

The moderating effect of agglomeration on horizontal differentiation and online reviews: the case of Paris hotels

Moderating
effect of
agglomeration

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Abstract

Purpose – Hotels are immersed in a very competitive environment and hoteliers have to plan and redesign their strategies to stay in the hospitality industry while faced with a steady rise in competition. Hoteliers can employ horizontal differentiation strategies and pricing decisions to gain a competitive advantage over their competitors. The goal of our work is to analyse the effect of pricing and horizontal differentiation strategy of a hotel on its online reputation and to analyse if the hotel location and agglomeration of competitors moderates their relationship with online reputation.

Design/methodology/approach – With a sample of 264 hotels from Paris, an empirical study is developed that aims to analyse, using regression techniques, the impact of price, differentiation, location and competitive environment on online ratings given by consumers in the hospitality context.

Findings – The paper provides empirical evidence of how a good location improves the online reputation of a company and how pricing strategies should take into account the location and number of competitors since a good location allows premium prices to be valued positively by consumers while an inappropriate location can produce the opposite effect. Depending on location, the number of competitors can intensify or reduce the effect of price on online reputation. Finally, online reputation only benefits from horizontal differentiation strategies when the degree of agglomeration is low.

Originality/value – This work provides insights about how hotels can strengthen their online reputation through pricing and differentiation strategies, incorporating elements of their environment such as location and competition in this decision-making process.

Keywords Online rating, e-WOM, Price, Horizontal differentiation, Competence, Location

Paper type Research paper

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1. Introduction

Online consumer review (OCR) is considered the most relevant way in which eWOM occurs (Kim *et al.*, 2018b), playing an essential role in recommender systems (Verma and Yadav, 2021). Indeed, when planning a purchase, 51% of French consumers always do some research on the Internet first, with 41% finding customer online reviews very helpful when planning a purchase (Statista, 2020). Indeed, it has become critical for a firm's performance (Xie *et al.*, 2016), with an expanding relevance under the New Normal (Arora *et al.*, 2020).

Extant literature has evaluated eWOM across several industries and settings (Kitirattakarn *et al.*, 2020). Without pretending to be exhaustive, a literature review reveals that research has primarily focused on senders' messages and channel related variables, such as the antecedents of a sender's reviews (e.g. Kim *et al.*, 2018a), the consequences for receiver's attitude and behaviours (e.g. Flanagan and Metzger, 2013; Wakefield and Wakefield, 2018), the cognitive information structure of the review (Ruiz-Mafe *et al.*, 2020), the consequences of the review for the receiver (e.g. Yoon *et al.*, 2019), the role of platforms in online review activity (Lee and Youn, 2009), the influence of brand awareness (Stojanovic *et al.*, 2018) or its effects on firm performance (Kim *et al.*, 2015; Ladhari and Michaud, 2015). However, a systematic review performed by Rosario *et al.* (2020) reveals that understanding how product characteristics shape eWOM search behaviour remains under-analysed.

Consumer review behaviour is conceived as a way of engagement, in which firm attributes and competitive alternatives induce reviews, either requesting higher quality or affecting the perceived value of the products (Van Doorn *et al.*, 2010). Specifically, firm-based contributions have mainly focused on factors such as brand engagement (Hollebeek *et al.*, 2014), customer service (e.g. Prentice *et al.*, 2019), consumer information or consumer loyalty (So *et al.*, 2016). Consequently, most of the previous studies focused on the analysis of the determining factors of online rating adopt a consumer perspective while the analysis of the role played by product characteristics or the location of a service in the online reputation are scarce. Likewise, although eWOM reviews have called for further investigation into the influence of the competitive environment on online reviews (see You *et al.*, 2015), there are few studies that address this relationship.

The purpose of our study is to fill this gap and try to analyse the impact of price, differentiation, location and competitive environment on online ratings given by consumers in the context of hospitality with a sample of 264 Parisian hotels, since it is a sector where pricing (Abrate *et al.*, 2012), location (Fang *et al.*, 2019) and competition (Becerra *et al.*, 2013) are very relevant aspects and hotels can horizontally differentiate their services according to customer preferences (Neirotti *et al.*, 2016). Also, economic outcomes in the hotel industry are influenced by online reviews (Yang *et al.*, 2018b). Specifically, we have focused on urban tourism because location plays a relevant role when tourists seek a good location to the detriment of other attributes or additional services (Yang *et al.*, 2018a) and we have contextualized our study in the Parisian hotel industry, as it is a relevant case of a city with a special interest for urban tourism research (Pearce, 1999), in the year 2017 when Paris was the second European city in bednights (European cities, 2018) and the one with the highest value (HVS, 2018).

Additional arguments justify our analysis. Firstly, from a company perspective, rating is an information rich OCR cue because high review ratings can act as a substitute for advertising spending (Hollenbeck *et al.*, 2019). Secondly, contributions to the literature regarding the effect of product attributes are very limited and generic. Previous findings show that product category has been revealed to moderate the influence of online review motivators on sales (Li *et al.*, 2020), and product characteristics have been identified as being a determinant of consumer review creation (Rosario *et al.*, 2020). However, existing research about product differentiation and online review has only found an indirect effect of

differentiation on online reviews through the dispersion of ratings (Clemons *et al.*, 2006). Product attributes such as horizontal differentiation strategy (Makadok, 2010) driven to specific segments has not been examined.

Thirdly, closely related to product evaluation is pricing, since it is linked to the product quality evaluation and affects user ratings as a quality cue (De Langhe *et al.*, 2016). Though literature supports the existence of a negative effect of price on eWOM (Masiero and Nicolau, 2016), the effect of price in hospitality does not have a straightforward effect, being influenced by trigger points' as price is the reason behind a stay (Lockyer, 2005). Also, previous studies have identified a self-selection bias in online reviews for early consumers that could benefit firms but may decrease consumer surplus (Li and Hitt, 2008).

Finally, although the previous literature has provided evidence that competitive intensity can transfer to the online environment (You *et al.*, 2015), there are few previous studies that address this issue (Gutt *et al.*, 2019; Liu *et al.*, 2018) and these do not take into account how physical distance can play a relevant role in OCRs, since the physical distance between users conditions the effectiveness of OCR and, as a consequence, of the advertising and communication strategy (Todri *et al.*, 2021) and based on the literature of spatial competition, a shorter distance between competitors can intensify rivalry (Lee, 2015) even in the online environment (Mayzlin *et al.*, 2014).

Theoretically, this work aims to contribute to the literature on the influence of firm's marketing decisions on online review literature. Firstly, it extends the previous studies about OCRs by incorporating a competition perspective to explain the online review ratings. Secondly, it helps firms to adopt marketing actions according to the perceived value generated for the customer, meeting Kannan and Li's call (2017). And thirdly, our study aims to clarify the importance and role of location on the generation of online ratings.

2. Literature review

2.1 Importance of online rating in tourism and hospitality

The advance of information technology, a key factor for the development of sectors such as tourism (Liberato *et al.*, 2018), has promoted the popularity of OCRs among consumers (Plotkina and Munzel, 2016) who consider this to be an essential tool to evaluate alternatives in their decision making process when purchasing products online and offline (Park and Nicolau, 2015). This common form of electronic word of mouth (eWOM) (Kim *et al.*, 2018b) can impact on the purchase decisions of consumers (Filieri and McLeay, 2014) and foster the sales of products in different industries (Chevalier and Mayzlin, 2006; Li *et al.*, 2019; Ögüt and Onur Taş, 2012).

The hospitality industry has not been an exception to this phenomenon since it is a service industry that, due to the intangible nature of experience goods, presents a high information asymmetry (Manes and Tchetchik, 2018) and consequently consumers frequently employ OCRs to support their decision-making process (Gretzel and Yoo, 2008; Tiago *et al.*, 2021), which, as in other industries, translates into an impact on sales (Ögüt and Onur Taş, 2012). Thereby, OCRs constitute a reliable source of information in the hospitality industry not only for consumers (Yen and Tang, 2019) but also for managers (Torres *et al.*, 2014).

The OCRs generally count with a numerical rating, mainly explained by service quality and the lodger's experience, that provide a general landscape of the attitude of consumers towards the product and the service consumed (Park and Nicolau, 2015). Extensive literature has highlighted the role that OCR ratings play in hospitality since a higher online rating can increase the monetary value of a company (Jang *et al.*, 2012), hotel performance (Yang *et al.*, 2018b), occupancy (Viglia *et al.*, 2016), sales (Ögüt and Onur Taş, 2012), revenues of companies (Neirotti *et al.*, 2016) and the willingness to pay (Nieto-Garcia *et al.*, 2017). Consequently, the hospitality context is an appropriate framework for OCR research since

hotels continually seek ways to enhance their online reputation to improve their competitiveness and profitability (Tiago *et al.*, 2021).

Despite the importance of a high rating in the hospitality context, research on the characteristics that influence the rating of OCRs mainly takes an approach based on consumer characteristics (Leung and Yang, 2020; Li *et al.*, 2021; Xue *et al.*, 2020; Yeng and Tang, 2019) with scarce previous studies that adopt an approach that encompasses the characteristics of the product and the strategic decisions of the company (Radojevic *et al.*, 2017; Yeng and Tang, 2019). For this reason, this work aims to analyse whether price, horizontal differentiation, location and agglomeration affect the online rating, given the value of a high rating both from the perspective of the company and the consumer in the hospitality industry.

2.2 Price and OCRs

Previous literature considered that product price can negatively impact on online ratings since it is likely that low price generates positive reviews from consumers who share their satisfaction with the low prices they pay (You *et al.*, 2015). Additionally, price can act as a pre-purchase quality cue (Wolinsky, 1983) that consumers can employ in the face of an uncertain purchase (Völcker and Hoffman, 2007) and consequently, based on the expectation disconfirmation theory (EDT) (Oliver, 1980) which postulates that the customer's experience with the product can lead to negative disconfirmation if it falls below expectations, while if the experience exceeds expectations positive disconfirmation occurs, price being a key factor that influences the consumers post-purchase satisfaction (Varki and Colgate, 2001) due to confrontation between expectations and the received quality post-consumption (Abrate *et al.*, 2021). Since OCRs can be driven by disconfirmation which influence ratings (Ho *et al.*, 2017), under this approach, price can impact negatively on online ratings of products and services (Li and Hitt, 2010; Abrate *et al.*, 2021).

In the hospitality context, price has been considered as an essential factor for customer choice (Gupta *et al.*, 2007). Furthermore, a reasonable price level is a critical factor that impacts on customer satisfaction (Pantelidis, 2010) and due to the existence of a significant relationship between consumer-generated ratings and customer satisfaction (Torres *et al.*, 2014), consumer reviews of products and services take price paid into account with a negative effect on online ratings (Ye *et al.*, 2014).

Despite some conflicting results (Martin-Fuentes, 2016; Radojevic *et al.*, 2017), this negative effect of the price on the online rating has found empirical evidence in hospitality research (Abrate *et al.*, 2021; Zhang *et al.*, 2014; Zhu *et al.*, 2019; Ye *et al.*, 2014). Thus, Ye *et al.* (2014) and Abrate *et al.* (2021) find that price impacts negatively on value perception of consumers about hospitality services and consumers take price into account negatively in their online ratings. The negative effect of price on ratings in the hospitality industry is also confirmed by Zhang *et al.* (2014). Zhu *et al.* (2019) found that consumers who enjoy a price reduction tend to give higher online scores when evaluating a hospitality service. Due to the above reasons, we establish the following hypothesis about the influence of price on online ratings:

- H1. The price of hospitality products or services has a negative impact on online ratings provided by consumers.

2.3 Horizontal differentiation and OCRs

Horizontal differentiation is based on the heterogeneity of consumer preferences in the selection of the set of desirable attributes in a product or service so that although the products are offered at the same price, each will have a different market share (Makadok, 2010).

Nowadays, companies engage in the development of innovations to seek or generate new markets (Tiberius *et al.*, 2021), and they are able to produce any product that a consumer

might want, something which can lead to consumer overload due to the wider offer. Although OCR platforms allow companies to promote their sales through appropriate horizontal differentiation strategies since they make it easier for consumers to search for a product with characteristics which meet their preferences (Clemons *et al.*, 2006), there are some reasons to justify that horizontal differentiation strategies can be harmful to online reputation (Li and Hitt, 2008; Liu *et al.*, 2018).

First, although there is empirical evidence that horizontal differentiation strategies can foster a greater volume of eWOM (Lovett *et al.*, 2013), an inappropriate degree of differentiation between competitors in a commercial zone can have the opposite effect (Liu *et al.*, 2018). Second, horizontal differentiation can enhance the effect of positive self-selection bias (bias generated by wrong decisions that did not meet expectations due to different preferences with respect to previous consumers) so that its main effect is the reduction of the average rating of a product or service (Li and Hitt, 2008). Finally, within the hospitality industry, it has been found that the less horizontally differentiated companies have a higher benefit from the effect of online rating on economic results (Manes and Tchetchik, 2018) so that OCRs can discourage companies from adopting horizontal differentiation strategies.

However, to the best of our knowledge, there are few previous studies that have analysed the impact of horizontal differentiation strategies on OCRs in the hospitality industry (Manes and Tchetchik, 2018; Radojevic *et al.*, 2017) and few studies have considered alternatives to incorporating competition in the measurement of horizontal differentiation (Urtasun and Gutiérrez, 2017).

Due to the aforementioned reasons and given that horizontal differentiation is evaluated by consumers based on their subjective preferences, we establish the following hypothesis:

- H2.* The horizontal differentiation of products and services has a negative impact on online ratings provided by consumers.

2.4 Location and OCRs

Location is an essential factor and long-term strategic decision for the success of a company in the hospitality industry (Fang *et al.*, 2019; Yang *et al.*, 2012) since a good location is associated with higher occupation, higher income and profitability (Lado-Sestayo *et al.*, 2016; Luo *et al.*, 2016; Yang *et al.*, 2014) and lower failures (Parsa *et al.*, 2011) and it allows the payment of fixed capital investments to be reduced (Chou *et al.*, 2008). A good location, in addition to improving the profitability of the company can also influence consumer choice (Masiero *et al.*, 2019) and customer behaviour (Shoval *et al.*, 2011).

