this reason, organisations aim to stimulate employee commitment to change. In this sense, Oreg *et al.* (2011) pointed out that how employees perceive the change situation is critical to successful change development. Therefore, given their influential position, the literature has paid particular attention to organisational leaders and how they can guide followers towards attitudes and behaviours that support change initiatives (Bormann and Rowold, 2016). However, it would remain to analyse the style of leadership most linked to the change (Heine *et al.*, 2023). In other words, what qualities of an effective leader are positively related to the commitment to change, and how are the employees' attitudes related to leadership and change (Bommer *et al.*, 2005).

Going deeper into the above challenge, researchers have pointed out that a relational leadership style called *inclusive leadership* is associated with the successful promotion of change in organisations (Javed *et al.*, 2019). According to Younas *et al.* (2021), in the presence of inclusive leadership, employees are treated uniquely and their access to decision making is ensured, facilitating their specific contribution to change. In addition, this type of leadership encourages inclusion, inviting employees to participate more actively in organisational change (Katsaros, 2022).

Continuing with the importance of employee attitudes in accepting organisational change, it has been pointed out that job satisfaction is positively related to commitment to change (Yousef, 2000). As highlighted by Shah *et al.* (2017), if employees have positive feelings towards the job during the organisation of the change, they will accept the organisational change. In this sense, Solinger *et al.* (2021) indicated that job satisfaction is critical in the development of an environment that facilitates employees' commitment to change. Job satisfaction is connected to employees' well-being, which affects their behaviour (Wright *et al.*, 2007). Satisfied employees feel safe in their organisation and are willing to take on challenges. In addition, satisfied employees have more expectations of the organisation, leading to a more significant commitment to change development. Furthermore, leadership is related to job satisfaction. Implicit leadership theories (Epitropaki and Martin, 2005) assume a relationship between leadership and job satisfaction, organisational commitment and well-being. In addition, the most appropriate leadership behaviours oriented towards people management are supporting, developing, recognising and empowering employees (Yukl, 2012).

Therefore, inclusive leadership and job satisfaction are related to commitment to change and inclusive leadership is related to job satisfaction, leading us to consider the relationships between these three constructs. Thus, this work has two research objectives. The first objective is to analyse the relationship between inclusive leadership and employees' commitment to change. The second is to analyse the mediating effect of job satisfaction between inclusive leadership and commitment to change.

The literature has proposed that maintaining successful change depends directly on the employees (Armenakis and Bedeian, 1999). This work contributes to the literature on organisational change and the relationship between a group-integrating leadership style, such as inclusive leadership, in supporting employees during change and the role of job satisfaction in involvement in change. In addition, country culture is considered as a control variable, allowing the expansion of this research's scope. Thus, this paper considers commitment to change as a dependent variable, inclusive leadership as an independent variable, job satisfaction as a mediating variable and country culture as a control variable. Therefore, the participants in this study are 256 employees from Brazil and Spain (131 from Brazil and 125 from Spain). According to "Global leadership and organizational behaviour effectiveness" (Javidan *et al.*, 2015), these two countries represent Latin American and Latin European clusters, respectively.

2. Theoretical approach and development of the hypotheses

2.1 *Attitude towards change and commitment to change*

Dunham *et al.* (1989) asserted that one's attitude towards change is composed of an affective component (feelings), a cognitive component (thoughts) and a behavioural component. Individuals' attitudes towards organisational change are critical for the successful implementation of change (Oreg *et al.*, 2011) because organisations adopt long-term changes through their members. Attitudes towards change can be positive or negative and can be described, respectively, as readiness for change and resistance to change (Bouckennooghe, 2010). Positive attitudes towards change have been defined and operationalised using constructs such as acceptance of change, openness to change, change readiness and affective commitment to change (Albrecht *et al.*, 2020). Commitment to change symbolises an individual's acceptance of and psychological alignment with or attachment to change (Choi, 2011). Herscovitch and Meyer (2002) defined commitment to change as "a mindset that binds an individual to a course of action deemed necessary for the successful implementation of a change initiative" (p. 475).

2.1.1 *Inclusive leadership and commitment to change.* Formal leadership has evolved to support the collaborative improvement of organisations (McCauley and Palus, 2021), which allows them to face the challenges of change in the current globalised economy and with constant technological innovation. Specifically, inclusive leadership, as "leaders who exhibit visibility, accessibility, and availability in their interactions with followers" (Carmeli *et al.*, 2010, p. 250), plays an essential role in ensuring that differences do not generate conflict and that adverse outcomes are mitigated through positive relationships and the valuing of diverse identities (Sugiyama *et al.*, 2016), which contributes to the development of change.

Inclusive leaders guarantee employees access to the decision-making process and are available to answer queries that can resolve change-oriented problems (Carmeli *et al.*, 2010). As a result, inclusive leaders create a good working environment (Hollander, 2012) in which their employees' opinions are genuinely valued. This situation encourages employees to engage in change-oriented behaviours (Choi, 2007).

The literature has pointed out other characteristics of inclusive leadership that contribute to change. For example, this leadership style influences the equity experience of employees and drives the activities necessary to establish perceptions of inclusion (Chrobot-Mason *et al.*, 2016). In addition, when making decisions, the inclusive leader listens to ideas, respects opinions and helps employees solve problems (Choi *et al.*, 2017). Furthermore, inclusive leaders take full responsibility for results, especially in failure, encouraging employees to initiate change without fearing negative consequences (Javed *et al.*, 2019). Fatima *et al.* (2021) and Younas *et al.* (2021) found that inclusive leadership positively affects change behaviour. Therefore, we proposed the following hypothesis:

H1. Inclusive leadership is positively related to employees' commitment to change.

2.2 *The mediating effect of job satisfaction*

Job satisfaction is associated with the feelings and emotions that employees experience in relation to their roles in an organisation and is an important psychological indicator of the quality of their professional life. A widely accepted definition of job satisfaction in the academic literature is the "pleasurable or positive emotional state resulting from the appraisal of one's job or job experience" (Locke, 1976, p. 1300).

Inclusive leaders provide employees with emotional support, thereby gaining their trust (Nembhard and Edmondson, 2006). This is associated with the development of job satisfaction (Doerwarld *et al.*, 2021). Bin and China (2019) found that inclusive leaders could positively influence employee work attitudes and behaviours, thus positively affecting job satisfaction. In addition, some traits that identify an inclusive leader, such as supporting

people as members of the group and fairness (Randel *et al.*, 2018), are positively related to job satisfaction (Jiang *et al.*, 2020).

The relationship between job satisfaction and organisational change has been analysed in different studies. Gonzalez *et al.* (2022) examined the attitudes of individuals – as related to, for example, job satisfaction – during organisational change and found that those attitudes are associated with change, especially in terms of risk tolerance. Wanberg and Banas (2000) determined that lower levels of change acceptance are linked with less job satisfaction. Chiaburu *et al.* (2022) indicated that job satisfaction is a driver of change-oriented citizenship behaviours but to a lesser extent than affect.

Based on the above, job satisfaction behaves as a mediating variable between leadership and change. The reason for considering job satisfaction as a mediating variable is that, although inclusive leadership involves the behaviour of employees towards the achievement of goals, job satisfaction is considered a broad relationship between the individual and the company, in which the individual values whether the environment satisfies their needs (Lofquist and Dawis, 1991), which would indicate that inclusive leadership would affect organisational results to the extent that the individual positively values their link in the business environment. Furthermore, job satisfaction could moderate the ambiguous situation that change could generate for employees between maintaining the status quo and facing a changing situation and, therefore, heading towards the unknown (Yousef, 2002).

In addition, various studies have found that job satisfaction moderates other variables, including employee attitudes. For example, Wirawan *et al.* (2020) noted that the impact of psychological capital on job engagement is partially mediated by job satisfaction. Nguyen and Tran (2022) found that job satisfaction is a mediating mechanism in the relationship between procedural justice and citizen behaviour at the individual level. In regard to leadership and commitment to change, Yang (2011) reported that job satisfaction plays a mediating and moderating role that could improve the relationship between leadership and commitment to change. Therefore, we formulated the following hypothesis:

H2. Job satisfaction moderates the relationship between inclusive leadership and employees' commitment to change.