Moreover, location is one of the key factors that positively influence customer satisfaction (Xu and Li, 2016), particularly in urban tourism, where tourists, as essential actors in the maintenance of high street vitality (García-Milon *et al.*, 2021), need accessible hotels close to the main attractions of the urban area (Ritter, 1986) in order to maximize their utilities and optimize their trip duration (Yang *et al.*, 2018a) and do not require additional services that can entail a higher price (Liu *et al.*, 2020), and hence location can influence the customer evaluations through OCRs (Aksoy and Ozbuk, 2017). A convenient location is associated with positive comments and higher online ratings and it is therefore a critical success factor (Fuentes-Medina *et al.*, 2018). Thus, several previous studies in the hospitality industry have confirmed a positive effect of location on online ratings (Radojevic *et al.*, 2017; Yang *et al.*, 2018a). Therefore, we consider the following hypothesis:

- H3.* A good location has a positive effect on the online rating

On the other hand, the location of the hotel also has a positive influence on the price of the product or service (Chen and Rothschild, 2010) and the client's willingness to pay (Aznar, 2020). Thus, based on EDT, through a convenient location, hotels can exceed expectations of

customers and can turn the disconfirmation related to price from negative to positive. For these reasons, we establish the following hypothesis:

- H4. A good location mitigates the negative effect of price on the online rating of consumers.

2.5 Competence and OCRs

The hospitality literature has highlighted the relevant role of the competitive environment in the performance of a company (Abrate *et al.*, 2012; Becerra *et al.*, 2013; Falk and Hagsten, 2015; Lee, 2015; Lee and Jang, 2015; Marco-Lajara *et al.*, 2016), although there are contradictory findings in this regard that can be supported by the confrontation framework of two opposite effects: agglomeration versus competition (Lu *et al.*, 2017). Thus, the hospitality literature has provided empirical support for the theoretical argument (Shaked and Sutton, 1982) from the Industrial Organization approach that suggests that a higher level of competition can negatively affect the performance of hospitality companies since it can decrease the price of a service (Abrate *et al.*, 2012; Becerra *et al.*, 2013; Falk and Hagsten, 2015), but on the other hand, previous studies (Lee and Jang, 2015; Marco-Lajara *et al.*, 2016) have also supported the theoretical arguments from agglomeration theories (McCann and Folta, 2008) that postulate benefits associated with a greater concentration of competitors such as the improvement in the innovation performance of the company (Turkina *et al.*, 2019).

Further, the marketing literature has analysed how the competitive environment can affect the online environment, that is, the eWOM generated by consumers (Gutt *et al.*, 2019; Liu *et al.*, 2018; Luca and Zervas, 2016; Mayzlin *et al.*, 2014; Neirotti *et al.*, 2016; You *et al.*, 2015). Thus, the competitive environment can moderate both the effect of rating on sales (You *et al.*, 2015) and the effect of the rating on revenues and profitability (Neirotti *et al.*, 2016).

Given the aforementioned importance of the competitive environment in the hospitality industry, most of the previous studies that have analysed the relationship between competition and OCR have used this industry as a study framework (Gutt *et al.*, 2019; Liu *et al.*, 2018; Luca and Zervas, 2016; Mayzlin *et al.*, 2014; Neirotti *et al.*, 2016). Despite a higher level of competition being able to generate a greater volume of OCRs (Liu *et al.*, 2018), based on EDT, when there are few alternatives, consumers have low expectations about their ability to match their preferences (Diehl and Poynor, 2010), which can stimulate the occurrence of positive disconfirmation. In fact, it has been found that markets with a greater number of competitors have a lower average online rating (Gutt *et al.*, 2019) and when a company faces a greater number of competitors, it is more likely to suffer negative fake reviews (Luca and Zervas, 2016). Although these previous studies have not analysed the impact of competition on the rating of OCRs at the company level, they suggest that the competitive environment can negatively affect online ratings. Therefore, we establish the following hypothesis:

- H5. The number of competitors of a hospitality company has a negative impact on online ratings provided by consumers.

Concerning the effect of distance on OCRs, hospitality research has found empirical support (Lee, 2015) for the postulates of spatial competition theory (Pinkse *et al.*, 2002), which states that competitive intensity increases with smaller distances. Additionally, competitive intensity can overlap to the online environment because a smaller distance to competitors also increases the probability of online fake reviews so hotels with close competitor neighbours are more likely to suffer negative fake review attacks from nearby competitors than hotels in isolated areas (Mayzlin *et al.*, 2014), and this can cause an attacker to overshadow its competitors in terms of online visibility (Lappas *et al.*, 2016). Due to these reasons, we establish:

- H6. Distance from competitors has a positive effect on the online rating of consumers.

On the other hand, in the hotel industry several results support that a higher number of hotels entails a reduction of average room price (Abrate *et al.*, 2012; Becerra *et al.*, 2013; Falk and Hagsten, 2015) due to the fact that a large number and concentration of hotels allows consumers to access higher quality (Lee, 2015). Consequently, we assume that a greater number of competitors increases the negative effect of price on online rating:

H7a. The number of competitors intensifies the negative effect of price on the online rating of consumers.

Finally, it has been found (Sanchez-Pérez *et al.*, 2020) that the benefits associated with horizontal differentiation in the hospitality industry are conditioned by the degree of agglomeration, perhaps due to the higher cost associated with horizontal differentiation together with the fact that this type of differentiation hinders collaboration between competitors (Silva, 2015). Furthermore, hotels that are less horizontally differentiated have lower costs of manipulation and are more likely to engage in review manipulations against differentiated hotels (Mayzlin *et al.*, 2014), with the consequent loss of online visibility (Lappas *et al.*, 2016) that may encourage differentiated hotels to locate far away from the competition to avoid attacks (Lappas *et al.*, 2016). Consequently:

H7b. The distance from competitors mitigates the negative effect of horizontal differentiation on the online rating of consumers.

3. Methodology

3.1 Research setting

We will carry out an empirical analysis in which we will consider the Paris hotel industry in 2017 as a frame of reference. There are several reasons for choosing the hotel industry as a framework to explore the factors that enable the improvement of online rating. Firstly, an increase in online rating can provide several benefits in the hotel industry. Hotels with higher online ratings can benefit from higher sales (Öğüt and Onur Taş, 2012), higher occupancy rate (Viglia *et al.*, 2016) and higher hotel performance (Yang *et al.*, 2018b). Secondly, the hotel industry offers a framework in which services may exhibit horizontal differentiation in terms of customer preference (Neirotti *et al.*, 2016), and it is an industry with intensive horizontal competition (Liu *et al.*, 2020). Additionally, pricing (Abrate *et al.*, 2012), competition and agglomeration (Becerra *et al.*, 2013) and location (Fang *et al.*, 2019) also play a key role for success in the hotel industry. Concerning the Parisian tourist sector in 2017, Paris was ranked as the second European city in international arrivals and the sixth city worldwide with 15.8 million (Euromonitor, 2018). Furthermore, Paris was ranked as the second European city in bednights with 48.1 million (European cities, 2018) and the Parisian hotel industry topped the Hotel Valuation Index in 2017 (HVS, 2018) which indicates that the hotel sector in Paris is a strong and consolidated sector that has been considered as a framework in the previous literature on OCRs (Öğüt and Onur Taş, 2012).

The sample includes 264 hotels located in Paris and has been obtained from the information system of an international Group Travel Agencies (GTA) and the commercial areas defined by GTA are considered as areas of geographic competition between hotels for a correct measurement of the horizontal differentiation of a hotel with respect to its competitors. All statistical analysis has been performed with the statistical software *R* Version 4.0.3. Table 1 shows the main descriptive statistics for all variables in the sample.

3.2 Models and variables

We propose two models to test the hypotheses established in the work:

Table 1.
Sample descriptive
statistics

	Min	Q1	Median	Q3	Max	Mean	SD
Score	6.300	8.180	8.560	8.920	9.920	8.505	0.643
Size	7	29	48	47	1025	50.05	91.259
Age	1	11	13	18	218	25.33	38.579
Price	50.55	100.10	125.30	157.60	1270	125.30	99.608
Differentiation	0	0.524	1.550	2.612	12.220	1.814	1.870
Location	1	2.750	3	4	5	3.201	0.873
N_Comp	3	53	77	129	155	84.75	41.821
Distance	0	0.700	0.875	1.060	4.110	0.941	0.406
Congress %	No 96.59	Yes 3.41					

Model 1:

$$\begin{aligned} \text{Score}_i = & \alpha_0 + \beta_1 \text{Size}_i + \beta_2 \text{Age}_i + \beta_3 \text{Congress}_i + \beta_4 \text{Price}_i + \beta_5 \text{Differentiation}_i \\ & + \beta_6 \text{Location}_i + \beta_7 \text{N_Comp}_i + \beta_8 \text{Distance}_i + \varepsilon_i \end{aligned}$$

Model 2:

$$\begin{aligned} \text{Score}_i = & \alpha_0 + \beta_1 \text{Size}_i + \beta_2 \text{Age}_i + \beta_3 \text{Congress}_i + \beta_4 \text{Price}_i + \beta_5 \text{Differentiation}_i \\ & + \beta_6 \text{Location}_i + \beta_7 \text{N_Comp}_i + \beta_8 \text{Distance}_i + \beta_9 \text{Price}_i \cdot \text{Location}_i \\ & + \beta_{10} \text{Price}_i \cdot \text{N_Comp}_i + \beta_{11} \text{Differentiation}_i \cdot \text{Distance}_i + \varepsilon_i \end{aligned}$$

where *Score* denotes the dependent variable that measures the yearly average online rating of each hotel. This rating from consumers consists of a score between zero and ten, where zero represents the worst rating and ten represents the best rating (Manes and Tchetchik, 2018).

Among the independent variables, we distinguished between:

Control variables. We used the following variables to control for the potential effects of differences between hotels:

- (1) *Size.* Large company size can result in a deterioration of the services offered which results in a negative impact on the online valuation of customers (Radojevic *et al.*, 2017), so we control for the size of the hotel by the number of rooms.
- (2) *Age.* We controlled for the age of the hotel by the number of the operation years since old facilities may be the source of dissatisfaction among consumers regarding a product or service (Xu and Li, 2016).
- (3) *Congress.* Given the different preferences between business travellers and leisure travellers and that business travellers report significantly lower levels of satisfaction than leisure travellers (Radojevic *et al.*, 2017), we controlled whether the hotel is a congress hotel through a dummy variable.

Explanatory variables. To test the hypotheses established in the previous section, we considered the following variables:

- (1) *Price.* The yearly average room rate for a standard double room in 2017 for each hotel (Lee, 2015).
- (2) *Differentiation.* This variable accounts for the horizontal differentiation based on the service offer of each hotel with respect to the remaining hotels in the same commercial

area. We considered a distance applied in product differentiation literature (Chisholm *et al.*, 2010). Specifically, each hotel is represented by a vector of services V_i that indicates with 1 the availability of the service while with the value 0 it indicates the absence of a service. The services considered in V_i includes hotel style, sports activities and food services. Specifically, for a hotel in the area A_i is defined as:

$$(\text{Differentiation})_i = \sum (V_i) * \text{mean}_{j \in A_i} (d(V_i, V_j))$$

where $d(V_i, V_j)$ is the differentiation of hotel V_i respect to V_j . It takes the value 0 if hotel V_j offers more services than hotel V_i and all services offered by V_i . Otherwise, it takes the following value:

$$d(V_i, V_j) = \frac{\left(\cos^{-1} \frac{V_i \cdot V_j}{\|V_i\| \cdot \|V_j\|} \right)}{\left(\frac{\pi}{2} \right)}$$

- (1) *Location*. A valuation of Parisian hospitality commercial zones (Mona, 2020) based on transport nodes, externalities or attractions. It ranges from 1 (the worst valuation) to 5 (the best valuation).
- (2) *N_Comp*. The total number of hotels in the same commercial area (Becerra *et al.*, 2013).
- (3) *Distance*. The average distance of each hotel with respect to other hotels located in the same area in kilometres (Becerra *et al.*, 2013).

Model 1 includes all the main effects of the explanatory variables to contrast the hypotheses about direct effects (H1, H2, H3, H5 and H6), whereas Model 2, in addition to the main effects, also includes the interaction terms to contrast hypotheses H4, H7a and H7b related to moderating effects. Both models were estimated with OLS and bootstrap methods were used to estimate standard errors (Davison and Hinkley, 1997). Table 2 provides the results obtained in the estimation of the two models using OLS. The adjusted R^2 value from Model 2 shows a better adjustment than Model 1. To test the significance of Model 2 versus Model 1, we conducted an F -test, the results of which confirmed the significance of Model 2 versus Model 1 (p -value 0.014).

4. Results

The results of Model 1 show that only price and horizontal differentiation have an effect on online ratings but, from Model 1, only hypotheses H2 is confirmed, since *Differentiation* has a negative effect whereas *Price* has a positive effect.

Now, since Model 2 fits significantly better than Model 1, we will focus on the results obtained in Model 2 which shows different results compared to Model 1. Although the results of Model 2 also confirm the hypotheses H2, unlike Model 1 it does confirm the hypothesis H1 and H3. Therefore, according to Liu *et al.* (2018), horizontal differentiation may harm some cues related to online reputation. Price has mainly a negative effect on rating as seen in the results of previous studies in the hospitality context (Zhang *et al.*, 2014; Zhu *et al.*, 2019; Ye *et al.*, 2014) and contrasting with the results from Martin-Fuentes (2016) and Radojevic *et al.* (2017). Also, the location of a hotel positively influences the online rating in accordance with previous hospitality studies (Radojevic *et al.*, 2017; Yang *et al.*, 2018a). Additionally, the interaction between price and location is significant and its coefficient is positive which confirms the hypothesis H4 and consequently the location mitigates the negative effect of price on online rating. To better illustrate this moderation effects, Figure 1 displays the effect

Table 2.
Models estimation

	Model 1	Model 2
Intercept	8.277***	8.055***
Size	9.2E-6	8.6E-6
Age	−7.4E-4	−0.001
Congress	0.435*	0.316
Price	7.8E-4*	−0.008**
Differentiation	−0.052*	−0.056**
Location	0.062	0.129**
<i>N_Comp</i>	2.5E-5	−0.001
Distance	0.023	0.022
Price × Location		0.003***
Price × <i>N_Comp</i>		−3.7E-5**
Differentiation × Distance		0.073*
<i>R</i> ²	0.054	0.093
Adjust <i>R</i> ²	0.025	0.054
Note(s): *10; **5; ***1 %		

of price on online rating for two levels of location and two levels of number of competitors. For both *Location* and *N_Comp*, Figure 1 shows the effect of price for the mean \pm one standard deviation. Regardless of the number of competitors, Figure 1 shows how location changes the effect of price on rating when hotels face low competition (black and blue lines) and high competition (red and green lines). Therefore, a good location can change the negative effect of price to a positive one, thus reconciling previous contradictory results on the price effect by linking its effect with location.

Regarding competition, results from Model 2 do not confirm the hypotheses H5 or H6. Consequently, the competition environment does not directly influence the online ratings at company level contrary to those at market level (Gutt *et al.*, 2019), unlike other online reputation indicators (Liu *et al.*, 2018).

However, because hypotheses H7a and H7b are confirmed by the results of Model 2, the competition environment influences the online rating indirectly through both *N_Comp* and *Distance*, so that the effect of price and horizontal differentiation is moderated by the competitive environment of hotels. Figure 1 also displays the moderation effects related with H7a and H7b and it shows how a higher number of competitors intensifies the negative effect of price on ratings when location has a low value (black and red lines) and how it moderates the positive effect of price when location has a high value (green and blue lines). It is worth highlighting the key role of location, since it can counteract the negative effect associated with price even if it is accentuated by a high number of competitors. The stronger positive effect of price occurs with the combination of low competition and high location, whereas the stronger negative effect occurs with the combination of high competition and low location. Finally, the distance to competitors changes the effect of horizontal differentiation on rating. Thus, horizontal differentiation has a negative effect in agglomerated areas (small distance between competitors), which may be due to the fact that hotels have more fake negative reviews from nearby competitors with less differentiation (Mayzlin *et al.*, 2014) while it has a positive effect in isolated areas (large distance between competitors).

5. Conclusion, limitations and future research

The present work tries to provide some theoretical and practical contributions. Firstly, compared to other theoretical contributions our study, through the horizontal differentiation index, overcomes the limitations of previous studies in the hospitality context which

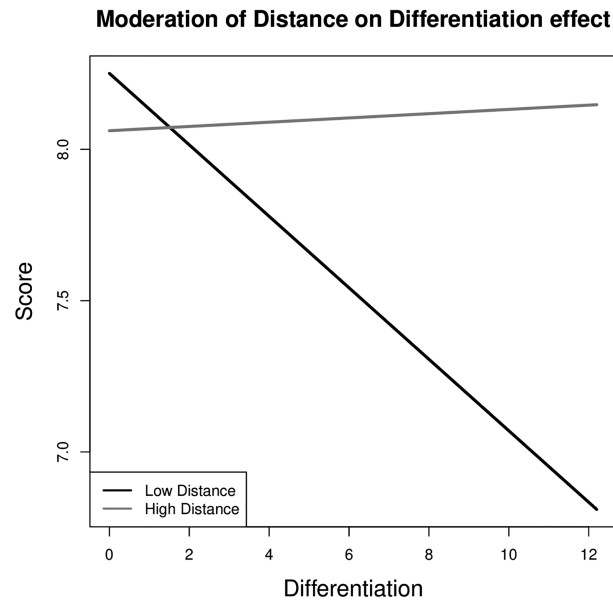
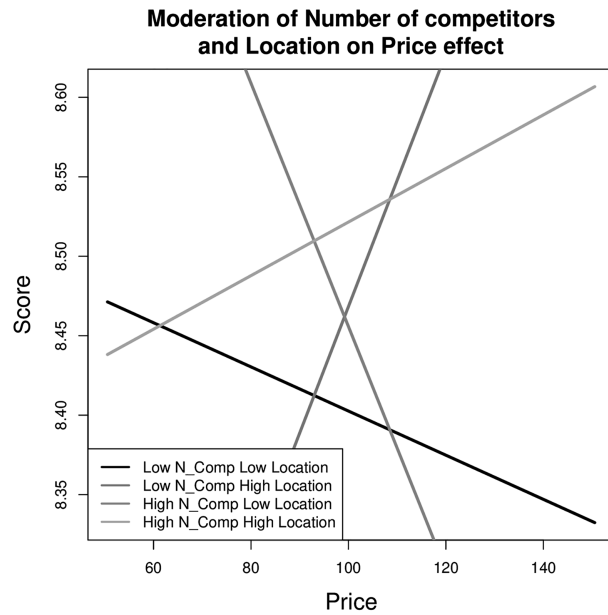


Figure 1.
Moderating effects on
the impact of price and
horizontal
differentiation on
online rating

individually analysed how the availability of a service affects online reputation (Radojevic *et al.*, 2017) and it complements previous studies on the negative impact of differentiation in other online reputation metrics (Liu *et al.*, 2018) concluding with a negative effect on the rating subject to the competitive environment in such a way that horizontal differentiation strategies benefit online reputation when the degree of agglomeration is low. In this way, our

study contributes to the analysis of variables not directly related to management that influence the success of innovation strategies (Tiberius *et al.*, 2021).

Regarding the competitive environment, we did not find a direct impact on online reputation at the company level, unlike at the market level (Gutt *et al.*, 2019) or with other metrics (Liu *et al.*, 2018), although indirectly it can negatively affect a consumer's online evaluation through price.

Concerning price, although we conclude with a main negative price effect, based on EDT, our study allows us to reconcile previous studies with contradictory results in the context of hospitality (Zhang *et al.*, 2014; Ye *et al.*, 2014; Radojevic *et al.*, 2017) since the effect of price is linked to the location of services. Consequently, we highlight the role of location in online reputation, but unlike previous studies that only highlighted the direct positive effect of location (Radojevic *et al.*, 2017; Yang *et al.*, 2018a), we also establish how a good location allows a premium price not to necessarily result in a negative user rating even in areas with a high number of competitors.

Next, among the managerial implications, our work shows the convenience of a good location as it improves the online reputation of a company. Additionally, pricing decisions should be subject to the location and the number of competitors. Managers from hotels with a good location can charge a premium price since it does not result in a penalty in the customer valuation. This price premium associated with a good location will be evaluated positively by customers the fewer the number of competitors the hotel has. On the contrary, to compensate for bad location, managers can offer price discounts to improve their online reputation especially if the competitive intensity is high. Additionally, hotel managers will benefit from making marketing decisions based on location as it is implied that customers give more importance to the location of the hotel than to the services that the customer is looking for, since the location choice of the customer replaces the greater differentiation of services offered by a hotel with a higher price.

Finally, this work has several limitations. Firstly, from a methodological point of view, online reputation can show spatial autocorrelation because hotels share externalities. Therefore, future work should consider the use of estimation methods that take spatial autocorrelation into account, for a better modelling of online reputation (Nicholls and Kim, 2019). Secondly, the proposed model does not incorporate characteristics of each customer when evaluating a hotel. Future works should consider whether these characteristics can moderate the relationships proposed with our model. Additionally, future work should consider alternative ways of evaluating locations that are not based on third-party evaluations, by defining an appropriate index that encompasses different types of location factors.

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Links, fit or sacrifice: job embeddedness and intention to quit among Generation Y

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Abstract

Purpose – The study aims to determine how the relationship among links, fit and sacrifice (dimensions of job embeddedness) influence employees' intention to quit in the case of professionals belonging to Generation Y.

Design/methodology/approach – A quantitative correlational study was conducted with a cross-sectional dimension of time. The survey technique was applied through a certified online panel. The sample consisted of 211 members of Generation Y.

Findings – It has been verified that the only significant dimension for Generation Y is sacrifice.

Research limitations/implications – It is necessary to extend the study of the dimensions of job embeddedness and their influence on employees' intention to quit in different demographic groups. It would be advisable to conduct longitudinal studies to observe the dynamics of job embeddedness throughout the years.

Practical implications – Organizations concerned with retaining the talent of young professionals can focus on the development of policies and benefits that encourage sacrifice.

Social implications – The finding that the sacrifice dimension is the one that would reduce the intention to leave for Generation Y will help to ensure that organizations retain the workforce that they value.

Originality/value – The study is important to gain a better understanding of Generation Y behavior. In addition, in response to the demand from the literature, the sample considered only Generation Y with work experience.

Keywords Job embeddedness, Intention to quit, Generation Y, Retention

Paper type Research paper

Introduction

Retaining employees has become a major challenge today (Dhanpat *et al.*, 2018). According to the Society for Human Resource Management, retention has remained at the top of the list of management challenges for five years (Society for Human Resource Management, 2018). In this context, specialists have encouraged organizations to maintain their productivity, quality, profitability and competitive advantage by ensuring the retention of their employees (Redondo *et al.*, 2019).

It has been observed that Generation Y is keen on acquiring new knowledge and upgrade existing skills (Kultalahti and Viitala, 2015). This helps them to gain a sustained competitive advantage in the job market and seek new opportunities (Ode and Ayavoo, 2020; Al-Omouh *et al.*, 2020). It is estimated that one-third of Generation Y is looking for new jobs (Naim and Lenka, 2018). Such trends appear to indicate that the members of this generation are more likely to change jobs due to which retaining talent has become a major challenge for organizations.

Young individuals belonging to the age cohort of 1982–1999, known as Generation Y or millennials, comprise a significant proportion of the workforce in the contemporary job arena.



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As stated by Joshi *et al.* (2010), generations are usually conceptualized according to age. This is observed in the case of baby boomers, Generation X and Generation Y. This classification assumes that growing up in a certain period of time affects the values and attitudes of the individuals who were born during that period. It should be noted that the years pertaining to the start and end of each generation vary according to the academic source (Myers and Sadaghiani, 2010; Twenge, 2010; De Hauw and De Vos, 2010; Levenson, 2010).

Studying different generation groups in the workplace creates the opportunities to design policies that can effectively manage generational differences in the work environment (Joshi *et al.*, 2010).

According to Twenge (2010), although the stereotypes of different generations are regularly discussed, the differences between them have not been empirically verified. Hershatter and Epstein (2010), Myers and Sadaghiani (2010), Kowske *et al.* (2010) and Cennamo and Gardner (2008) have also commented on this topic. Some of the unverified differences attributed to Generation Y are an altruistic spirit and the value of free time (Twenge, 2010). In the opinion of Myers and Sadaghiani (2010), speculations attribute positive and negative characteristics to young professionals. Attraction toward diverse environments, advanced communication skills, knowledge of information technologies and being comfortable with teamwork are among the positive characteristics. The negative characteristics include impatience, disloyalty and vanity.

According to Valenti (2014), Generation Y seeks meaningful work and opportunities to advance in an organization. However, he points out that economic rewards are equally important to this generation, which is contrary to what is usually indicated (García *et al.*, 2019).

Generation Y is educated, speaks different languages and manages new technologies. At work, they manage multicultural environments, cooperate and work as a team and seek close contact and feedback from their superiors (Gong *et al.*, 2018; Robak, 2017).

This study focuses on the individuals born between 1982 and 1999, who are commonly classified as millennials or Generation Y (Twenge *et al.*, 2010). The professional world has a keen interest in this generation (De Hauw and De Vos, 2010); this is because of the presence of possible conflicts among the different generations that interact within the same organization. Managers must deal with generational differences that can cause conflicts in terms of employee relationships and productivity (Myers and Sadaghiani, 2010). Similarly, there is a growing academic interest in examining how this generation influences contemporary work culture (De Hauw and De Vos, 2010). Accordingly, guiding and motivating this generation is considered as a challenge, opportunity and skill that must be learned (Hershatter and Epstein, 2010).

It would be possible to analyze varied business management topics focusing on the peculiarities of Generation Y; however, in this study, we focus on analyzing the relationship between young individuals' job embeddedness and their intention to quit the job, which is turnover. Turnover creates serious organizational problems. When an employee quits, the organization's investment in the employee's training is lost. Similarly, when the turnover is high, the morale of the employees who continue to work in the organization is also negatively affected (Ertas, 2015).

The turnover analysis of Generation Y shows important contradictions in the literature. On the one hand, some studies report a weaker intention to quit or varied results (Twenge, 2010). On the other hand, it is argued that the intention to quit is higher among young individuals if their expectations are not met (Cennamo and Gardner, 2008; Hershatter and Epstein, 2010). Moreover, one of the causes of premature turnover is attributed to the feeling of boredom that employees experience in the workplace (Myers and Sadaghiani, 2010).

It is estimated that, by 2025, three-quarters of the global workforce may comprise Generation Y (Catalyst, 2019). In the USA, it already represents more than one-third of the

workers (Fry, 2018). Further, according to Phutura Ejecutivo, 25% of Generation Y changed jobs in the last four years (*El Comercio, Aptitus* 9 April 2017, p. 1); this is a worrisome figure. Therefore, it is in the companies' interest to understand the work expectations of this generation, such that they can achieve employee retention (Hershatte and Epstein, 2010; D'Amato and Herzfeldt, 2008; Deal *et al.*, 2010).

The current studies on turnover are analyzing the reasons behind employees' decision to continue working in a company as opposed to the traditional studies examining the reasons behind their quitting (Peltokorpi *et al.*, 2015).

The concept of job embeddedness has been developed to understand more about employee retention (Mitchell *et al.*, 2001; Ng and Feldman, 2007). This construct considers the reasons for staying in an organization. Its proposal is relatively new; hence, it is necessary to study its background (Allen and Rhoades, 2013; Yang *et al.*, 2011; Karatepe, 2013). It is important to study job embeddedness among young professionals because they are assumed to have little loyalty to the companies in which they work; this can contribute significantly toward understanding the need to retain them. In addition, it can provide insights into their intention to quit better than what can be understood from assessing job satisfaction and organizational commitment (Clinton *et al.*, 2012; Jiang *et al.*, 2012).

Ertas (2015) has conducted a study to analyze the motivations and intentions to resign in the case of millennials and employees belonging to older generations. Generation Y was found to be more likely to report the intention to quit than any other generation.

However, there exist contradictory results regarding young professionals' intentions to quit; hence, further analyses need to be conducted in this regard (Kowske *et al.*, 2010; Twenge, 2010). According to some studies, work occupies a less central place in the lives of young professionals; they prefer to work in positions that may not pay them well, but it allows them to achieve a work-life balance and gain satisfaction (Manuti *et al.*, 2018). Further analyses are needed to examine the work values of Generation Y and clearly understand the individual differences that can impact their behaviors in the workplace (Chan *et al.*, 2019). In this study, we address this challenge using job embeddedness as a predictor of employee turnover.

Additionally, existing literature finds that job embeddedness has been studied globally but without differentiating among the dimensions that it consists of (Tian *et al.*, 2016). It is necessary to develop a study on job embeddedness, considering that each of its dimensions is related to young professionals' intention to quit (Halvorsen *et al.*, 2015). Limited studies have analyzed the relationship between job embeddedness and turnover and have primarily focused on the USA market. Upon reviewing the literature, we could understand the need to study the impact of job embeddedness on countries other than the USA (Harris *et al.*, 2011; Nguyen, 2010; Peltokorpi, 2013). In particular, it is necessary for developing countries to be able to analyze whether there exist cultural differences between them and the developed countries, where job embeddedness has been studied more frequently, in order to better understand the behavior of job embeddedness (Karatepe, 2016; Khorakian *et al.*, 2018; To *et al.*, 2020). In this study, we analyze the Latin American country, Peru.