2.3 Control variables

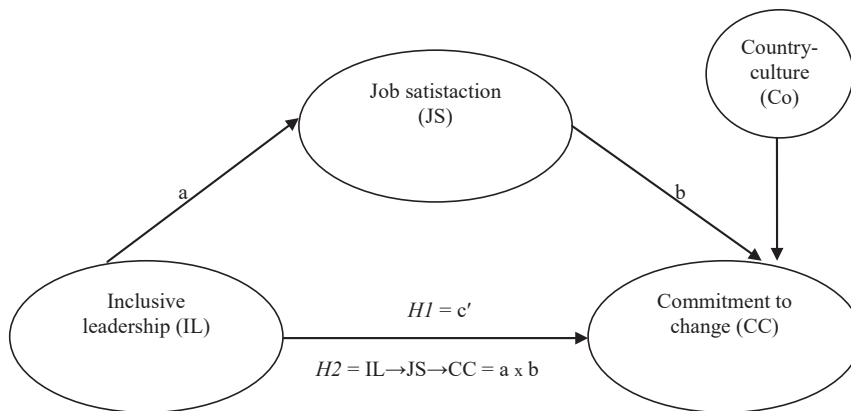
Some scholars have pointed out that national culture determines leadership style (Gerstner and Day, 1997). As Lee *et al.* (2014) stated, current meta-analytic research on culture and leadership indicates that national culture and cultural orientations are essential in understanding employees' leadership perceptions and leadership outcomes. Therefore, the country of the employees was proposed as a control variable that, as research has indicated, affects commitment to change (Newman and Scheikh, 2012) and job satisfaction (Nazarian *et al.*, 2022).

We selected two Latin countries: Brazil, from the American cluster, and Spain, from the European cluster (House *et al.*, 2004). The two countries have similarities in terms of the perception of leaders; however, there are some significant differences. Thus, the traits that most identify the leader in Brazil are "team oriented" and "charismatic", and the least-weighted characteristic is "autonomous". The traits that most identify the leader in Spain are also "team oriented" and "charismatic", and the least-weighted characteristic is "self-protective". The research model is shown in Figure 1.

3. Method

3.1 Data collection and participants

The research team recruited an incidental sample of employees from companies in Brazil and Spain. The sample (256 employees) was diverse in terms of demographic characteristics (see Table 1).



Source(s): Authors' own

Figure 1.
Research model

Variables	Sample <i>N</i>	Sample %
<i>Country</i>		
Brazil	131	51.2
Spain	125	48.8
<i>Firm Sector</i>		
Industry	72	28.1
Services	184	71.9
<i>Firm Size</i>		
Micro and Small (less than or equal to 99 employees)	115	44.9
Medium and Large (over 99 employees)	141	55.1
<i>Sex</i>		
Men	102	39.8
Women	154	60.2
<i>Job category</i>		
Manager	62	24.2
Middle manager	83	32.4
Employee	111	43.4
<i>N</i>	256	100

Source(s): Original table – created by authors of this article from data

Table 1.
Sample characteristics

As shown in Table 1, 51.2% of the employees were from Brazil and 48.8% were from Spain. Just over 28% (28.1%) of the employees were from the industrial sector, and 71.9% belonged to the services sector. In regard to firm size, 44.9% worked at a micro or small company (fewer than 99 employees) and 55.1% worked at a company with more than 99 employees. Just under half of the sample employees (39.1%) were male and 60.2% were female. Regarding their job category, 24.2% had a managerial position, 32.4% were middle managers and 43.4% were employees. The mean age of the participants was 36.82 years. They had, on average, spent 7.84 years at the organisation where they currently worked, and the average length of their work experience was 14.88 years.

3.2 Measurement scales

To formulate each of the constructs, we analysed the literature. The items had a scale that ranged from 1 to 7 (Kunin, 1955), where 1 represents a minor agreement with the sentence and 7 is the most significant agreement with it.

Commitment to change is a force that binds an individual to a course of action that allows the successful implementation of a change initiative. The mental effect of this course of action means that the employee assumes the costs associated with the change and desires to provide support because they believe in the inherent benefits of the change (Herscovitch and Meyer, 2002). In this study, commitment to change was measured with four items: (1) whether the respondent analyses situations before addressing a change, (2) whether they examine the possible consequences of actions they have taken, (3) whether they receive training related to the processes of change and (4) how they cope with change. These four items address the three components of commitment that have been described in the literature (Meyer and Allen, 1991): (1) affective commitment (desire to stay), (2) continuity commitment (perceived cost of leaving) and (3) normative commitment (perceived obligation to stay).

The second construct addressed job satisfaction. Researchers have measured job satisfaction using different theoretical approaches. Some studies have analysed satisfaction with a single item (Ghetta *et al.*, 2020), although most have evaluated it with several items (Judge *et al.*, 1998). For this reason, there is no consensus when considering the most appropriate number of items to use to measure job satisfaction. In this study, we used four items that address different facets of satisfaction in organisations (Smith *et al.*, 1969): (1) the work environment, (2) coworkers, (3) the supervisor and (4) organisational satisfaction.

Randel *et al.* (2018, p. 195) described four behaviours that characterise inclusive leadership: (1) supporting individuals as group members, (2) ensuring justice and equity within the group, (3) promoting individuals' diverse contributions to the group and (4) helping individuals to make a full contribution to the work of the group based on their unique perspectives and abilities.

3.3 Data analyses

We tested the research model with a partial least squares structural equation model (PLS path modelling), using the third version of the SMARTPLS technique (Ringle *et al.*, 2015). Researchers have put forward critical arguments for using the PLS-SEM method (Rigdon, 2016); among other circumstances, the use of PLS has been advocated for complex models and with small samples.

4. Results

4.1 Results of the measurement model

We estimated our model in Mode A using correlation weights (Table 2; Rigdon, 2016). The type of indicator that we used is a manifestation of constructs in which each indicator reflects the essence of the construct that it is intended to define (Diamantopoulos and Siguaw, 2006). Following an analysis of this type of model, the measures of internal consistency, reliability and validity for all the elements involved in the model are determined (Henseler *et al.*, 2016). In our case, the load for all the indicators was more significant than 0.7, so these indicators were conserved in the model (Hair *et al.*, 2012, Table 2).

Furthermore, all the components achieved a composite reliability greater than 0.7 (Table 2), and therefore these variables achieved satisfactory construct reliability (Chin, 1998). The average variance extracted was then applied to assess the convergent validity (Henseler *et al.*, 2009). All the compounds met this criterion because their average variance extracted exceeded the level of 0.5 (Table 2).

Finally, we analysed the discriminant validity (Table 3). This validity was evaluated through two criteria: (1) the Fornell and Larcker (1981) criterion and (2) the

Construct/Dimension	Loading	α cronbach	CR	AVE	Mediating effect of job satisfaction
Commitment to change		0.797	0.868	0.623	
Coping with changes	0.719				
Analysis of change consequence	0.799				
Analysis of change situation	0.833				
Training for change	0.796				
Inclusive leadership		0.919	0.943	0.805	
Supporting individuals as group members	0.893				
Ensuring justice and equity within the group	0.898				
Promoting individuals' diverse contributions to the group	0.899				
Helping individuals fully provide their perspectives, and abilities to group work	0.899				
Job satisfaction		0.793	0.866	0.620	
Environment	0.718				
Colleagues	0.713				
Managers	0.829				
Company	0.877				
Note(s): CR: Composite Reliability; AVE: Average Variance Extracted. Convergent validity					Table 2. Measurement model results
Source(s): Original table – created by authors of this article from data					

Fornell-larcker Criterion					Heterotrait-monotrait ratio (HTMT)				
	CC	Co	IL	JS		CC	Co	IL	JS
CC	0.789				CC	0.106			
Co	0.080	1.000			Co	0.514	0.060		
IL	0.442	0.000	0.897		IL	0.579	0.099	0.890	
JS	0.461	−0.077	0.782	0.787	JS				
Note(s): CC: Commitment for change, Co: Country-culture, IL: Inclusive leadership, JS: Job satisfaction. Discriminant validity									
Source(s): Original table – created by authors of this article from data									

heterotrait–monotrait relationship, with the criterion of 0.9 (Henseler *et al.*, 2015). All the variables attained discriminant validity.

4.2 Structural model analysis

To determine the statistical significance of the coefficient paths, we used the bootstrapping technique with 5,000 subsamples (Hair *et al.*, 2011). Table 4 shows the main parameters obtained from the three study models related to the structural evaluation. Model 1 presents the total effect of inclusive leadership on commitment to change, which was shown to be significant ($c = 0.447^{***}$). Model 2 shows how the effect of inclusive leadership on commitment to change became less significant when job satisfaction intervened ($c' = 0.194^{**}$). Routes a and b were significant. Therefore, both the apparent decrease in the direct effect that ceased to be significant (c') and the importance of the regression coefficients of a and b indicated the potential indirect effect of inclusive leadership on commitment to change, with job satisfaction as a mediator (Hypothesis 2). The critical condition for determining the mediating effect, however, was to prove the result of $a \times b$ (Hayes, 2009).