This study attempts to identify the means to achieve employee retention among Generation Y through the framework of job embeddedness, thus complementing the information that has been explored for regions other than Latin America. As Generation Y is an important part of the global workforce, identifying the ways to retain them in the workplace is of global interest.

Thus, the aims of this study are to (1) determine the relationship between the dimensions of job embeddedness and the intention to quit among young professionals in Peru and (2) identify the dimensions of job embeddedness that have the most significant impact on the intention to quit among young professionals.

To achieve these objectives, we propose a model that studies the dimensions of job embeddedness and the intention to leave the company in the context of Generation Y.

To validate the model, a cross-sectional quantitative research is proposed using the technique of surveying the young residents of Lima, Peru with work experience.

Theoretical framework

Job embeddedness

Job embeddedness is an alternative proposal to explain voluntary turnover. Staff turnover is one of the most important issues for organizations (Batt and Colvin, 2011). The costs of turnover are high, particularly when they refer to technical, professional and managerial employees because their skills and knowledge are difficult to replace (Batt and Valcour, 2003). Allen *et al.* (2010) have pointed out that the cost of turnover can vary from 90 to 200% of the annual salary.

According to Hainess *et al.* (2010) and Allen *et al.* (2010), it is necessary to distinguish between voluntary and involuntary turnover, since their determinants are different; hence, not recognizing the difference can lead to errors. Voluntary turnover is initiated by employees, while involuntary turnover is initiated by the organization.

Most theories on turnover are based on the premise that individuals resign primarily due to dissatisfaction with work and the availability of new job offers (Lee *et al.*, 2004). According to these studies, focusing on dissatisfaction, poor commitment and work alternatives has been common in the study of voluntary turnover, but it has been only able to explain approximately 10% of the variance. Bergiel *et al.* (2009) have argued that in addition to job satisfaction and organizational commitment, other factors should be studied with regard to turnover. Accordingly, new approaches to the study of voluntary turnover are suggested. Mitchell *et al.* (2001) have focused more on analyzing why employees stay in a company through the construct of job embeddedness (Holtom *et al.*, 2008).

Mitchell *et al.* (2001) have put forward the concept of job embeddedness. Job embeddedness is a construct that considers employees to be connected to a social network. This network “traps” the employee at their job (Felps *et al.*, 2009). Therefore, job embeddedness is defined as the combined forces that prevent the employees from quitting their job (Yao *et al.*, 2004). This interconnection is explained via three dimensions.

Links. These are formal or informal connections between a person and their organization or individuals who are not a part of the organization (Mitchell *et al.*, 2001). Examples of links in an organization are colleagues and clients. Examples of non-work links are family and friends in the community (Adams *et al.*, 2010).

Fit. It represents the employee's perception of compatibility or comfort within the organization and its environment (Mitchell *et al.*, 2001). Adams *et al.* (2010) have explained that organizational fit refers to the compatibility associated with knowledge, required skills, work styles and organizational culture. Non-work or external fit refers to the compatibility associated with the values of the community or with the lifestyle offered by it.

Sacrifice. It represents the perceived costs of tangible and intangible benefits that employees lose if they quit an organization (Mitchell *et al.*, 2001). According to Adams *et al.* (2010), the internal factors of an organization that could be lost are status, prestige, payments and benefits. External factors may include community clubs, hobbies, a change of schools, among others.

Therefore, these three dimensions encompass both work and non-work aspects. This means that job embeddedness is considered to play a role both at work and outside of work. The former refers to the forces that keep an employee “tied” to their position and the latter considers the aspects of personal life and the community that keep them geographically stable (Ng and Feldman, 2010). It is necessary to mention that job embeddedness is a relatively new construct that is still under development (Zhang *et al.*, 2012).

The measurement of job embeddedness is one of the factors under discussion. There exist composite and global scales for measurement. The composite scales reflect the concept under study in detail when considering the three dimensions of work and non-work environments; they are characterized as being extensive (Clinton *et al.*, 2012). The global scale of job embeddedness is based on general and non-invasive questions that seek to measure how settled the employee is in their company (Crossley *et al.*, 2007). However, this scale has received criticism for not dealing with non-work environments explicitly. By focusing only on the scope of the organization, it excludes the non-work aspects, such as the recreational activities in which they engage or their relationship with friends, which “trap” the employee.

Bergiel *et al.* (2009) and Felps *et al.* (2009) have presented job embeddedness as a predictor of intention to quit and voluntary turnover. However, the impact of the perceptions of organizational human resource practices on job embeddedness (especially those that show consideration toward employees) has not yet been studied. It would be expected that when human resources show appreciation to their employees, care about them and invest in them, the employees, in turn, exhibit a greater embeddedness in the organization.

Ng and Feldman (2010) have mentioned that previous studies have, in general, found empirical evidence on the relationship between strong job embeddedness and low voluntary turnover. However, Tanova and Holtom (2008) have compared traditional models to predict high turnover in the presence of job embeddedness. They verified that job embeddedness influence turnover and called for the need to promote the attributes that encourage embeddedness in employees if their retention is desired. Table 1 lists the studies that have linked job embeddedness to voluntary turnover. The articles mentioned in Table 1 are not the only ones that link both constructs, but they have been adopted from prestigious journals, mostly classified as Quartile 1 in their specialties. However, the intention of this table is to show how the relationship between job embeddedness and voluntary turnover has been studied over the years.

Authors	Main findings
Mitchell <i>et al.</i> (2001)	Being settled in an organization and a community is associated with the reduction in quitting and actual turnover
Lee <i>et al.</i> (2004)	They separately analyzed job embeddedness of the work and non-work environments. Non-work embeddedness was a predictor of turnover and absenteeism
Crossley <i>et al.</i> (2007)	Job embeddedness (measured on a global scale) predicted the intention of individual turnover and voluntary turnover
Mallol <i>et al.</i> (2007)	They emphasize the importance of job embeddedness as a predictor of turnover and as a guide for retention policies
Tanova and Holtom (2008)	Job embeddedness significantly predicts voluntary turnover
Clinton <i>et al.</i> (2012)	Job embeddedness within the organization and non-work embeddedness showed a negative relationship with intention to quit. Job embeddedness explained the intention to quit over organizational satisfaction and commitment
Karatepe (2013)	Employees with strong job embeddedness show lower levels of individual turnover
Peltokorpi <i>et al.</i> (2015)	Job embeddedness predicts intention to leave the company and voluntary turnover
Coetzer <i>et al.</i> (2017)	Job embeddedness predicts intentions to leave the company in large companies and not in small companies
Dechawatanapaisal (2018)	Workers with less job embeddedness are more likely to indicate intention to leave the company
Hussain and Deery (2018)	Job embeddedness has an impact on expatriates' intentions to leave the company

Source(s): Compiled by the author

Table 1.
Studies that link job
embeddedness and
voluntary turnover

Job embeddedness suggests that the environment that surrounds an individual and the factors that they perceive significantly explain the degree to which they are embedded in a job, which determines employee retention (Lyu and Zhu, 2019).

Intention to quit

Employees' intention to leave their company could lead to a real turnover (Haque *et al.*, 2019; Rombaut and Guerry, 2018; Yalabik *et al.*, 2017). Abugre (2017) has also considered that employees' intention to leave their company is the closest antecedent to an actual turnover because it reflects what the employee thinks about their organization and suggests an evaluation of future employment possibilities.

According to Firth *et al.* (2004), intentions are the immediate determinants of real behavior. Ng and Butts (2009) have pointed out that both turnover and employees' intention to quit are closely related. They mention studies in which the relation is 0.45 and 0.50.

In addition to distinguishing between voluntary and involuntary turnover, Allen *et al.* (2010) have recommend distinguishing between dysfunctional and functional turnover. Dysfunctional turnover negatively affects an organization because it implies the departure of staff whose abilities are difficult to replace.

Several factors have been studied as the antecedents of the intention to quit. As it has been pointed out by Ahuja *et al.* (2007), lack of organizational commitment is a strong predictor of intention to quit, role conflict, work overload and stress increase turnover (Allen *et al.*, 2010). Hausknecht *et al.* (2009) have considered that the factors that explain why people choose to stay in a company are job satisfaction, extrinsic rewards, emotional ties in the organization, organizational commitment, organizational prestige, lack of alternatives, years of work in the company, advancement opportunities, location, good treatment, flexible work and personal influences. The factors associated with the intention to quit are work stress and sources of stress (Firth *et al.*, 2004).

In the last decade, there has been an increasing trend among studies analyzing stress to have both harmful and favorable effects on turnover. The sources of stress mentioned in the previous section increase turnover intention. However, challenging sources of stress can result in fewer turnovers (Holtom *et al.*, 2008). Another trend mentioned by Holtom *et al.* (2008) is to differentiate between the approach of "to stay" in or "to quit" a company, the latter being the traditional approach in research.

Lavoie-Tremblay *et al.* (2010) argue that the intention to quit should be studied for each generation in the workforce. In this way, the necessary strategies to retain these employees can be formulated.

The intention to quit does not necessarily imply that a turnover takes effect, but research on this topic considers that intention and actual behavior are highly correlated. As stated by Nelissen *et al.* (2017), the intention to quit has proven to be the strongest predictor of actual turnover. Ertas (2015) has pointed out that several studies on turnover have examined the effect of human resource practices on the probability of quitting.

Hypothesis

Social exchange theory helps to explain the relationship between an employee and an organization (Eldor and Vigoda-Gadot, 2016; Adeoti *et al.*, 2020). The authors cite Coyle-Shapiro and Shore (2007) to identify three fundamental aspects of social exchange: relationship, reciprocity and exchange. Relationships start when one of the parties grants a benefit to the other; consequently, the beneficiary can show reciprocity and a series of exchanges can occur, thus creating a sense of commitment between them (Coyle-Shapiro and Shore, 2007).

In the previous section, we presented the dimensions of job embeddedness: links, fit and sacrifice. These dimensions have seldom been studied independently, although they can help

organizations facilitate the strengthening of job embeddedness (Halvorsen *et al.*, 2015). This study examines the three dimensions independently.

Links connect employees in social, psychological and financial networks. The more the links in the network, the stronger the relationship with the organization (Mitchell *et al.*, 2001; Tanova and Holtom, 2008). The more the interactions, the more the benefits that can be obtained (Ghahtarani *et al.*, 2020). Members of Generation Y are used to interact with the members of the groups to which they belong. It is their natural way of socializing, which they also do via technology (Lub *et al.*, 2016); hence, it would be expected that although this dimension contributes to decreasing their intention to quit, it is not the determining factor.

Fit alludes to the sense of comfort generated by the compatibility between future plans, values and goals of the employee and of the organization. If an employee does not “fit” properly, voluntary turnover occurs (Mitchell *et al.*, 2001; Tanova and Holtom, 2008). Some aspects that are considered in the fit dimension are clarity and support in career development opportunities and the provision of training to achieve future goals (Holtom *et al.*, 2006). These aspects are valued by Generation Y (De Hauw and De Vos, 2010).

Sacrifice refers to the perceived cost of benefits that would be lost when an employee changes job. If an employee believes that they have more to lose, it will be harder for them to cut their link with the organization (Mitchell *et al.*, 2001; Tanova and Holtom, 2008). When employees feel that their company values the complexity of their lives and tries to offer options that contribute to a work–life balance, they tend to be more productive and stay in their organizations for a longer time (Holtom *et al.*, 2006). These studies propose that a good salary, the ability to design the workspace and support of work–life balance initiatives, among others, are considered in the dimension of sacrifice. These are attractive benefits for Generation Y (Lub *et al.*, 2016).

Further, Clinton *et al.* (2012) pointed out that a negative relationship could be expected among the dimensions of job embeddedness and employees’ intention to quit. In this sense, Peltokorpi *et al.* (2015) have mentioned that the stronger the job embeddedness, the less likely the employees are to quit their organization.

Therefore, the hypothesis is proposed as follows:

- H1.* Each dimension of job embeddedness (links, fit and sacrifice) has a negative relationship with the intention to quit among Generation Y employees.

Method

The aim of this research is to determine the relationship between the dimensions of job embeddedness and young professionals’ intention to quit. A quantitative correlational study was conducted considering the cross-sectional dimension of time. The survey technique was conducted through a certified online panel. Self-administered questionnaires were given to the working professionals belonging to Generation Y.

A company dedicated to market research was hired to conduct the surveys on the members of a certified panel. These members were part of a group of previously selected people who share the main characteristics and socio-demographic traits of the universe studied and who, on a voluntary basis, collaborate periodically by answering questionnaires. The process included the identification and validation of the socio-demographic traits and the main characteristics of the sample.

The survey was conducted online; therefore, to collect the information, a request for collaboration was sent to the emails of the panel members. In this email, the panel members found a link that redirected them to the questionnaire using the responsive technique (adaptive design), which is a web design technique that seeks the correct visualization of the same page in different devices such as desktops, tablets and mobiles.

The characteristics of the sample are shown in Table 2.

Issue	Description
Questionnaire	Virtual
Location	Lima, Peru
Responses	211
Effective response rate	21%
Sampling error	±6.75%
<i>Sample composition</i>	
Age	25–35
Sex	55% men and 45% women
Marital status	52% married, 46% single and 2% divorced
Children	59% have children
Work experience	3 or more years
Work position	55% entry level, 39% middle management and 6% upper management position
Background	University graduates
Company size	Medium and large
Sector of the economy	Business, industrial, communications, educational, financial and health

Source(s): Compiled by the author

Table 2.
Sampling information

Measurement

The questionnaire was translated from English into Spanish and included 60 questions since the fieldwork covered the gathering of information for 5 constructs. Two of these were the subjects of this research.

Variable: job embeddedness

Job embeddedness is a construct developed to explain why people stay at work. It was originally defined as consisting of three dimensions: links, fit and sacrifice (Mitchell *et al.*, 2001). In order to measure job embeddedness, the scale developed by Holtom *et al.* in 2006 was used, which was obtained from Felps *et al.* (2009).

This scale was chosen because (1) it represents the three dimensions of the job embeddedness construct (links, fit and sacrifice); (2) it is presented as a short scale with theoretical foundations, countering the criticisms of the global scale proposed by Crossley *et al.* (2007) and (3) it shows a moderate extension compared to the 48 items proposed in the original scale. An example of an item is “At work, I frequently interact with my work group.” We used a Likert scale of five points ranging from 5 (totally agree) to 1 (totally disagree). Given the characteristics of the working environment of the city of Lima, we decided to work only with the questions that are related to the workplace. The Cronbach's alpha for the link dimension was 0.78, for the fit dimension was 0.81 and for the sacrifice dimension was 0.78.