To examine the previous proposal, we obtained the value of the indirect effect ($a \times b = 0.248^{***}$) using Smart PLS, and it proved to be significant (see Table 5). Hypothesis 2 was therefore confirmed. Innovation culture partially mediated the relationship between

Table 4.
Structural model
results

Relationships	Model 1	Model 2	Support
	$R^2CC = 0.206$	$R^2JS = 0.612$ $R^2CC = 0.240$	
H1: IL→JS	$c = 0.447^{***} (9.070) [0.372; 0.535]$	$c' = 0.194^{**} (2.235) [0.050; 0.332]$	Yes
IL→JS = a		$0.782^{***} (33.330) [0.745; 0.822]$	
JS→CC = b		$0.317^{***} (3.292) [0.167; 0.480]$	
Control variable			
Co	$0.078 (1.330) [-0.018; 0.174]$	$0.104 (1.797) [-0.010; 0.216]$	
Note(s): IL: Inclusive leadership; JS: Job satisfaction; CC: Commitment for change, Co: Country-culture, (based on $t(4,999)$, one-tailed test) $t(0.05, 4,999) = 1.645$; $t(0.01, 4,999) = 2.327$; $t(0.001, 4,999) = 3.092$; (based on $t(4,999)$, two-tailed test); $t(0.05, 4,999) = 1.960$, $t(0.01, 4,999) = 2.577$; $t(0.001, 4,999) = 3.292$. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$			
Source(s): Original table – created by authors of this article from data			

collaborative climate and innovation capacity because the direct effect had lower significance (Hypothesis 1 = c') and the indirect effect (Hypothesis 2 = $a \times b$) was significant (Hayes and Scharkow, 2013).

We also calculated the variance accounted for (Hair *et al.*, 2014), which determined the size of the indirect effect ($a \times b$) in relation to the total effect (c). When the variance accounted for is greater than 20% (in the present case, the variance accounted for was 56.2%; see Table 5), there is said to be partial mediation (Hair *et al.*, 2014). Furthermore, the control variable relationships were not significant (0.078; see Table 4).

5. Discussion

This work had two objectives: (1) to analyse the relationship between inclusive leadership and employee commitment to change and (2) to analyse the mediating effect of job satisfaction between inclusive leadership and commitment to change. Regarding the first objective, based on the causal attribution mechanism (Weiner, 1986), it has been argued that employees' behaviour and attitude towards their leaders result from their attributions regarding the perceived causes of their leaders' behaviour (Younas *et al.*, 2021), so, in this study, we analysed the relationships between inclusive leadership and employees' attitude towards change. Attitude towards change is a multifaceted concept that captures feelings, cognitions and intentions concerning the change (Elizur and Guttman, 1976). The construct of "commitment to change" (Herscovitch and Meyer, 2002) has been studied because this could have a significant relationship with inclusive leadership. Research has highlighted the importance of leaders' commitment to organisational change (Stouten *et al.*, 2018); however, the mechanism through which leaders commit to change has not always been described (Heine *et al.*, 2023). The present study has shown that inclusive leadership relates positively to commitment to change. This proves that the characteristics that identify this leadership style, such as openness, accessibility, support and availability (Carmeli *et al.*, 2010), encourage followers to change.

Concerning the second objective, to determine the mediating effect of job satisfaction between inclusive leadership and commitment to change, the data indicate a partial moderation effect. This would mean that leaders would need employees to have a high level of job satisfaction to encourage their involvement in change. In addition to the influence of leadership, an employee's commitment to change requires a positive attitude towards work. In other words, leadership supports organisational changes, but feeling satisfied with one's job is a reasonable condition to empower oneself and dedicate more energy to change. This inference can be explained because the level of employees' satisfaction depends on the treatment that they receive from their organisation (positive or negative leadership) and to which they

Table 5.
Summary of mediating
effect tests

Total effect on CC (model 1)				Direct effect on CC (model 2)				Indirect effect on CC (model 2)								
BCCI				BCCI				BCCI								
Path	t	Lower	Upper	Path	t	Lower	Upper	Point estimate	t	Lower	Upper	Sig	Yes	56.2%		
IL (c)	0.447***	9.070	0.379	0.524	H1: IL (c')	0.194**	2.239	0.048	0.333	H2: (via JS)	0.248***	3.218	0.379	0.130	Yes	56.2%

Note(s): IL: Inclusive leadership; JS: Job satisfaction; CC: Commitment for change; Co: Country-culture; BCCI: Bias corrected confidence interval. Bootstrapping; (based on $n = 5,000$ subsamples). VAF: Variance accounted for; (based on $t(4,999)$, one-tailed test) $t(0.05; 4,999) = 1.645$; $t(0.01, 4,999) = 2.327$; $t(0.001, 4,999) = 3.092$; (based on $t(4,999)$, two-tailed test); $t(0.05, 4,999) = 1.960$; $t(0.01, 4,999) = 2.577$; $t(0.001, 4,999) = 3.292$. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Source(s): Original table – created by authors of this article from data

Mediating
effect of job
satisfaction

correspond accordingly (Islam *et al.*, 2022). These results are consistent with those of Xiu *et al.* (2022), who found that teachers' job satisfaction mediated the relationship between distributed leadership and involvement in change. Job satisfaction is a general attitude towards work that indirectly affects more specific attitudes, such as commitment to change.

The "country culture" control variable, which identifies national culture, was not significant for either commitment to change or job satisfaction. This could mean that specific leader attributes have the same significance in two cultures that share similar identities despite belonging to different clusters (Javidan *et al.*, 2015). Moreover, as has been found in other work comparing leadership types (Liang *et al.*, 2021), there may be culturally implicit perceptions of leaders' behaviour, such as respectability or charisma, that remain constant across cultures.

5.1 Theoretical implications

In line with other works (Hinduan *et al.*, 2009), this study investigated whether leadership is associated with employees' commitment to change. As stated in the hypotheses, this inclusive leadership was positively related to employees' commitment to change. Thus, this work advances the notion of the social identity of leadership (Hogg, 2001), which considers leadership as a group process in which the leader's influence is exerted through depersonalised processes of social attraction that make followers subscribe to the leader. In addition, it delves into the essence of the Relational Leadership Theory (RLT) (Uhl-Bien, 2006), which points out that leadership is a social process of influence towards change.

Job satisfaction mediates the influence between leadership and commitment to change. This situation is consistent with role ambiguity (Rizzo *et al.*, 1970), which describes an individual's need for clarification about the direction of their actions and expectations related to their work. Somehow, job satisfaction helps to assume certain risks associated with change and supports the leader's influence on employees' commitment to change.

5.2 Practical implications

The success of change in organisations mainly depends on their employees because organisations only announce the change; the implementation is carried out by the employees (Shah *et al.*, 2017). Thus, for a change to be implemented successfully, in addition to informing or monitoring its employees, an organisation needs to encourage its employees to design the proposed change to fit in with their preferences and daily work (Demerouti *et al.*, 2020). The data from this research show that an inclusive leadership, characterised by the inclusion of the person in the group, is related to the commitment to change of employees. Therefore, organisations installed in the difference should commit to including people in the group. In other words, manage diversity. Diversity management starts with recruitment and continues with training and development. It is about having teams with a vast repertoire of skills and experiences and with a greater awareness of the importance of linguistic and cultural richness.

Furthermore, organisational change is a double-edged sword; it is necessary for organisational viability (Day *et al.*, 2017) but sometimes has a negative impact on the workforce and is met with resistance (Oreg, 2006). Because of this, it is common for planned organisational change to prove unsuccessful (Werkman, 2009). Therefore, as part of ensuring that the circumstances are favourable to a proposed change, it is recommended that managers implement a change only when they have established that the employees are effectively or normatively committed to that change (Al-Shamali *et al.*, 2021).

5.3 Limitations and future lines of research

Some limitations of this work should be noted. First, in terms of internal validity, this study avoids systematic errors of the common method, particularly errors inserted by the context of

the measurement. It was found that the respondents did not, despite all the procedures and efforts to minimise and control them, for example, by trying to eliminate obvious overlap of items on measurement scales (Podsakoff and Organ, 1986). Second, perceptual data were used because leaders' influence ultimately rests on what subordinates perceive their leaders to be doing or to be like (Bandura, 1989), even if such perceptions do not always match reality. Nevertheless, future research could investigate the relationship between leadership behaviours and the drive for change, using data from multiple sources. Third, the data were taken from individuals of two nationalities through a questionnaire that showed good reliability and validity. However, statements about the generalisability of the results should await studies with different samples and samples from other cultures. In addition, the country culture variable could be analysed as a moderator variable to analyse for changes in effects between leadership and commitment to change. To identify causality fully, a definitive study could sample new employees and track their attitude towards change. Because this investigation tested a limited number of hypotheses, it could be helpful to delve deeper into critical aspects of leadership (Robinson and Kerr, 2009) that show positive and negative aspects of different leadership styles. Fourth, the constructs were measured at a particular point in time. It could be helpful to apply the suggested model longitudinally to consider the dynamics of employees' perception.

6. Conclusion

Organisational members' acceptance of and support for change are considered essential for planned organisational change (Herold *et al.*, 2007). Given this importance, in this study, we analysed the most appropriate leadership style for developing employees' commitment to change. The traits that identify this type of leadership, as critical aspects of a leader's ethical behaviour, such as supporting individuals and groups, stimulating justice and equality, promoting diversity and supporting people individually within a group, are vital in generating a positive attitude towards change without omitting the development of job satisfaction.

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Tracking the literature on strategic alliances in the biotechnology industry: insights from a bibliometric approach over the last 30 years

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Abstract

Purpose – The purpose of this study is to identify papers that have produced the most significant impact on research on strategic alliances in the biotechnology industry. The authors attempt to illustrate the thematic evolution of its intellectual structure through 616 papers published between 1992 and 2021.

Design/methodology/approach – The present research methodology relies on three distinct techniques, implemented using SciMat software: (1) bibliometric techniques, (2) scientific map analysis and (3) content analysis of research documents from the Web of Science (WoS). In this manner, the authors analyse the intellectual structure of the field of strategic alliances in the biotechnology industry, tracking its evolution over a period of three decades.

Findings – The study emphasises the relevance of “innovation” as a key theme and identifies several potential areas for future research, which could serve as a foundation for further investigations.

Originality/value – This study represents a novel contribution to the literature as it is the first to use the SciMat tool to analyse strategic alliances in the biotechnology industry. This research reveals that while strategic alliances have been assessed extensively across various industries, some topics, such as the types and formation of alliances, have not been specifically studied in the biotechnology industry. These areas as well as the barriers and variables influencing the formation of alliances offer promising avenues for future research in this field.

Keywords Strategic alliance, Biotechnology industry, Bibliometric analysis, Scientific mapping, Co-word analysis

Paper type Research paper

1. Introduction

A strategic alliance is characterised as a fluid mode of external expansion that entails two or more entities operating with legal and economic autonomy and without any financial obligations or hierarchical links. The underlying goal of such a partnership is to fulfil mutual objectives that may be difficult to achieve independently, such as enhancing competitive advantage, generating value and fostering synergies, by means of a time-limited contractual arrangement that governs the involvement of the participants (Carvajal-Camperos *et al.*, 2021,



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p. 303). In the biotechnology industry, strategic alliances are particularly important as they provide companies with access to new technologies that would otherwise be challenging to acquire due to the high costs and high risk of knowledge appropriation associated with this industry. Strategic alliances are instrumental in driving scientific, technological and innovative developments, which in turn foster sustainable economic growth, ultimately resulting in long-term success (Bengoa *et al.*, 2021).

The biotechnology industry is academically relevant due to its pivotal position in contributing to the national gross domestic product and generating job opportunities on a global scale. The substantial tax revenues generated by this industry further emphasise its importance. Recent events, such as the COVID-19 pandemic, have highlighted the critical role the biotechnology sector plays in safeguarding human lives. Notably, biotechnology accounts for seven out of 10 drugs currently in development worldwide. Additionally, this industry plays a key role in facilitating the transition to sustainable practices, such as the adoption of eco-friendly agricultural methods and the promotion of a bioeconomy. These efforts have contributed to an 18.4% reduction in the Environmental Impact Quotient and the conservation of water resources in crops (AseBio, 2021). The biotechnology industry is primarily composed of small- and medium-sized enterprises, except for pharmaceutical corporations (Leu, 2022). This sector is responsible for generating numerous ground-breaking innovations globally, which have propelled market growth. The biotechnology sector is also making significant contributions to the attainment of goal 17 of the 2030 Agenda for Sustainable Development (Agenda 2030, 2020).

As Carvajal-Camperos *et al.* (2021, p. 304) stated, strategic alliances have become fundamental to companies' competitive strategies as such partnerships facilitate the achievement of objectives that would otherwise be challenging to accomplish. Alliances present an opportunity for companies, particularly those in the biotechnology industry, to improve their capabilities in innovation, learning and training; to enhance their agility in responding to market demands; to optimise their efficiency and to distribute investment risks with their partnering companies (Lange and Wagner, 2021). However, there is a high risk of opportunism when partners want to leave the alliance, especially in research and development and innovation (R&D&i) activities (Palomeras and Wehrheim, 2021; Robinson and Stuart, 2007; Spieth *et al.*, 2021).

According to Chordà *et al.* (2007, p. 109), biotechnology is considered an emerging sector of advanced technology and is currently in the initial stages of its advancement, with no apparent limits to its potential growth. The authors also highlighted that biomedicine was the fastest-growing area of the sector as it was closely linked to the pharmaceutical industry. Thus, the utilisation of scientific discoveries and advancements for both commercial and public purposes is contingent upon entrepreneurs' initiatives to establish novel technology-oriented enterprises (Segers, 2015; Subramanian *et al.*, 2018).

In the biotechnology industry, strategic alliances face two primary hurdles. The first is the partners' ability to acquire current knowledge that is associated with intellectual property, and the second is funding (both public and private) to secure the necessary resources to undertake research projects and develop new products and processes that meet the needs of customers in an increasingly competitive and global market (Gilding *et al.*, 2020).

Researchers are interested in numerous areas of study in the field of strategic alliances in the biotechnology sector, but many topics remain to be developed; therefore, objective criteria must be used to evaluate the research that has been conducted to date, analyse its evolution and trends and identify gaps in the literature. To achieve these goals, we use bibliometric techniques: first, citation analysis to demonstrate the potential of the topic of strategic alliances; second, scientific mapping to study the evolution of this area of research and third, content analysis both to deepen the themes developed in the literature and to shed light on the topics that should be studied further. We then analyse the scientific output with SciMAT software (Cascón-Katchadourian *et al.*, 2020; Cobo Martín, 2012; Cobo *et al.*, 2015; Montero *et al.*, 2018).

The literature review shows that the scientific field of strategic alliances has experienced vast growth over the years, surpassing even some established scientific areas; however, this growth has not occurred in the biotechnology sector. Our research has two main objectives. The first is to analyse the evolution of strategic alliances in the biotechnology industry from 1992 to 2021 and to illustrate the intellectual structure of this discipline by identifying the key themes and theories that have attracted the attention of the research community. The second is to identify areas that must still be developed, and we hence define some avenues for future research.

Based on the literature review carried out in this research, our study is one of the first to apply bibliometric techniques to strategic alliances in the biotechnology industry over the last 30 years using SciMAT software. Prior to this study, there was a dearth of scholarly works that examined the intellectual framework and theoretical foundations of this area. This gap in research underscores the importance of the present work, which enhances the existing body of knowledge on strategic alliances in the biotechnology industry in particular.

The remainder of the paper is structured as follows: Section 1 offers an introduction to the topic at hand. Section 2 outlines the methodology employed in the research. Section 3 presents the findings generated through the use of SciMAT, and it details the primary issues, theories and research gaps concerning strategic alliances within the biotechnology industry. Section 4 offers an integrative analysis of the scientific mapping results. Finally, Section 5 provides conclusive remarks on the research conducted, along with its limitations.

2. Research design and methodology

The extant literature offers various approaches to conducting a systematic literature review. Some scholars advocate for a traditional (manual) theoretical review, in which the researcher uses their expertise to select relevant documents and conduct a content analysis to derive insights about the state of knowledge in the field (Carvajal-Camperos *et al.*, 2021; Gilal *et al.*, 2019; Paul and Rosado-Serrano, 2019). Other scholars employ a meta-analysis approach that combines statistical results from multiple studies to identify patterns that may not be apparent from individual studies alone (García Cruz and Ramírez Correa, 2004; Gomes *et al.*, 2016; Knoll and Matthes, 2017; Mariano *et al.*, 2012). Bibliometric analyses that systematically examine bibliographic data, such as publication and citation counts, are also utilised to gain insights into various aspects of scholarly communication (Albort-Morant and Ribeiro-Soriano, 2016; Chatterjee and Sahasranamam, 2018; Dabić *et al.*, 2020; Fakhra *et al.*, 2020). Moreover, some researchers undertake in-depth hybrid analyses that combine bibliometric and content analysis (de Diego and Almodóvar, 2021; Rodríguez-Ruiz *et al.*, 2019). For the present study, we selected a hybrid approach to analyse the conceptual structure of strategic alliances in the biotechnology industry and to identify future research directions through the use of bibliometrics and content analysis.

In line with other literature reviews, we selected scholarly papers published in the main databases of the Web of Science (WoS) platform as our unit of analysis. The WoS provides access to a vast array of peer-reviewed bibliographic databases, thus ensuring the high quality of the published papers (Bouckennooghe *et al.*, 2021; Fernandes *et al.*, 2022; Ferreira *et al.*, 2022; Klarin and Suseno, 2021; Xu *et al.*, 2021; Zhang *et al.*, 2021). We specifically focused on the *Science Citation Index Expanded* and *Social Sciences Citation Index* databases, which are related to our research topic.

We based our research on Cobo *et al.* (2011) methodology, which involved using SciMAT (Cobo *et al.*, 2012; Cobo *et al.*, 2012; Cobo *et al.*, 2015). This tool is based on the h-index and co-word analysis (Callon *et al.*, 1983; Chen *et al.*, 2016; Gálvez, 2018; Leung *et al.*, 2017). This methodology allowed us to visualise the behavioural subdomains of a specific area of research over a range of time. Specifically, we used the SciMAT workflow (Cobo *et al.*, 2012, p. 70), which includes four stages that are developed sequentially, as indicated in Figure 1.