Variable: intention to quit

The scale developed by Mitchell *et al.* (2001) was used in this study and it consisted of three items. An example of an item is “I intend to quit this organization in the next 12 months.” Cronbach's alpha for the scale was 0.92. A Likert scale of five points was used, ranging from 5 (totally agree) to 1 (totally disagree).

Results

Multiple regression analysis was used to assess the findings. This statistical procedure seeks to establish a direct or inverse relationship between two or more variables. It has the advantage that it allows the researcher to predict the behavior of a variable at a certain point or moment. The analysis was performed using the Statistical Package for the Social Sciences (SPSS) software.

First, it was important to define the constructs considered in the analysis as formative or reflective. Following the recommendations of Felps *et al.* (2009), the indices were considered to be formative constructs.

The first step was to convert the variables of links, fit and sacrifice into a continuous numerical scale since the type of Likert measurement scale used in the questionnaires was ordinal. A categorical principal component analysis was performed to conduct a confirmatory factor analysis. The results showed three dimensions as per our expectations.

The indices of fit, links, sacrifice and intention to quit were evaluated, evidencing reliability and validity in all the four cases. Cronbach's alpha, as mentioned previously, showed reliability. Validity indicates whether an instrument actually measures what it claims to measure. The aspects necessary to achieve validity were considered in the design of the instrument.

Second, a multiple linear regression analysis was conducted. The control variables considered were the employee's gender, number of children, position and their number of years in the company. Control variables with more than two categories were entered into the model as dummy variables.

Following the regression analysis, further analyses were carried out to verify the corresponding assumptions. The Durbin–Watson test was performed to evaluate the presence of autocorrelation. The Durbin–Watson statistic was 1.937 for this model. Therefore, there exists statistical evidence to affirm that there was no autocorrelation in the model, and this assumption was fulfilled. Similarly, the homoscedasticity assumption was fulfilled, errors were distributed normally and there was no multicollinearity. The variance inflation factor was less than 10 as expected.

The summary of the regression analysis is shown in Table 3.

The R^2 of the model is 0.28; this means that the intention to quit is explained in approximately 28% by the explanatory variables. As evidenced by these results, we can say that the sacrifice index is significant at a confidence level of 99%, that is, there is a negative effect on intention to quit. In this sense, as sacrifice increases by one unit, keeping the other variables constant, the index of the intention to quit the company decreases by 0.370 units on an average.

Since only the sacrifice dimension is significant, Hypothesis 1 cannot be validated. It is not possible to conclude on the relationship between links and fit with the intention to quit.

Independent variables	Dependent variable intention to quit variable	
	β	t
Fit	-0.123	-1.583
Sacrifice	-0.370	-4.406**
Links	-0.072	-1.060
Female gender	0.105	1.707*
Not having children	0.096	1.576
Position: Middle management	-0.057	-0.928
Position: Upper management	0.065	1.063
Number of years in the company: Less than one year	-0.103	-1.551
Number of years in the company: More than three years	-0.082	-1.217
R^2	0.311	
Adjusted R^2	0.280	

Table 3.
Summary of the
regression analysis

Note(s): * $p < 0.01$; ** $p < 0.001$
Source(s): Compiled by the author

Discussion

It has been verified that only the dimension of sacrifice is negatively related to intention to quit. This means that the dimension of sacrifice contributes toward decreasing employees' intention to quit. The results coincide with the reviewed literature in terms of the relationship between the dimensions of job embeddedness and intention to quit (Clinton *et al.*, 2012; Karatepe, 2013; Dechawatanapaisa, 2018).

The dimensions of job embeddedness have rarely been studied separately. It is interesting to note that in this study the only significant dimension for Generation Y is sacrifice. The sacrifice dimension is more directly linked to material, psychological benefits or conditions that the organization offers (Mitchell *et al.*, 2001). Sacrifice represents the benefits that an individual would lose if they quit their job. It could be highly costly for an individual to sacrifice the accumulated benefits (Khorakian *et al.*, 2018).

As mentioned earlier, Generation Y values meaningful work and opportunities to grow within the organization (Valenti, 2014). They also seem to value the economic aspect (García *et al.*, 2019). The results show that the sacrifice dimension influences their intention to resign; therefore, the monetary and non-monetary benefits observed should be taken into account to achieve the job permanence of these young professionals for a longer time.

The links dimension was not significant. One of the reasons for this could be that for this generation, links represent a common way of interacting or working, that is, working in a team and interacting with coworkers can be considered as natural for them. In the same sense, they can relate to their peers through social networks such that they do not need to be in the workplace to socialize. Gong *et al.* (2018) and Garcia *et al.* (2019) consider that Generation Y interacts very well with coworkers and socializes naturally. Their technological skills allow Generation Y to establish relationships with different groups without being physically present (Lub *et al.*, 2016). These characteristics help explaining why links can be maintained without staying at work.

Similarly, the fit dimension was not significant. Fit represents the compatibility of an individual with their work. Compatibility is determined by factors such as organizational culture or the required skills. The members of Generation Y could pay less attention to this factor when considering what they need for a working development is to gain experience and knowledge, even if they do not feel completely compatible with the organization initially. According to Gong *et al.* (2018) and Robak (2017), Generation Y values close contact with their supervisors and feedback at work. At the beginning of the working life, finding the ideal organization remains a secondary preference while learning is prioritized.

The dimension of sacrifice mostly pertains to material and psychological benefits or conditions that the organization offers. Therefore, it may be valued more when considering resignation. Sacrifice entails losses that come with resignation. For Generation Y, losing participation in major projects or a good income could be relevant if not all companies can offer the same benefits.

Conclusions, limitations and future research

This study contributes to both academics and practitioners. Regarding the theoretical implications, each dimension of job embeddedness has been studied separately along with their relation to the intention to quit among Generation Y. This allows us to know job embeddedness in greater detail, as suggested by Halvorsen *et al.* (2015). This study shows that not all dimensions of job embeddedness behave in the same way, which is why the idea of studying each dimension of job embeddedness is reinforced and why global measurements in which the behavior of each dimension cannot be distinguished are not used.

By studying the dimensions independently, it has been found that the dimension of sacrifice is relevant with regard to intention to quit among young professionals. The more

resources the employee perceives that they will lose if they change jobs, the less attractive the job change options will appear (Zhang *et al.*, 2019).

Similarly, a sample of Generation Y from a Latin American country has also responded to the research gap found in the literature on the relationship between job embeddedness and intention to quit in countries other than the USA (Coetzer *et al.*, 2018; Ghosh and Gurunathan, 2015; Peltokorpi *et al.*, 2015). The labor reality of Peru in terms of the benefits that organizations can offer differs from those offered by USA companies. The study of Generation Y in the workplace is a recurring request in the literature to avoid references to stereotypes (Naim and Lenka, 2018; Robak, 2017). For this reason, it is especially important that the sample under study has work experience, precisely to know the impression about work values people develop in the work environment based on their experience rather than speculations about work. The sample used in this study only included Generation Y members with work experience, in contrast to the majority of studies that include students without work experience.

Regarding the practical implications of this study, organizations concerned with retaining the talent of young professionals can focus on the development of policies and benefits that encourage sacrifice and offer adequate resources (Agusti-Perez *et al.*, 2020). Holtom *et al.* (2006) propose that in the sacrifice dimension, a good salary, the ability to design the workplace and support for work-life balance initiatives, among others, are considered. For Generation Y, these benefits would be appealing (Lub *et al.*, 2016).

Options for development as well as employee benefits must be competitive so that employees perceive that the cost of leaving one company for another is high. In this sense, there are various options, such as a good salary, benefits designed according to employees' needs and allowing freedom in job design and in the performance of day-to-day activities.

A limitation of this study was the length of the questionnaire used. It would have been better to work with a less extensive questionnaire in order to better hold the respondents' attention.

Regarding future research, it is necessary to deepen the study of the dimensions of job embeddedness and their influence on the intention to quit in different demographic groups. It is also advisable to delve deeper into the study of the benefits valued by Generation Y. Thus, decisions can be made to retain these young professionals. However, it would be advisable to conduct longitudinal studies to observe the dynamics of job embeddedness throughout the years.

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Digital ecosystem structure formation depending on the archetype of distribution network participants

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Abstract

Purpose – Fundamental changes in economic relations, instability of the market environment in which enterprises operate and increased intensity of competitive influences to obtain better business conditions emphasize the importance of the nature of interaction for all participants of business processes in the distribution channel and the success of the chosen business structure. This circumstance determines the expansion of the content of the ecosystem approach to the organization of enterprise activities and the clarification of the participants' roles in such systems. The purpose of the study is to identify the key features and differences in business models of digital ecosystem participants that are critical to shaping the value of the distribution system.

Design/methodology/approach – In this paper, within the framework of the theoretical component, the authors analyze conceptual and empirical articles contained in the Web of Science database and also rely on information obtained from the study of articles by Russian academicians in specialized journals, monographs and conference abstracts. Using the method of content analysis, data on enterprises were collected and generalized into cases, which made it possible to propose possible classification properties of enterprise archetypes within the digital ecosystem and to determine the general properties of the objects under study and their interrelations.

Findings – The systematization of results allows us to present a co-competitive activity model for ecosystem participants, depending on their archetype, where they are segmented according to the dominant principle of role and activity within the system. From a practical point of view, the considered classification of the archetypes of recipient enterprises and their economic relations make it possible to structurally visualize a digital ecosystem, which significantly reduces the distance between the consumer of the product/service, the manufacturer and the seller. This reduces the time of delivery and waiting as well as the time to find a suitable option making the market more perfect. The proposed conceptual framework indicates the interdependence of the development of all participants in the product distribution and proves that successful business models take part in the market expansion. Finally, the authors' systematic review of the academic literature results in identifying certain promising directions for future research based on the consideration of open ecosystems with transparent infrastructure.



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Research limitations/implications – The results are limited by the authors' sample data and the case study approach. The study does not show the further evolution of the digital ecosystem depending on the set and configurations of ecosystem participants. The authors introduce a possible new classification of archetypes of ecosystem participants and a co-competitive activity model for ecosystem participants depending on these archetypes.

Practical implications – From a practical point of view, the considered classification of the archetypes of recipient enterprises and their economic relations make it possible to structurally visualize a digital ecosystem, which significantly reduces the distance between the consumer of the product/service, the manufacturer and the seller.

Originality/value – From a practical point of view, the considered classification of the archetypes of recipient enterprises and their economic relations makes it possible to structurally visualize a digital ecosystem, which significantly reduces the distance between the consumer of the product or service and the manufacturer or the seller. This reduces the time of delivery and waiting as well as the time to find a suitable option making the market more perfect in this respect.

Keywords Ecosystem, Digitalization, Distribution systems

Paper type Research paper

Introduction

Global trends such as the emergence of disruptive technologies, digitalization and accelerated product lifecycle are driving massive changes in most areas of activity. Distribution channels are changing, profitability zones are shifting and new players appear on the market. All these fundamentally change the balance of power in industries significantly accelerating the introduction of new business models. Involvement in universal digitalization leads to changes in all spheres of activity. Many new companies appear, while the leaders are those enterprises that build their organizational and economic ties taking into account the requirements of digital trends. In this regard, the ecosystem approach to the organization of interaction is becoming widespread.

The business ecosystem is a relatively new concept, which was introduced by Moore (1993), and it describes enterprises as an evolving system of interconnected organisms that coevolve and compete with each other. The digital business ecosystem is a system that has a digital aspect of business collaboration (Kohtamäki *et al.*, 2019). It ensures that participants find themselves in an environment where there is access to information and programs and where software components, services, applications and business models are considered as “digital species” that can interact with each other, reproduce themselves and develop in accordance with market selection laws. Numerous research papers present a number of approaches to the formation of a digital business model of an ecosystem (Karakas, 2009; Senyo *et al.*, 2019; Korpela *et al.*, 2016; Venkatraman *et al.*, 2014; Elia *et al.*, 2020; Li *et al.*, 2019; Blaschke *et al.*, 2018; Gupta *et al.*, 2019; Henningsson and Hedman, 2014; Kituyi, 2019; León *et al.*, 2016; Teece and Linden, 2017; Autio *et al.*, 2018; Coppin *et al.*, 2002; Hanna *et al.*, 2011; Rita *et al.*, 2021; Rodríguez *et al.*, 2017).

Despite the significant number of definitions of this concept, it is necessary to clarify its content. The directions related to the determination of the composition, functions and their features, as well as the peculiarities of ecosystem management methods, coordination mechanisms within ecosystems, etc. have not been sufficiently studied. This article attempts to consider the possibility of using an ecosystem structure to identify types of distribution structures at the aggregated level and to denote the roles within the ecosystem on which the researcher's attention will be focused. The paper overviews the main works devoted to the substantiation of the ecosystem concept and analyses the features and advantages of this form of production organization.

The purpose of the article is to substantiate the feasibility and scientific correctness of using the ecosystem concept as an object of economic and management research.

To achieve this goal, it is necessary to solve the tasks as follows:

- (1) To explore the concept of an ecosystem that goes beyond the individual company and direct participants in the value chain and allows us to describe the indirect effects produced by the mutual influence of organizations;
- (2) To clarify the theoretical basis of the ecosystem concept and to conduct a bibliographic analysis of how this concept is used;
- (3) To identify the key features and differences in the business models, which are employed by the digital ecosystems' participants and are critical in shaping the distribution system value.

This article develops the concept of digital ecosystems and presents some of the archetypes of actors and their roles depending on how much the enterprise is involved in the process of creating ecosystem value.

Theoretical framework

Currently, research into digitalization processes in all areas has intensified. At the moment, a lot of research is devoted to the methods and key principles of how distribution systems, marketing channels and distribution channels are formed. There are also many practical cases describing the interaction of economic agents. Thus, the ecosystem approach has recently become one of the topics attracting the interest of the academic community and also a promising area of practical application in the activities of enterprises (Ratten, 2020; Kandiah and Gossain, 1998; Scaringella and Radziwon, 2018; Sklyar *et al.*, 2019; Stam and van de Ven, 2019; Tsujimoto *et al.*, 2018; Tsvetkova and Gustafsson, 2012; Valkokari, 2015).