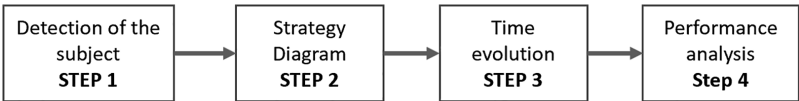
Topic detection was based on the analysis of bibliometric performance indicators through published papers and citations received (Brandão, 2019; de Diego and Almodóvar, 2021; Egghe and Rousseau, 2020; Hu *et al.*, 2020).

In the WoS search, we used the terminology identified by Carvajal-Camperos *et al.* (2021, p. 293) regarding the concept of “strategic alliance” (e.g. “alliance”, “cooperation”, “coalition”, “joint venture”, “joint action” and “bilateral agreement”, along with derivations thereof). In addition, the search was limited to biotechnology industry publications and refined by “management” or “business” categories. Finally, we only included published academic papers and reviews because they are considered “certified knowledge” (Fernandez-Alles and Ramos-Rodríguez, 2009; Ramos-Rodríguez and Ruíz-Navarro, 2004). These conditions ensured a high level of data quality (Fernandez-Alles and Ramos-Rodríguez, 2009; Ramos-Rodríguez and Ruíz-Navarro, 2004).

The data were obtained from the WoS on 1 June 2021. The search yielded 772 articles, and we screened abstracts and manuscripts to discard papers that did not meet the required criteria. A total of 616 papers met the search equation. Figure 2 shows the evolution of these publications and their citations on strategic alliances in the biotechnology industry by year. This allowed us to study the maturity of the topic over a period of almost 30 years.

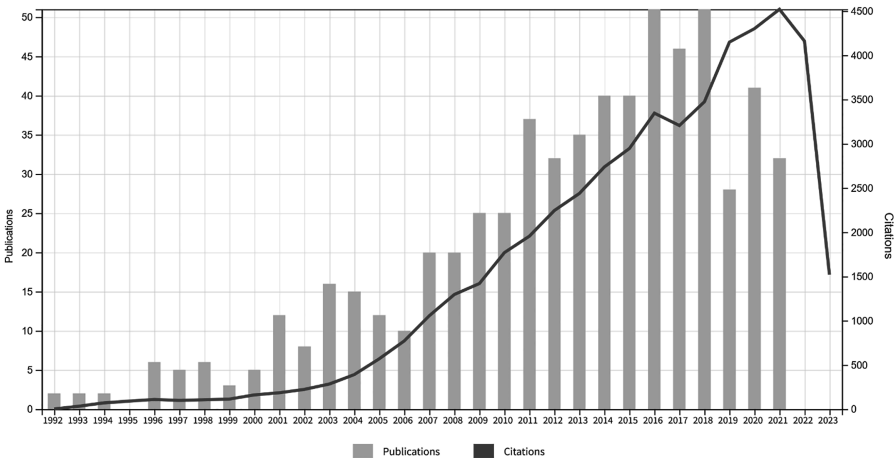
The present study involved exporting 616 articles to the SciMAT software for further analysis. To ensure the accuracy and reliability of the data, we comprehensively refined the set of keywords. This involved consolidating keywords that conveyed similar meanings (e.g. singular and plural forms) and eliminating terms with vague or overly general connotations that failed to contribute substantively to the analysis (such as “research” or “study”). The initial set of 1,946 keywords was subsequently reduced to 992 through a

Figure 1.
Workflow of the steps
of the methodology



Source(s): Cobo Martín (2011: 70)

Figure 2.
Evolution of
publications and
citations in WoS on
strategic alliances in
the biotechnology
industry



Source(s): Web of Science (2021)

process of manual filtering. The temporal scope of the study spanned 30 years, from 1 January 1992 to 1 June 2021. Following the approach of Cobo *et al.* (2011), we divided the 30-year time frame into five consecutive periods, each spanning 6 years. The distribution of the number of documents per period is presented in Figure 3.

Once we created the periods, we analysed the data following the methodology outlined by Cobo Martín (2011, p. 152). At the end of the 10 steps, we analysed the scientific maps showing two types of visualisations: longitudinal and by period. In the longitudinal visualisation, we present the evolution maps, which identify the development of the themes over the periods, as well as their continuity or disappearance. In the period visualisation, we show detailed information from the results obtained in each period and present strategic diagram. Figure 4 illustrates the implications arising from the distribution of topics across the four quadrants.

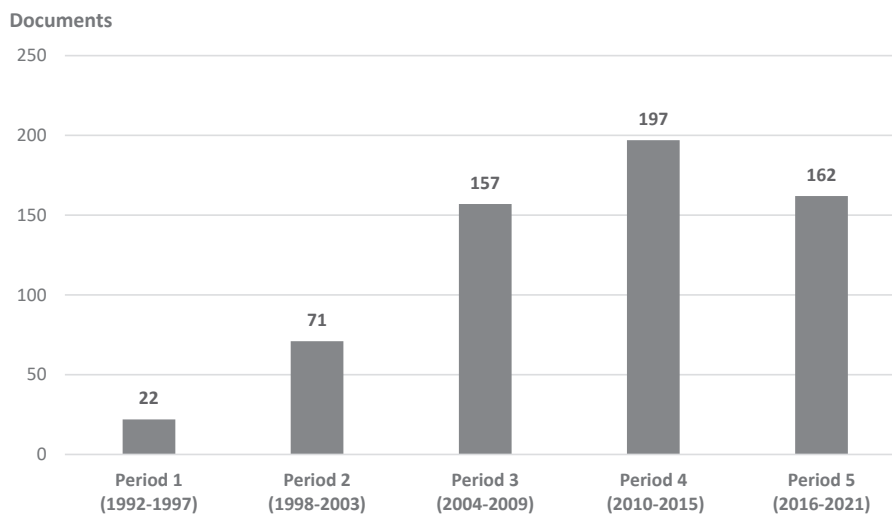
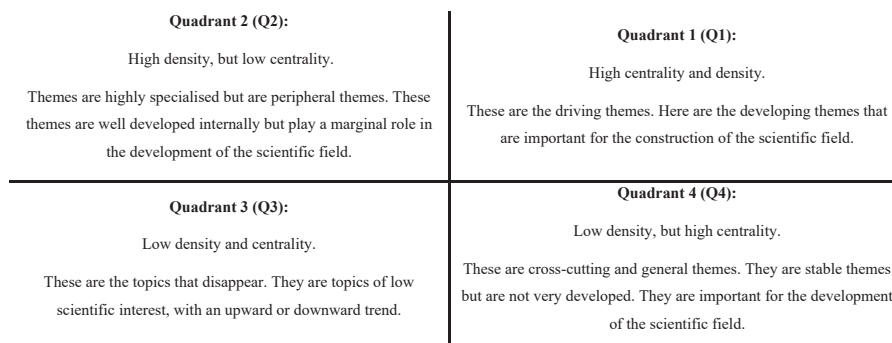


Figure 3.
Number of documents per period

Source(s): Authors' own elaboration



Source(s): Authors' own elaboration

Figure 4.
Strategic diagram of research themes

3. Analysis of the scientific map of strategic alliances in the biotechnology industry

Figure 5 displays the thematic evolution of the research field over the five periods. In the first period, research on strategic alliances focuses on a single topic, namely “innovation” in the biotechnology industry. As time progresses, research on “innovation” is maintained, and “transaction costs” theory (TCT) and different approaches to the resource-based view (RBV; “dynamic capabilities” and “capabilities”) come into play. In addition, the specific case of “networks”, “technological discontinuities” and new topics related to corporate finance (“investments” and “public offerings”) are addressed. In the third and fourth periods, there is a large proliferation of different topics, with 12 and 13 topics of high relevance, respectively. In the fifth period, there is a reduction in the number of topics analysed, indicating that academics focus their research on 10 specific sub-areas.

A noteworthy observation pertains to the enduring prominence of the “innovation” theme, which has garnered sustained research attention over time, with varied facets of this theme being investigated directly or indirectly. The biotechnology industry poses unique challenges, as companies operating within this sphere require rapid and secure knowledge generation despite typically being comprised of small or medium-sized entities with limited resources, negotiating skills and project management experience and possessing a limited or scarce client portfolio. Consequently, extant literature has focused considerably on examining the benefits and drawbacks of collaborative R&D&i processes involving external organisations. For a specific analysis of the themes developed in each of the periods, it is necessary to design strategic diagrams.

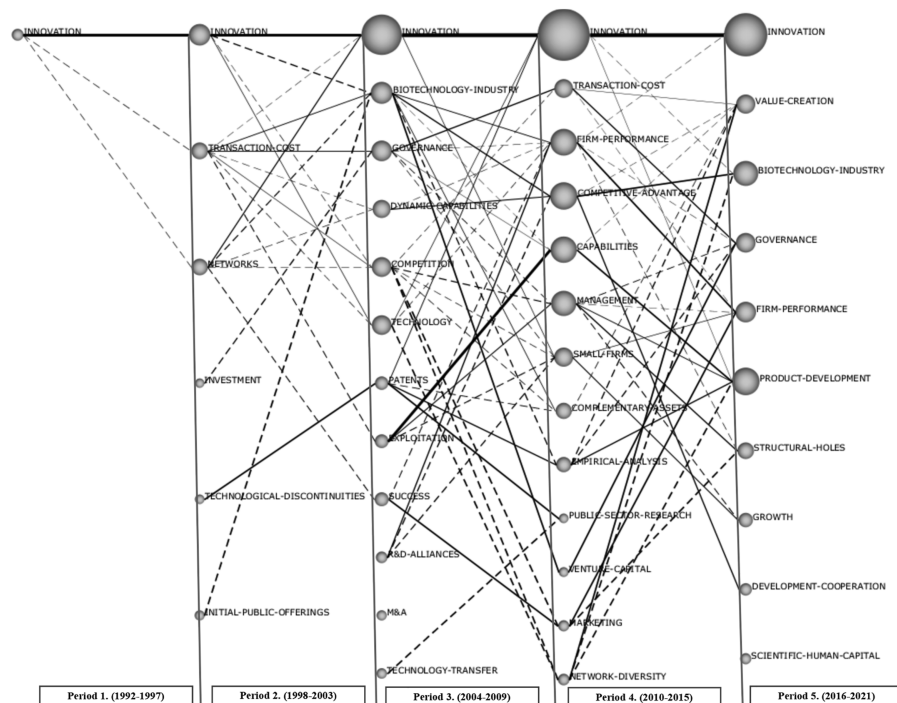


Figure 5.
Evolution of the
longitudinal map of
strategic alliances in
the biotechnology
industry

Source(s): Own elaboration using SciMat software

3.1 Strategy diagram analysis: period 1 (1992–1997)

The strategic diagram presented in Figure 6 pertains to Period 1 and provides an overview of the single cluster that characterised this period, along with its corresponding performance indicators, including centrality/density values, h-index and the number of citations.

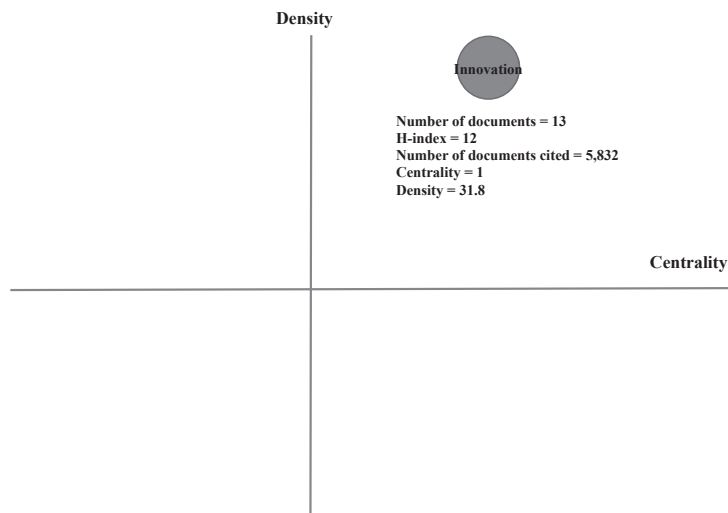
Notably, this diagram highlights the fact that strategic alliances within the biotechnology industry revolve around a singular theme, namely “innovation”. This driving theme is characterised by a centrality value of 1, a density value of 31.18, an h-index of 12 and 5,832 citations. This finding suggests that innovation is a central and highly valued aspect of strategic alliances within the biotechnology industry during this period.

3.2 Strategy diagram analysis: period 2 (1998–2003)

In Period 2 (1998–2003), the strategic diagram indicates that strategic alliances in the biotechnology industry revolve around six research themes. Figure 7 shows the strategic diagram for the period and the groupings with their performance indicators.

The cluster “innovation,” located in the Q1 quadrant, has the following indicators: a centrality of 128.89, a density of 37.86, an h-index indicator of 41 and 19,161 citations. From this, it can be inferred that innovation is a driving theme, of great interest to researchers and important for the structure of strategic alliances in the biotechnology industry. The density of 37.86 is not the highest in Period 2, but it is the cluster of greatest interest to researchers. Two other themes are important to researchers. The first is the “networks” cluster, located in quadrant Q4, with a centrality of 76.87 and a density of 11.55. These figures suggest that the topic under consideration holds significant relevance for advancing the scientific domain, given its consistent, yet underdeveloped nature. The second theme is the “transaction costs” cluster, with a centrality of 65.63 and a density of 34.15. This cluster lies at the intersection of quadrants Q1 and Q4, denoting a theoretical framework that is progressively employed to elucidate diverse facets of strategic alliances.

Whilst the “innovation” cluster demonstrates the greatest impact, the “transaction costs” and “networks” clusters are in close proximity. This is reflected in the individual citation counts of 19,161, 16,559 and 5,832, respectively, which far exceed the combined total of the



Source(s): Authors' own elaboration

Figure 6.
Strategic diagram with
performance
indicators. Period 1
(1992–1997)

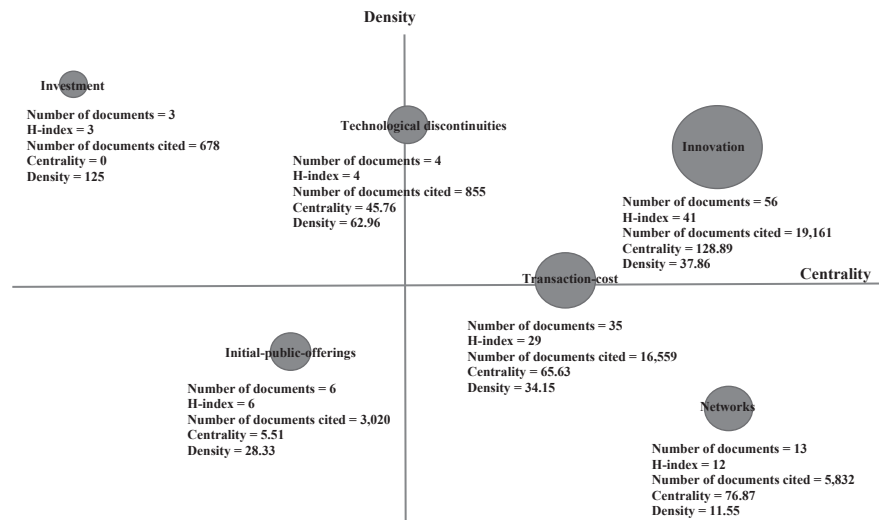


Figure 7.
Strategic diagram with
performance
indicators. Period 2
(1998–2003)

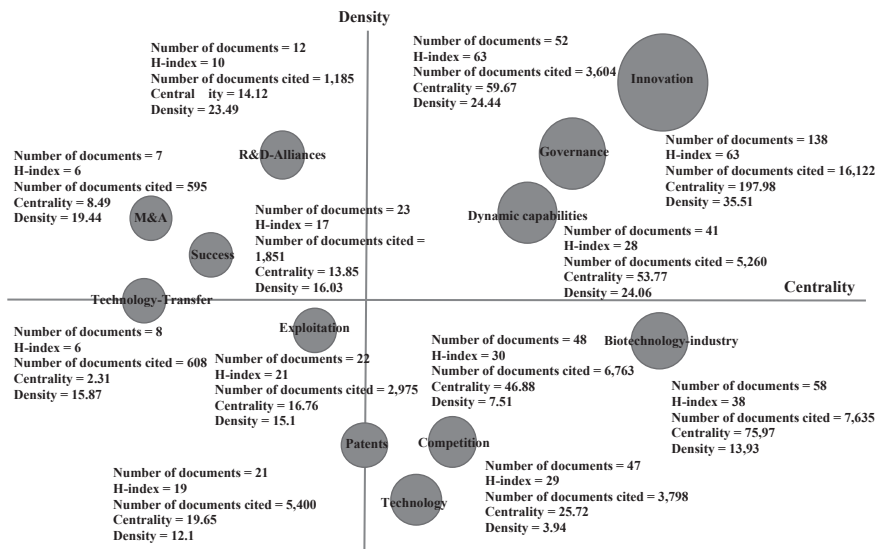
Source(s): Authors' own elaboration

remaining three themes, amounting to a mere 4,553 citations. These three themes encompass the “investment”, “technology discontinuities” and “initial public offerings” clusters, yet their respective indicators indicate that they remain underdeveloped. For example, the cluster “initial public offerings”, located in quadrant Q3, has a density of 5.51 and a centrality of 28.33; this means that it is underdeveloped and has not evolved much. The last two clusters, “investment” and “technological discontinuities”, present less relevant indicators.