The ecosystem approach is interdisciplinary, as it covers various fields of activity and includes such academic areas as sociology, economics and psychology of relationships (Corvini and Bellows, 1955; Sewell, 2004; Al-Omoush *et al.*, 2020; Ghahtarani *et al.*, 2020). For instance, Iansiti and Levien (2004) use a powerful example of biological ecosystems to show how companies can leverage new business interactions to achieve long-term success. The title of the book is taken directly from biology and refers to the types of organisms that actively maintain healthy functionality of their entire ecosystem for one simple reason – their own survival depends on it. Likewise, according to the authors, companies can protect and ensure their own success by knowingly contributing to the overall health of the network in which they operate (Blackburn, 2005). These authors concluded that different enterprise development paths depend on customer experience and operational efficiency, leading to new digital business models (Weill and Woerner, 2015, 2018). Entrepreneurial ecosystems include a network, a system of interaction between individuals and organizations such as financial intermediaries, universities and research institutions, suppliers and customers, multinational companies or government. Entrepreneurial ecosystems are also seen as a strategy for regional economic development based on creating favorable conditions for the development of innovative start-ups. Thus, the entrepreneurial ecosystem academic literature examines the development and change of entrepreneurial ecosystems over time and the internal dynamics of entrepreneurial ecosystems. Despite the popularity of the ecosystem approach, the academic literature has paid almost no attention to and largely ignored the nature of the interaction and the role of ecosystem participants.

In our study, we have considered various attributes of non-economic academic fields: for example, relations within an ecosystem can be linked to the functioning of a biological organism which, in its development, aims at reproducing its own kind. This development is associated with the replication of successful business models and

technologies in trade and production, which can be viewed as the expansion of successful types of business entities. With the help of various case situations, we have examined how entrepreneurs in different countries and over approximately the same time period create similar business models of activity. This phenomenon can be called the expansion of similarity, when a certain system tries to form a certain integral superstructure/group. To this end, a new multi-disciplinary approach to interpreting complex patterns of enterprise activity is required in order to gain a deeper and more effective understanding of the ecosystem structure. In this article, after a brief introduction to the basic concepts of Jung's analytical psychology, we propose using Jung's archetypes to implement the co-competition model (Brown, 2011; Samuels, 1983; Tallman, 2003). Basing on observations and comparison of available information about companies, we introduce archetypes of enterprises included in the digital ecosystem by analogy with the theory proposed by Carl Gustav Jung and his disciples (Jung, 2014; Olson, 2019; Robertson, 1992).

Jung defined archetypes as a system of deep-seated behavioural patterns, typical reactions and attitudes derived from the collective unconscious that is common to all human beings (Jung, 1935). Putting forward his system of psychological types, Jung provides a means for understanding ourselves and the world around us: our various behavioral patterns, relationships, marriage, national and international conflicts and organizational functioning. In human behavior, Jung denoted common traits that are similar for many people and defined six personality archetypes.

These considerations allow us to state the following: higher competitiveness of the company is present or absent in the decisions that are made at the scale of the system. We believe that each enterprise that is part of the ecosystem contains elements of certain archetypes, whose characteristics are given in this article.

Due to the obvious multiplicity of studies devoted to ecosystems, this area, as argued by Maroufkhani *et al.* (Maroufkhani *et al.* (2018), remains thematically fragmented and lacks a contribution that would clearly articulate the multiple roles and functions of enterprises participating in ecosystems. When designing ecosystems, it is necessary for state policy and regional development of the market to revise both the possibilities of cooperation and the interfaces of interaction between the stakeholders of entrepreneurial activity. Academic literature creates a theoretical basis for the study of business ecosystems, which relies on theories of economic evolution and considers important concepts such as co-evolution, self-organization, emergence, conscious choice, limited knowledge, interconnectedness, feedback and interaction of variation, selection and development (Basole *et al.*, 2018; Demil *et al.*, 2018; Gomes *et al.*, 2018; Humbeck *et al.*, 2019; Peltoniemi and Vuori, 2004; Pidun *et al.*, 2020; Rinkinen and Harmaakorpi, 2019; Scarlat, 2007). Despite the fact that business ecosystem creation is an urgent issue in the context of the digitalization of the economy, creating business models with a focus on innovative advancement is still an unaddressed problem due to the need to define the roles of ecosystem participants; enterprises do not fully understand their functionality, which hinders their development.

Academic research has an increasing contribution to the digital ecosystems' creation, but there is also a need for a deeper understanding of how ecosystem participants interact and how their roles and opportunities can be assessed and compared between existing business model structures.

From a practical point of view, the considered classification of the archetypes of recipient enterprises and their economic relations makes it possible to structurally visualize a digital ecosystem, which significantly reduces the distance between the consumer of the product or service and the manufacturer or the seller. This reduces the time of delivery and waiting as well as the time to find a suitable option making the market more perfect in this respect.

Methodology

The research methodology is described in Figure 1 and presents the process of cognition from the study of technology and the basic principles of digital ecosystems to the development and substantiation of a co-competition model based on the archetypes of enterprises of ecosystem participants as a way to improve the efficiency of enterprises in modern market conditions. The study used a systematic review of 50 articles drawn from three global databases – Web of Science, Google Scholar and Scopus. The analysis includes two stages. First, a descriptive report looks into research on ecosystems, digital and entrepreneurial ecosystems, as well as related categories present in the logic of the research as described in Figure 1. Second, we proceed with a case study based on thematic categorization of research on enterprises that are part of ecosystems.

In the first step, we reviewed the corresponding literature and analyzed case studies of the surveyed enterprises. To ensure that the case studies are consistent with our research focus, we selected businesses that participate in ecosystems or use ecosystem-based business models or those related to it regardless of industry. To identify the demand for ecosystems, which is the core of the modern manifestation of customer-centric business based on digitalization expanding the potential of enterprises, we conducted a market research in the form of a survey, in which representatives of enterprises from various industries and fields of activity took part. We believe that we have obtained satisfactory results, indicating that the business is interested in the implementation of such systems. So by analyzing the answers to the survey questions, we can say that almost all respondents (98%) are aware of digital

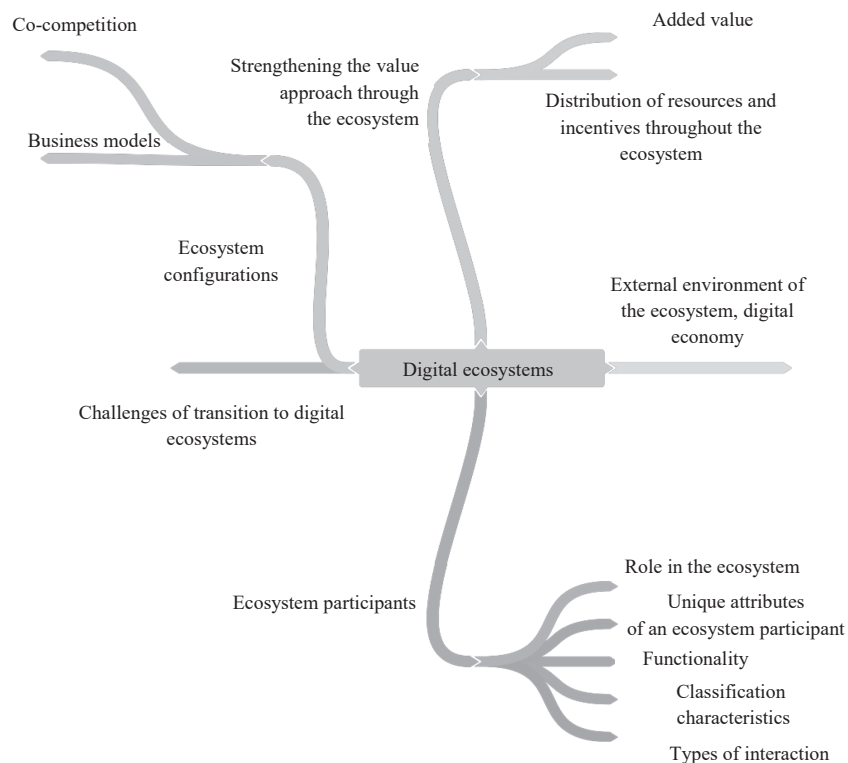


Figure 1.
Research logic

platforms and use digital platforms together with their applications and services to solve everyday tasks.

The findings from the survey and meetings with company representatives were useful for creating preliminary versions of the archetype typology and drafting the minutes of subsequent interviews.

Further, we analyzed the data relying on case studies of the respondents' enterprises. The case study method refers to the situation analysis technology, which is one of the most suitable approaches to answer the questions formulated in the study and to identify the development dynamics of enterprises' functionality within the ecosystem. The specificity of this technology lies in the fact that it is carried out in the form of a situational analysis of how enterprises react to any conditions, but this is possible only by interacting with the participants of the process, considering various viewpoints and approaches and arguing for our own position.

Primary data were collected by interviewing representatives of selected enterprises as well as by collecting information from open sources. The interview scenarios were prepared to facilitate data collection, together with the available information, a description of real economic situations was obtained, which will allow us to understand the essence of the research matter, suggest possible classification features of enterprise archetypes within the digital ecosystem and help to choose the most suitable business model.

The choice of an enterprise is a critical element of this study since enterprises must provide a significant contribution to the economy, which should be interesting and competitive in the market and use digital technologies in their activities.

So in the context of digital transformation, one of the pressing academic issues is the optimization of relationships in the chain of interaction between the manufacturer and the consumer. Significant economic and technical advantages are provided by the integration of multiple currently existing economic entities representing various industries. To do this, we consider enterprises and partners in the broader context of a distribution channel (a digital ecosystem, in which it is possible to develop incentives and criteria for ensuring close and open interaction between participants, which will contribute to the joint increase of competitive advantages).

The attempt to classify enterprises in strict accordance with archetypes has a number of limitations, since the boundaries between archetypes can be blurred and each industry can have different features at the same time (Hannah and Eisenhardt, 2018). While automotive innovation is heavily dependent on engineering, car manufacturers also need to be mindful of changing consumer preferences and, in order to remain profitable, they cannot abandon efficiency-driven innovation. Our classification of archetypes should clarify and structure the consideration of a particular business model used by a company within the ecosystem and in the process of its development. The next section contains the final versions of the resulting classification.

Ecosystem structure formation depending on the archetype of its participants

The advancement of information technologies has led to a number of qualitative changes in public relations, which stimulated the development of informal ties between various participants in the business environment and also significantly transformed relations within the companies themselves, their corporate environment and culture (Kazakov *et al.*, 2020; Adamides and Karacapilidis, 2020; De Reuver *et al.*, 2018). Under the influence of technology, enterprises become adaptive elements of the economic system. In such an emerging business ecosystem, we observe the increasing role and importance of relationship marketing – long-term relations, which allow building interaction with business partners and key consumers as full-fledged components of the emerging value chain using a new digital platform (Izakova *et al.*, 2017; Ketova and Xue, 2017).

This reveals a certain contradiction between the desire to effectively use information technologies for economic development and the formation of a dominant group of society (global information society) to obtain the largest share in the world production and sales market, on the one hand, and the need to maintain the global strategic balance of power, on the other. In an economic system oriented toward consumers and stimulating demand, where marketing innovations are actively applied, this contradiction manifests itself quite visibly.

Characterizing the fundamental importance of digitalization for the business ecosystems formation, we present data on the development of the digital economy in several countries of the world including Russia (Table 1).

In line with the data presented, Russia is among the ten leading countries according to the development of the digital economy, which implies good starting opportunities to create business ecosystems on its territory.

In this context, in addition to the above definitions, we note that the economy residing on digital principles produces a new form of business organization – a business ecosystem, which, as a rule, is used in high-tech markets and is based on platform technologies. At this stage in the development of the digital economy, a business ecosystem can be understood as a community of individuals and companies that have united around a specific digital or product platform with various connections between participants as their main assets (Markova and Trapeznikov, 2016). The most famous examples of business organization based on the business ecosystem concept are Apple, Amazon, Alibaba and 1C Company. Various digital ecosystem-based projects have been created in order to provide services for the development of the digital economy in Russia by supporting socially significant projects and initiatives in various fields, as well as by coordinating interaction between the business community, scientific and educational organizations, other communities and government authorities. These include platforms as follows:

- (1) MegaFon CARGO logistic online platform (the solution allows to increase the efficiency of organizing cargo transportation of various types, dimensions and characteristics of cargo; it is a domestic digital platform designed for large companies as well as for small and medium-sized businesses);
- (2) PRO-STORE digital platform for the procurement of goods for non-chain retail outlets (the solution allows to increase the efficiency of sales and procurement activities of small and medium-sized businesses in the trade sector);
- (3) Naumen service management platform for consumers of commercial and government services (the solution allows a commercial or government service provider to improve the quality of customer service and reduce operating costs; it is a web-portal);

10 countries leading the global digital economy		Dynamics	Involvement	Trust		
1	The United Kingdom	1	The USA	1	China	
2	The USA	2	The United Kingdom	2	China	
3	China	3	Germany	3	The USA	
4	Germany	4	France	4	Australia	
5	France	5	Australia	5	France	
6	Australia	6	Japan	6	Germany	
7	Spain	7	Spain	7	Russia	
8	Italy	8	China	8	Spain	
9	Japan	9	Italy	9	Italy	
10	Russia	10	Russia	10	Russia	
			10	Japan	10	Japan

Table 1.
Digital Society Index
Rating, 2018^a

Note(s): ^aDigital Society Index Rating, 2018. Framing the Future. Dentsu Aegis Network, 2018

- (4) Intelligent quarry complex of digital technologies (the solution allows to increase the efficiency of mining enterprises, including mining and transportation of solid minerals).

It is worth noting that the features of organizing commercial activities through a business ecosystem are as follows.

- (1) There is a structure formed using platform technologies that can be open or closed and which are used by companies or individuals to carry out their activities and facilitate communications. The platform is the center for the business ecosystem formation that creates a commodity circulation system.
- (2) The platform mechanism representing a kind of encapsulation service for the seller combines various counterparties: consumers, sellers, manufacturers of goods, sales partners, logistics, marketing and information technology. All participants contribute to the organization of the platform ecosystem, develop and support it.

To analyze the current situation of companies, we will give examples of some cases that we have considered in our study.

An example of a product-oriented archetype.

The ability to formulate ideas in an engaging way is important to attract customers and motivate employees, but it is also risky due to the enormous uncertainty associated with creating something new. A product-oriented business model is characterized by the design and creation of new products through technology integration with supply chain partners. Enterprises of this archetype include, for example, those in such industries as mechanical engineering, power engineering and construction. To be successful, companies need a professionally trained workforce and a business environment that provides strong intellectual property protection: engineering innovations are often protected by patents. There are many factors that have a positive impact on the development and implementation of innovations: developed industrial clusters as well as policies that contribute to gaining wider access to global sources of technology, knowledge and high-quality workforce.

The product-oriented archetype is a reasonably robust business model if the enterprise can create a standardized offering suitable for the mass market and if the product contains a unique value proposition. Competitive advantages can be achieved through technological breakthroughs, lower costs and unique business processes. For example, in 2012, farming equipment manufacturer John Deere created the open platform MyJohnDeere, an information system that helps a farm business model to optimize the management of production data, equipment information and farming operations. New services have included, for example, smart irrigation and soil quality improvement based on indicators derived from remote diagnostic tools.

Using the information technology (IT) platform, John Deere customers increase hourly productivity, reduce fuel consumption and equipment downtime. For John Deere, the technology implementation results in higher equipment sales, increased customer loyalty, reduced switching to other brands within the same farm, creating barriers to prevent competitors from entering the market and obtaining large amounts of data to form a more attractive value proposition to customers.

Komatsu, a construction equipment manufacturer, has developed an IT system for remote equipment health monitoring. Its implementation has ensured the availability of information on processes at all stages of the value chain. The result is less downtime and higher resale value for equipment through increased uptime and productivity. In addition, Komatsu began developing products with new features based on large datasets of equipment maintenance.

An example of a platform-oriented archetype.

A platform-oriented business model is also standardized and scaled. In contrast to a product-oriented system where various components seamlessly connect to each other, a platform serves as a foundation that integrates a complete set of products and services, defines the rules and conditions for interaction (e.g. management, workflows and processes) and, by offering features and tools for sharing, it creates opportunities for its customers. Platforms organize market interactions in a new, technological way. Market relations have existed for centuries, connecting consumers and merchants, but information and communication technologies have significantly reduced the need for physical infrastructure and assets. Today there are many varieties of platforms, but they all have an ecosystem with the same four elements: owners, providers, suppliers and users.

The architectural principles of 1C technologies cannot be considered outside its relationship with a partner network. Roles are distributed by the parent company, which designs, supports and develops the 1C: Enterprise, a technological platform. A partner network, basing on the principles of long-term cooperation and directly interacting with customers, is responsible for the sales and implementation of products and their adaptation and adjustment to specific needs as well as for the development of their own replicated solutions.

In the new economy, creative associations are becoming widespread. They represent the so-called creative workshops in which scientific and educational institutions, businessmen, industrial partners, start-ups and other participants of the creative process can interact. As a rule, business concentrated within such associations belongs to knowledge-intensive sectors such as nanotechnology, biotechnology, information and communication technologies and other high-tech industries. In addition, these platforms are a convenient way to bring together business and investors and to aggregate competing business solutions. By embodying co-competition, this system allows large companies to solve complex technological problems using open innovation. This form of business combination is developing both in Russia and abroad. This is due to the increased likelihood of finding the right commercial solution or innovative project for a company based on the effect of knowledge spillover in the networks of interactions between companies (Rumyantseva *et al.*, 2018).

Co-working centers, which have become popular in Russia, can act as possible practices for such combinations. There are many types of co-working centers, depending on the line of business: office, industrial, craft, etc. There are examples of co-working centers operating in the Rostov region today.

- (1) Industrial co-working GARAZH brings together inventors and promising entrepreneurs in the industrial sphere, helping them to develop projects using the technological and humanitarian resources of the southern flagship university (Don State Technical University).
- (2) The municipal center for the development of entrepreneurship NEW ROSTOV created a co-working space called UNDER THE ROOF, which is engaged in consulting on entrepreneurial activities, holding business events (conferences, expert platforms, round tables, trainings, seminars and other free training events on various aspects of entrepreneurship). It is also a space for creating free jobs and organizing events for start-up entrepreneurs and those who want to start their own business.
- (3) South IT-PARK is a space for interaction of IT professionals of all levels and is supported by the state. The purpose of this hub is to form a community of entrepreneurs to facilitate the implementation of new projects through consulting and training. Thus, this co-working center creates a venture investment ecosystem in the region and offers uniform rules for investing and interaction for start-ups and investors based on the world's best practices.

(4) Co-working RUBIN.

The platforms run a variety of businesses, from dating (men and women) to games (developers and users) and various retail structures (Frishammar *et al.*, 2018). The more users join the platform, the more applications and other offerings they create, the higher the value of each of them and the larger the number of interactions. The exponential growth of Facebook users attracts more people because they believe that their friends also use the platform.

This archetype is a good option to organize activity in an ecosystem if the company can build a solid foundation, integrate a wide range of goods and services and establish rules and present opportunities to its customers. In addition, it will have to foster the creation of “traffic and attraction” that is determined by the size and activity of the user base and the potential ecosystem of co-innovation surrounding it. Its advantage is the economy of scale and volume based on the network effect and the integrity of offers, so, as a result, consumers prefer long-term use of the platform. The disadvantages of the archetype include the fact that platforms that have a longer lifecycle than their offerings must use the best processes, superior architecture and/or significantly improved cost position in order to become a prominent player in the market.

An example of a project-oriented archetype.

The project-oriented business model relies on highly customized products or services, which are usually developed with the customer’s active participation. Despite the fact that projects are usually implemented for a long time and may include contracts for its separate parts, they remain one-time contracts. These customized business models are usually service-based. This can be a construction company that comprehensively designs and builds a dam and, while doing so, provides a large number of engineering services. Another example is a project of a consulting company that does not produce any tangible product at all. Since the customer is free to change suppliers of subsequent transactions, it is obvious that service companies try to develop a close relationship with the customer during the project with an eye to selling other services in the future. For example, it is common in the energy business to switch suppliers (such as General Electric, Siemens and ABB) from one facility to another in order to maintain independence with a balanced portfolio of seller–enterprise combinations. Likewise, public company auditors must prove their qualifications annually, and they are changed after several years of cooperation in order to avoid bias and to maintain mutual independence. A project-oriented business model is appropriate for a company if its competitive advantage is related to the ability and willingness to design and implement complex local projects in accordance with the specific needs of its customers. Benefits include a manageable level of complexity, the accumulation of knowledge from the provider in which the customer is interested and the process of collaborative development and implementation of the project.

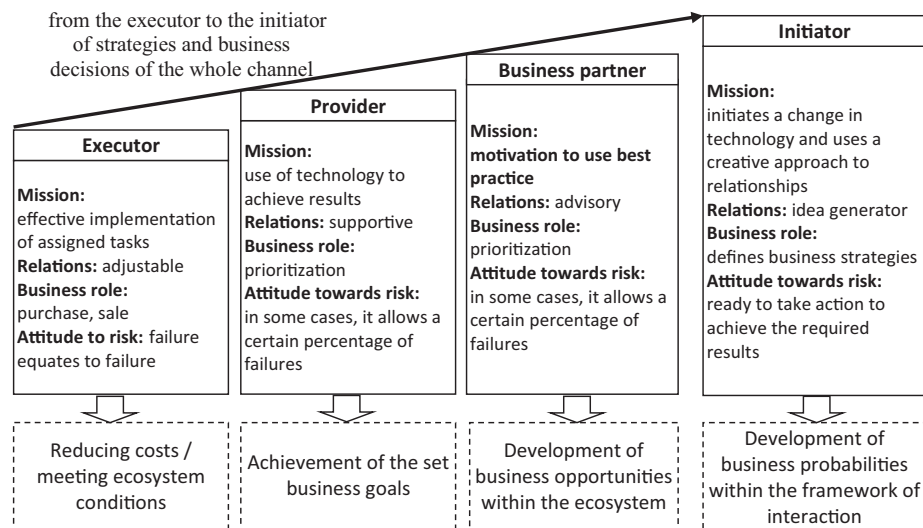
To create the digital ecosystem structure in various industries and fields of activity, it is possible to introduce a co-competitive activity model for ecosystem participants, depending on their archetype, where they are segmented according to the dominant principle of role and activity within the system. Sources for detecting activity can include research and development from research centers or companies, interactions with partners in the supply chain, customer inquiries and work to improve efficiency. The degree of importance of certain actions depends on the archetype of the ecosystem participant.

The model itself is three-part and has three different sub-systems: a marketing-oriented production subsystem, a marketing-oriented distribution system and a communication core, which is responsible for full contact with consumers.

Depending on the level of involvement and activity in the presented model, we can distinguish the following archetypes of enterprises, as presented in Figure 2.

As you can see, the growing involvement of an enterprise in the process of creating value changes its development goals, from a simple executor to an initiator of strategies and

Figure 2.
Archetypes of digital ecosystem participants: from the executor to the initiator of the system



business decisions for the entire channel, which transforms this ecosystem participant from a partner into a system provider.

Discussion

Direct interaction between the closest link levels of the distribution system is popular in Russia. Meanwhile, mature practical experience in this area is still not extensive. The spread can be observed in joint global projects implemented by large foreign companies, such as Danone, Nestle, The Procter & Gamble Company (P&G), Unilever, etc. and not by purely Russian partnership initiatives. The reasons for such an insufficient development of co-creation and digital ecosystems creation in the existing Russian conditions are threefold.

The first reason is the distribution chains structure characterized by a variety of all types of market players. This is due to the focal location of large manufacturers in a geographically extended territory. As a result, when organizing a channel, the geographical component creates many intermediate participants, with whom the cooperation is onetime and strategically ineffective.

The second reason is business culture. Co-competition assumes that all parties of the business combination strive to optimize not only their own processes, but also those of their counterparties in the distribution chain and not to oust business competitors.

And the third reason is the impossibility to fully organize effective interaction within the distribution network due to insufficient information and technical support of the participants and their unwillingness to develop in this direction.

The proposed co-competitive activity model for ecosystem participants, depending on their archetype, allows us to realize the significance of the system for all potential participants and partners since it makes it possible to understand how such a complex interaction can be organized and configured on the basis of modern digital platforms.

Enterprises have come a long way in developing its entrepreneurial culture, understanding marketing and setting up new relationships within distribution systems. However, given the relatively short history of the market economy in the country, it is necessary to continue the course toward the popularization of entrepreneurship and co-competition, for example, by creating open digital ecosystems that function on a voluntary basis, support its participants

and also contribute to the dissemination of success stories of large Russian companies and start-ups that are not yet known to the general public, which will allow the participants to determine their roles and opportunities for development within the ecosystem.

To sum up the results and conclusions of this study, we can note the following.

Global changes and issues related to economic mechanisms that allow modern enterprises to sell their products cause a natural change in the relationship between market participants, which implies the improvement and renewal of business models for the enterprise operation.

This article describes research on developing partnerships based on digital ecosystems. It provides an important insight into the practice of implementing the ecosystem approach of doing business as well as into the still understudied transition of enterprises to a digital business environment. The study focuses on the analysis of the digitalization impact on new business ties creation and the nature of interactions between the distribution chain participants.

The main data source is the respondents' answers to the online survey for 2020. For this study, the research sample included southern Russian enterprises and information business entrepreneurs from other regions. The study shows how knowledgeable businesses are about the possibilities of digitalization and familiarity with the essence of ecosystem business models.

The findings suggest that most businesses do not have a solid understanding of platform tools and all of their applications. Therefore, a methodology is needed to provide targeted incentives to interaction for process participants, as well as a choice of options for combining the interests of partners and creating conditions for new digital forms of doing business with multiple communicative relationships that unite all types, functions and levels of interaction between subjects of business ecosystems directing participants to long-term cooperation.

Since the integration of enterprises into a digital ecosystem is aimed at gaining a competitive advantage due to the coordinated work of all counterparties of the system, archetypes have been proposed for enterprises in various industries. These archetypes are reflected in the activities of enterprises when justifying the transformation scenario of enterprises' business models in digital conditions and the evaluation of its effectiveness for enterprises in various industries.

This article uses theoretical data and case studies to analyze the degree to which various enterprises and their business models participate in digital ecosystems, taking into account digital transformation.

Despite this contribution, our research has its limitations. The results are limited by our sample data and the case study approach. The study does not show the further evolution of the digital ecosystem depending on the set and configurations of ecosystem participants. We introduce a possible new classification of the archetypes of ecosystem participants and a co-competitive activity model for ecosystem participants depending on these archetypes.

Therefore, the directions for further research are seen in advancing knowledge about the factors influencing the configuration of archetypes in the ecosystem and the principles of interaction between the participants of the model as well as the corresponding tools (techniques, models and algorithms).

In addition, the relations and connections established among the participants in digital ecosystems are constantly evolving; therefore, longer studies are required to show the relationship dynamics and to analyze the development of interaction over time.

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Change tolerance, group focus and students' entrepreneurial intentions: does gender matter?

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Abstract

Purpose – This study examines the impact of cultural dimensions on entrepreneurial intentions (EIs) and the mediating role of planned behavior (TPB) determinants between change tolerance (CT), group focus (GF), and EIs for both men and women in the context of international business schools.

Design/methodology/approach – Using a quantitative research design, data were collected in France through anonymous questionnaires. The data consisted of responses from 480 business students. Structural equation modeling (SEM) and the bootstrap method with PROCESS macro were used to determine the significance of the mediation effects.

Findings – Results reveal the strong impact of CT on the EIs of both men and women through TPB antecedents. They also indicate that GF has an indirect effect on EIs through TPB antecedents for men and an indirect multiple mediation effect on EIs through CT and TPB antecedents for both men and women.

Originality/value – The extended TPB model is original in that it supports both the determinants of planned behavior and cultural dimensions and provides a valuable perspective through its findings on cultural and gender diversity in entrepreneurship.

Keywords Change tolerance, Group focus, Entrepreneurial intentions, Gender differences, Cultural dimensions, Business schools

Paper type Research paper

Introduction

As entrepreneurship plays an important role in stimulating economic growth, it continues to attract the attention of scholars who attempt to understand its processes and the social factors that lead to its development across different countries (Doran *et al.*, 2018; Lu *et al.*, 2021; Rico and Cabrer-Borrás, 2019; Seyoum *et al.*, 2021). This is particularly true for Europe, which suffers from gender imbalance in entrepreneurship due to socio-cultural barriers that have traditionally put women at a structural disadvantage, leading to missed opportunities, both socially and economically (World Economic Forum, 2020).