3.3 Strategy diagram analysis: period 3 (2004–2009)

In Period 3 (2004–2009), the strategy diagram indicates that partnerships in the biotechnology industry centre on 12 research themes. Figure 8 displays the strategic diagram, featuring distinct clusters and their corresponding performance indicators.

The “innovation” cluster remains in the first quadrant, with a centrality of 197.98 and a density of 35.51, an h-index of 63 and 16,122 citations, which are the highest values of the period. In the same quadrant Q1, we observe the clusters “governance”, with a centrality of 59.67 and a density of 24.44, and “dynamic capabilities”, with a centrality of 53.67 and a density of 24.06. These values indicate that the above-mentioned themes are in full development and are of great interest to researchers. Quadrant Q4 features other topics of interest: “biotechnology industry”, “competition” and “technology”, with centrality scores of 75.97, 46.88 and 25.72 and density values of 13.93, 7.1 and 3.94, respectively. These topics, although relevant for the advancement of the scientific field, are underdeveloped. In quadrant Q2, the clusters “R&D alliances”, “success” and “mergers and acquisitions” are of marginal importance for the development of the scientific field. From the position of the cluster “exploitation” in quadrant Q3, we deduce that this is a disappearing theme, as it has both low density and low centrality. The cluster “technology transfer” is located between quadrants Q2 and Q3, with a low centrality of 2.31 and a density of 15.87, which could indicate that it is an under-researched topic and could disappear because it is of little interest to researchers. Finally, the “patents” cluster, located between quadrants Q3 and Q4 and with a centrality of 19.65 and a density of 12.1, is growing and may develop in the future.



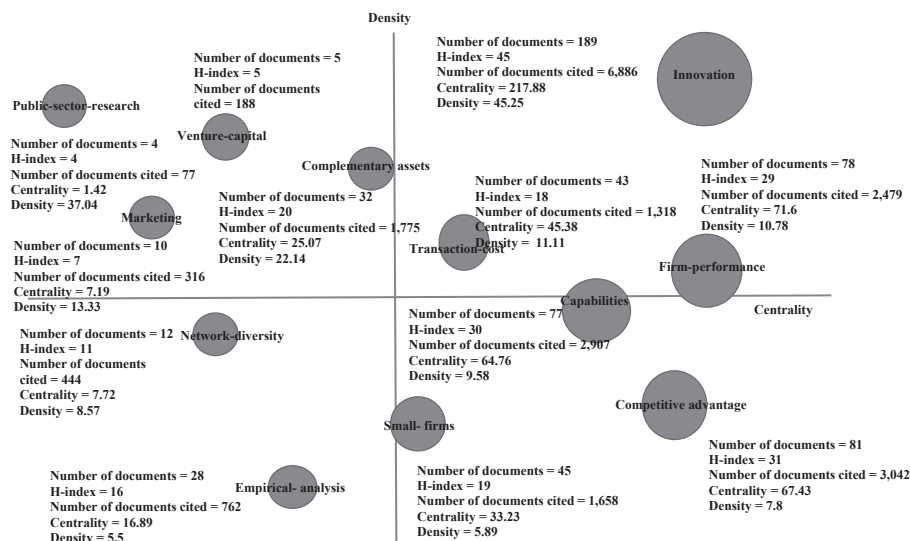
Source(s): Authors' own elaboration

Figure 8. Strategic diagram with performance indicators. Period 3 (2004–2009)

3.4 Strategy diagram analysis: period 4 (2010–2015)

In Period 4 (2010–2015), the strategic diagram indicates that strategic alliances in the biotechnology industry revolve around 13 research themes. Figure 9 shows the strategic diagrams and the full set of indicators.

In the first quadrant, “innovation” emerged as the foremost cluster, with a centrality score of 217.88, a density of 45.25, an h-index of 45 and 6,886 citations. Notably, this cluster appears



Source(s): Authors' own elaboration

Figure 9. Strategic diagram with performance indicators. Period 4 (2010–2015)

to have already undergone significant development; nevertheless, scholarly interest in innovation remains consistent. Quadrant Q1 also contains the cluster “transaction costs”, with a centrality of 45.38 and a density of 11.11. TCT first appeared in Period 1, located between quadrants Q1 and Q4, and is now fundamental to the construction of the scientific field of strategic alliances. In the transition between quadrant Q1 and Q4, we observe the cluster “firm performance”, with a centrality of 71.6 and a density of 10.78. While the performance indicators for these clusters are noteworthy, they fall short of those exhibited by the “innovation” cluster, thus suggesting that these areas remain subjects of ongoing research and development. Quadrant Q4 features several enduring clusters that are relevant for the academic community; however, they require further refinement and expansion. These clusters include “competitive advantage” and “management”, with centrality scores of 67.43 and 56.63 and density values of 7.8 and 5.79, respectively. Moreover, “small firms”, with a centrality of 33.23 and a density of 5.89, is located at the intersection of quadrants Q3 and Q4. In quadrant Q3, we observe the clusters “network diversity” and “empirical analysis”, with centrality scores of 7.72 and 16.89 and density values of 8.57 and 5.5, respectively. Quadrant Q2 contains the clusters “public sector research”, “venture capital” and “marketing”, which are poorly developed and play a marginal role in the development of the scientific field. Finally, the cluster “complementary assets”, with a centrality of 25.07 and a density of 22.14, is located between quadrants Q1 and Q2. These values indicate that the theme has attracted the attention of researchers but that its links with other themes are not well developed because they are highly specialised.

3.5 Strategy diagram analysis: period 5 (2016–2021)

In Period 5 (2016–2021), the strategic diagrams indicate that strategic alliances in the biotechnology industry centred around 10 research themes. The results are presented in Figure 10.

Quadrant Q1 continues to show the “innovation” cluster in the first position. The high relevance of this cluster is supported by a centrality of 210.72, a density of 41.06, an h-index of

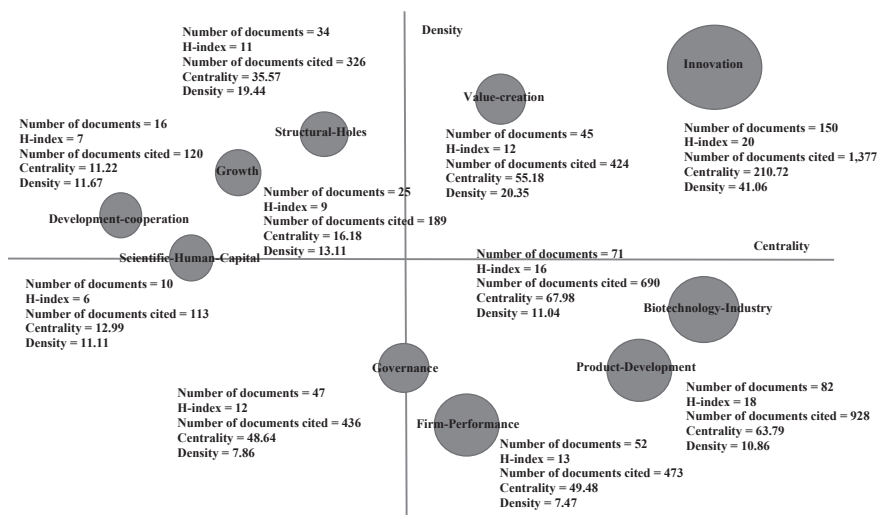


Figure 10.
Strategic diagram with
performance
indicators. Period 5
(2016–2021)

Source(s): Authors' own elaboration

20 and 1,377 citations. According to these indicators, “innovation” remains the cluster of greatest interest to researchers, and the values may indicate that, after 30 years of research, it has reached maturity. Quadrant Q1 also contains the “value creation” cluster, which has a centrality of 55.18 and a density of 20.35 – indicators that are considered high but not as high as those of the “innovation” cluster.

In addition, Figure 10 illustrates a number of noteworthy themes, including the cluster called “biotechnology industry”, which repeats its location in the Q4 quadrant of Period 3, albeit with a higher number of citations, from 58 to 71 (an increase of 18.30%), and a reduced cluster density, from 13.93 to 11.04 (a decrease of 29.74%). This trend may suggest that researchers are exploring other areas of interest alongside the biotech industry. The clusters “product development” and “firm performance” are also located in quadrant Q4, with centrality scores of 63.79 and 49.48 and densities of 10.86 and 7.47, respectively. These results indicate that these are important themes for the advancement of the scientific field but have undergone little development. As for the theme “governance” (located at the intersection of quadrants Q3 and Q4, but which was located in Q1 in Period 3), its centrality value decreased from 59.67 in Period 3 to 48.64 in Period 5 and its density decreased even more: from 24.44 to 7.86. These data could indicate that interest in the topic is declining. The cluster “scientific human capital”, located between quadrants Q2 and Q3, has a centrality of 12.99 and a density of 11.11. These values, and their location, indicate that the themes are underdeveloped and marginal; it is not yet known whether their evolution will be upward or downward. Finally, in quadrant Q2, we observe the clusters “structural holes”, “growth” and “development cooperation”, all of which have a negligible impact on the progress of the scientific domain.

4. Integrative considerations on the results of scientific mapping: Exploring the main theoretical underpinnings

4.1 Exploring the primary approaches employed in investigating strategic Alliances within the biotechnology industry

One of the main contributions of this review is the identification of the main theories used to support strategic alliances in the biotechnology industry. Through content analysis of 616 articles, we found that TCT (Coase, 1937; Hennart, 1988, 1991; Williamson, 1975, 1979) and RBV (Barney, 1991; Barney *et al.*, 2001; Grant, 1996; Wernerfelt, 1984) exert the greatest influence on the literature on strategic alliances in the industry. Based on these theories, research was conducted on different topics in the biotechnology industry, such as R&D, networks, entrepreneurship, cooperation, governance, organisation, firm performance, complementary assets, technology and technological change, capabilities, markets and product development.

TCT represents the foremost theory in the realm of strategic alliances and is primarily concerned with the minimisation of contract costs to facilitate optimal partner selection and transaction agreement (Dadfar *et al.*, 2014; Di Dio and Correani, 2020; Grant and Baden-Fuller, 2004; Reuer and Ariño, 2002; Williamson, 1991). According to TCT, strategic alliances are an intermediate formula between the internalisation of activities and market exchanges, as they partially internalise an exchange. This theory posits that alliances will be chosen when one of two situations occurs (1) transaction costs are neither too high (i.e. internalisation is not preferable): nor too low (i.e. going to the market is not preferable) but somewhere in-between (Gulati, 1995a, b; Williamson, 1991) or (2) full internalisation is the preferred option, but some constraints prevent it (e.g. lack of resources or expertise), and a second-best option, i.e. semi-internalisation, is thus chosen (Thomas *et al.*, 1997). The TCT perspective assumes opportunistic behaviour, which is associated with alliance performance, whose associated risks are sought to be minimised by optimal partner selection (Ali *et al.*, 2021; Judge and Dooley, 2006). According to TCT, partnerships may fail to materialise or may break down due

to opportunistic conduct stemming from inadequate trust and commitment between partnering entities (Dadfar *et al.*, 2014; Reuer and Ariño, 2002; Todeva and Knoke, 2005). Strategic alliances are associated with many risks, especially in the biotechnology sector, which can lead to their failure.

The RBV is the second theory used to analyse strategic alliances. This theory is diametrically opposed to TCT, since the minimisation of transaction costs is no longer the central focus of corporate decision-making. According to the RBV, decision-making is based on the expansion of a firm's resources and capabilities (Almodóvar Martínez, 2007), and all firms are heterogeneous and unique, especially biotechnology firms, as their resources are different (Hernández, 2010; Teece, 1982). Therefore, each firm's knowledge base is also unique and determines the performance of the firm (Dadfar *et al.*, 2014; Grant, 1996). Sometimes, however, knowledge cannot be traded in the market and must be obtained by other means (Barney, 1986). Thus, the RBV suggests that an alliance is the ideal option when a firm needs resources and/or capabilities that are characterised by mobility, inevitability and/or imperfect substitutability, so that they cannot be acquired by other means (Barney, 1991) and, therefore, can neither be acquired through the market nor be timeously and cost-effectively developed internally.

Strategic alliances provide prime opportunities for an organisation to access the knowledge of partner firms (Das and Teng, 2000a, b). However, the RBV highlights that organisations form clusters with all their resources and capabilities (Yasuda, 2005). When organisations cannot acquire resources through market transactions or cannot develop them internally, they resort to strategic alliances, and their formation is justified by the creation of value through the resources and capabilities of the partners (Das and Teng, 2000a, b; Glaister and Buckley, 1996). The RBV conceives inter-organisational relationships as a way to acquire resources; these relationships, in turn, generate synergies, taking into account that resources should be complementary or similar, as all partners should offer surplus resources and seek complementary resources to transfer or pool, which is of great benefit to the biotechnology sector (Hoffmann *et al.*, 2010; Subramanian *et al.*, 2018, pp. 5–6).

4.2 Mature, emerging and unaddressed issues in the literature

According to the analysis of the strategy maps and the different clusters, the theme “innovation” received the most attention from researchers during the five periods. From Period 1 onwards, researchers' interest grew steadily. However, in Period 5, although the “innovation” cluster had the highest impact, its h-index decreased. This indicates that the theme reached its maturity and gave way to other themes, such as “governance”, “dynamic capabilities” and “value creation”, which are driving themes with a high degree of development.

On the one hand, themes such as “networks”, “competitive advantage”, “management”, “biotechnology industry”, “product development”, “technology”, “firm performance”, “patents” and “small firms” are basic and transversal themes that may be the next to be developed, depending on the research and the relationships that exist between their nodes, both internally and externally. On the other hand, “technology transfer”, “diversity networks”, “exploitation” and “initial public offerings” are emerging themes and may disappear, as their nodes have a low weight compared with the internal and external nodes of the other three quadrants, which could indicate that they are not of interest to researchers.

Some themes, such as “scientific human capital”, “marketing”, “complementary assets”, “R&D alliances”, “structural holes”, “venture capital”, “growth”, “investment” and “public sector research”, are highly developed internally, but they are isolated. These themes are not of interest to researchers.

We found that, in the biotechnology industry, some topics have received little to no attention and could be the subject of future lines of research. In particular, the following topics have been addressed globally in the analysis of strategic alliances but not specifically or in

depth in the biotechnology industry: contracts and types of contracts, formation of strategic alliances, barriers or variables that influence the formation of alliances, partner selection, success, failure, opportunism, internationalisation, entrepreneurship, resilience, alliance performance, reputation, spin-offs and knowledge transfer. These topics could be the focus of future research in the biotechnology industry.

Furthermore, we propose several pertinent research gaps that remain relatively unexplored or that are currently in their nascent stages. These include (1) an investigation into the aspects or variables associated with the value creation of biotechnology companies during Period 5, (2) an extensive inquiry into the internalisation of biotechnology companies via strategic alliances, (3) an in-depth exploration of the factors that exert influence over the success of strategic alliances within the biotechnology industry and (4) a comprehensive study of pre-alliance dynamics to determine the aspects or factors that impact contract formation and signing in biotechnology alliances (Carvajal-Camperos *et al.*, 2023).

5. Conclusions

In this research, we conducted a literature review of strategic alliances in the biotechnology industry, and we presented, over five different periods, the clusters that constitute the key topics for this sector. We used the SciMAT tool, which allowed us to analyse and depict the relationships among strategic alliances in the industry and other topics. The relevance of this line of research stems from the significant economic impact of the biotechnology industry in many countries. The industry has emerged as a crucial contributor to job creation and has demonstrated consistent growth over time (AseBio, 2020, 2021).

Our study indicates a robust association between topics that exhibit high centrality, situated in the right quadrants of the strategy diagrams, and the corresponding number of citations they receive, as depicted in Figures 6 through 10. Specifically, our findings underscore the significant impact of topics located in these quadrants on the realm of strategic alliances. Over the five periods under review, innovation was the predominant theme within the literature – a finding that aligns with the substantial number of authors who have dedicated their research to this subject. This body of scholarship has exerted a notable influence on the field, particularly regarding topics linked to innovation and associated nodes, such as industry, networks, patents, technology, absorptive capacity, alliance formation, product development, collaboration, opportunism and dynamic capabilities (Chung *et al.*, 2021; Hu *et al.*, 2021; Melnychuk *et al.*, 2021; Vedel, 2021). We also drew upon theories such as TCT and the RBV to assess the function of alliances in relation to various factors (Hu *et al.*, 2021; Lange and Wagner, 2021; Na *et al.*, 2021; Palomeras and Wehrheim, 2021; Vlasisavljevic *et al.*, 2021).

Finally, our research shows that strategic alliances in the biotechnology industry remain an area of interest for researchers. Notably, the topic of innovation has been studied for more than 30 years and continues to evolve. Issues such as the network structure of collaborative alliances continue to be investigated to observe their course and impact on the industry (Pammolli *et al.*, 2021). Likewise, ongoing research delves into the asymmetrical impacts of alliances on absorptive capacity (Do Prado Vicentin, Galina, Alves and Viana, 2021). Recent studies have shed light on the potential impact of cooperation on the development of in-house R&D human capital, particularly in the context of alliances with competitors (Vlasisavljevic *et al.*, 2021). The biotechnology industry has emerged as a subject of interest for research on radical innovations in small businesses through knowledge exchange and cooperation. Moreover, investigations have been conducted to discern the effects of partner collaboration on the advancement of in-house R&D human capital (Shkolnykova and Kudic, 2022). Additionally, researchers have sought to determine the relationships among partner collaboration, the degree of external competition and the probability of alliance dissolution

(Hu *et al.*, 2021). These studies demonstrate a growing interest in the role of cooperation and alliance formation in facilitating the development of human capital within the realm of R&D.

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