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Previous studies have focused on entrepreneurial intentions (EIs) as they help predict future entrepreneurial actions (Bogatyreva *et al.*, 2019; Krueger *et al.*, 2000; Liñán and Chen, 2009; Nowiński and Haddoud, 2019; Seyoum *et al.*, 2021). Research on gender differences in entrepreneurial intentions revealed that men have stronger EIs than women (Díaz-García and Jiménez-Moreno, 2010; Santos *et al.*, 2016; Sweida and Sherman, 2020; Yukongdi and Lopa, 2017). However, more empirical evidence is needed to explain such variations (Choukir *et al.*, 2019; Elnadi and Gheith, 2021; Gurel *et al.*, 2021; Shinnar *et al.*, 2012). Some scholars argue that differences may exist due to contextual influences that affect the perceptions of men and women (Byrne and Fayolle, 2010; Moriano *et al.*, 2012; Haddad *et al.*, 2016, 2021; Haddad, 2017); hence, many studies have attempted to combine gender with culture to investigate EIs across different nations and cultures (Liñán and Chen, 2009; Shinnar *et al.*, 2012, 2018). Unique cultural contexts may indeed present opportunities and challenges for driving entrepreneurship (Elnadi and Gheith, 2021; Gurel *et al.*, 2021; Krueger *et al.*, 2013). However, macro-level studies neglect within-group differences and the fact that members of a particular nation may vary in the extent to which they relate or adhere to prevailing cultural norms and values (Kirkley, 2016; Pruett *et al.*, 2009).

To examine how change tolerance (CT) and group focus (GF) affect the EIs of 480 students in French international business schools, this study leans on the theory of planned behavior (TPB) (Ajzen, 1991), which is widely applied in entrepreneurship research to investigate intentions (Lortie and Castogiovanni, 2015) and individual cultural dimensions (Solomon and Schell, 2009). This study addresses a gap in current knowledge regarding the way in which individual cultural values affect EIs across genders. Reliance on a student sample is quite common when examining intentions (Liñán and Chen, 2009; Shinnar *et al.*, 2012; Choukir *et al.*, 2019; Haddad *et al.*, 2021) because students need to make immediate career choices and starting a new venture may be a realistic option for them (Krueger *et al.*, 2000). Choosing international business schools in France as the context for this research stems from the fact that the country is supportive of entrepreneurship and highly responsive to the needs of business creators. Furthermore, multinational schools are a typical environment for studies dealing with cultural diversity.

The rest of this paper is organized as follows. Section 2 outlines the theoretical framework and the research hypotheses that derived from it. Section 3 provides a full description of the methods and instruments used. The findings of the statistical analyses are reported in Section 4. A discussion is detailed in Section 5. Finally, concluding remarks regarding the implications of the study and future research avenues are outlined in Section 6.

Theoretical framework

Entrepreneurial intentions

Several scholars have stated that EIs and cognitive structures are essential for understanding entrepreneurship (Krueger *et al.*, 2000; Krueger, 2017; Liñán and Chen, 2009). As it is an immediate antecedent of behavior, a significant body of research uses intention models and focuses on intention (Ajzen, 1991). One of the most widely used models to explore the direct and indirect antecedents of intentions is the TPB (Ajzen, 1991). The TPB model includes three motivational factors that affect EIs. The first is the personal attitude toward entrepreneurship, which refers to the extent to which a person has a positive or negative assessment of entrepreneurship. The second is subjective norms and refers to the role of significant others (e.g. family, relatives and friends) in approving or disapproving of entrepreneurial behavior. The third is perceived behavioral control, which refers to the perception of difficulty or ease to undergo the entrepreneurial process (García-Rodríguez *et al.*, 2015). Perceived behavioral control is a proxy of the self-efficacy concept coined by Bandura (1977), which refers to the self-perception of the capacity to perform a certain action, such as establishing a new business (Krueger *et al.*, 2000). Lortie and Castogiovanni (2015) demonstrate the robustness of the TPB model in entrepreneurship research and its

capacity to explain EIs. The overall conceptual model that illustrates the relationships between TPB constructs, EIs and cultural influences on entrepreneurship is illustrated in Figure 1.

Gender and entrepreneurial intentions

Previous studies suggest that men exhibit stronger EIs than women (Díaz-García and Jiménez-Moreno, 2010; Sweida and Sherman, 2020; Yordanova and Tarrazon, 2010; Yukongdi and Lopa, 2017). Gender differences exist because of the manner in which self-beliefs and attitudes toward entrepreneurship are developed. Previous research indicates that women tend to perceive lower opportunities and higher barriers to entrepreneurship than their male counterparts (Santos *et al.*, 2016). These variations can be explained by the dissimilar effect of contextual influences on the perceptions of men and women (Byrne and Fayolle, 2010; Elnadi and Gheith, 2021; Haddad and Loarne, 2015), the roles they are attributed in society (Haddad, 2017), and the type of education they receive (Haddad *et al.*, 2016; Gurel *et al.*, 2021; Boubker *et al.*, 2021; Lu *et al.*, 2021). Díaz-García and Jiménez-Moreno (2010) demonstrate that subjective norms related to entrepreneurship can greatly affect the EIs of women because they are highly conditioned by societal values and the roles ascribed to them. They generally believe that they are less qualified than men for entrepreneurial work (Stedham and Wieland, 2017). The low self-efficacy they have compared to men affects their EIs and their propensity to follow an entrepreneurial career (Haddad *et al.*, 2016; Santos *et al.*, 2016). However, the effect of high self-efficacy on intentions is stronger for women (Kickul *et al.*, 2008). Despite numerous studies that acknowledge differences between men and women in terms of EIs, some scholars argue that empirical evidence is still insufficient to explain such variations (Shinnar *et al.*, 2012, 2018). Based on previous findings regarding gender and EIs, this study posits the following hypotheses:

- H1a.* Gender differences exist in entrepreneurial intentions, such that the effect of personal attitude toward entrepreneurship on intentions is stronger for men.
- H1b.* Gender differences exist in entrepreneurial intentions, such that the effect of subjective norms on intentions is stronger for women.
- H1c.* Gender differences exist in entrepreneurial intentions, such that the effect of perceived behavioral control on intentions is stronger for women.

Cultural influences on entrepreneurship

Morris *et al.* (1994, p. 70) define culture as a “learned, socially transmitted set of behavior standards.” It is the “collective programming of the mind that distinguishes the members of

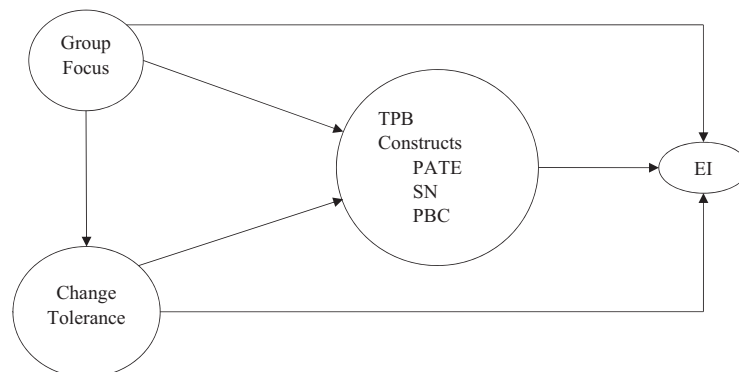


Figure 1.
Conceptual model

one human group from another” and comprises systems and values (Hofstede, 1980, p. 25). They influence the extent to which people and societies consider entrepreneurial behaviors as desirable (Watson *et al.*, 2019). National culture is often seen as central to the entrepreneurship field. Among its different conceptualizations, Hofstede’s (1980) dimensions are the most widely used in entrepreneurship and management studies (Watson *et al.*, 2019). Unique cultural, national, and institutional contexts present opportunities and challenges for driving entrepreneurship (Krueger *et al.*, 2013). Previous research acknowledges the impact of culture on EIs using national cultural dimensions. However, these studies neglect within-group differences and the fact that members of a particular nation may vary in the extent to which they relate or adhere to prevailing cultural norms and values (Kirkley, 2016; Pruett *et al.*, 2009). The current study focuses on two individual cultural dimensions, CT and GF, to investigate their direct and indirect effects on EIs.

Change tolerance

Change tolerance refers to the comfort level with novelty, risk taking and change (Solomon and Schell, 2009). Highly change-tolerant people take risks and view transformation as a natural part of their lives. They are creative, flexible and receptive to innovative ideas and do not fear failure to undertake new ventures (Solomon and Schell, 2009). Hofstede (2001) demonstrated that people who accept uncertainty are more at ease with new situations, which leads them to launch new businesses. Other research linked tolerance to change with innovation, thus explaining that change-tolerant people are more prone to developing innovative ways of doing things (Mueller and Thomas, 2001; Shane, 1993) and take advantage of opportunities they identify in their surroundings (Busenitz, *et al.*, 2000). Numerous studies support the fact that societies that encourage risk taking and acknowledge uncertainty tend to have more entrepreneurial members (Kreiser, *et al.*, 2010; McGrath *et al.*, 1992; Mueller and Thomas, 2001). Moreover, it has also been revealed that there is a strong relationship between risk tolerance and self-efficacy (Serino and Buccino, 2019) and between high-risk preference and EIs (Gurel *et al.*, 2021; Nasip *et al.*, 2017). Regarding gender differences in relation to risk taking, the literature indicates that women are more risk-averse than men, which negatively influences their propensity to step into entrepreneurship (Shinnar *et al.*, 2012, 2018). Despite this, women in some contexts, such as Sub-Saharan societies, may seek entrepreneurship to achieve higher social positions (Anlesinya, 2019).

Based on the theory that CT is associated with high comfort when dealing with risk, novelty, and change, that risk taking is associated with entrepreneurship attitude and self-efficacy, and that men are more risk tolerant than women, this study formulates the following hypotheses:

- H2a.* Gender differences exist in entrepreneurial intentions, such that the direct effects of change tolerance on intentions is stronger for men.
- H2b.* Gender differences exist in entrepreneurial intentions, such that the indirect effects of change tolerance on entrepreneurial intentions, through TPB antecedents, is stronger for men.

Group focus

As defined by Solomon and Schell (2009) at the individual level, GF could be matched with Hofstede’s (1980) cultural dimension of collectivism. People in group cultures always seek consensus in decisions and seldom take the initiative or implement changes without discussing it with the group. They are motivated by greater security and affiliation opportunities (Solomon and Schell, 2009). Bullough *et al.* (2017) divided collectivism into two categories: institutional and in-group collectivism. Institutional or societal collectivism reflects the degree to which society,

such as laws, social programs and institutions, values group fidelity and unity over individual accomplishments. On the other hand, in-group collectivism reveals the extent to which people express dignity, trustworthiness, and solidarity in their families and how much they depend on them (Bullough *et al.*, 2017). In contrast, people in individualistic cultures focus on personal achievement and feel responsible for their own actions (Hofstede, 1980). They are motivated by the recognition of their talents and achievements and have the capacity to evaluate risk and make quick decisions (Solomon and Schell, 2009). Several empirical studies have revealed the positive influence of individualistic cultures on entrepreneurship since they accentuate the identity of an individual more than their society, which increases self-confidence, initiative and courage to take risks (Hayton *et al.*, 2002; Mueller and Thomas, 2001; Rantanen and Toikko, 2017). Some previous works conceptualized collectivism and individualism as two opposing dimensions, while others suggested that they constitute two different attributes at the individual level, implying that a person can have both tendencies depending on the different situations they encounter (Farrukh *et al.*, 2019; Rantanen and Toikko, 2017). Thus, individualism and collectivism do not imply two ends of the same scale (Oyserman, 2006). People may hold both an autonomous and a reliant sense of self, and each of these two dimensions may prevail across different circumstances (Markus and Kitayama, 1991). Rantanen and Toikko (2017) found that collectivism and individualism are significant factors in determining EIs. On the one hand, because individualist values such as individual autonomy and competitiveness promote entrepreneurial intentions, and on the other, because communality creates a socio-cultural capital that positively impacts EIs. Collective practices are then significant for entrepreneurial development because working in teams is an opportunity to solve problems and find and implement innovative ideas (Anlesinya, 2019; Lechler, 2001). The controversial findings regarding collectivist values and entrepreneurship in studies that applied the TPB model call for a deeper understanding of the impact of GF. While supporting the evidence that no gender differences exist in relation to the individualism/collectivism dimension (Hofstede, 2001; Shinnar *et al.*, 2012), we formulate the following hypotheses:

H3a. Group focus has a direct positive and significant impact on entrepreneurial intentions.

H3b. Group focus has an indirect positive and significant impact on entrepreneurial intentions through TPB antecedents.

Individuals driven by a GF mindset are more inclined to meet others' expectations and sustain social harmony (Solomon and Schell, 2009); they seek motivation and support from others to take entrepreneurial risks and create new ventures (Anlesinya, 2019; Lechler, 2001; Rantanen and Toikko, 2017). Further, the knowledge that a learner acquires through formal and informal activities in educational environments alters their perceptions and attitudes, thus producing behavioral changes such as the willingness to undergo new experiences, develop new ideas and skills, and try new things (Matthews *et al.*, 2020). A gender comparative study indicates that interactions with people help individuals, particularly women, to develop their entrepreneurial opportunities and boost their self-confidence to take risks and engage in the entrepreneurial process (Haddad and Loarne, 2015). Nevertheless, the theoretical evidence that group interactions can reduce risk aversion remains scarce. This study provides empirical proof on the mediation effect of CT between GF and EIs. Consequently, the following hypotheses are formulated:

H4a. Change tolerance mediates the relationship between group focus and entrepreneurial intentions.

H4b. Change tolerance and TPB antecedents mediate the relationship between group focus and entrepreneurial intentions.

Methodology

This study examines the relationships between CT, GF, TPB constructs and students' EIs. A questionnaire survey was administered to 480 students, all pursuing degrees in business administration. This method of convenience sampling is extensively used in entrepreneurship research (de Jorge *et al.*, 2012; Karimi *et al.*, 2013, 2014; Liñán *et al.*, 2011). The questionnaire was subsequently administered to students in an electronic form using the data collection tool Sphinx. Overall, 425 responses were received, and after data cleaning and screening for missing data and outliers (Hair *et al.*, 2014), 407 valid questionnaires were obtained, with an effective response rate of 84.79%. A total of 47.9% of the respondents reported being male, while 52.1% of respondents were female. Overall, 76% of them were aged 18–25 years, while 23.6% were over 25 years of age. In terms of education level, 34.4% were undergraduates, 40% graduates and 25.6% had completed a post-graduate course.

Measurement

The survey instrument included measurement scales used in other research and was assessed using self-report measures based on multi-item scales.

Entrepreneurial intentions (EIs)

To assess entrepreneurial intentions, we used the scale used in earlier studies (Liñán *et al.*, 2011; Liñán and Chen, 2009). The construct consisted of four items measured on a seven-point Likert scale (1 = total disagreement to 7 = total agreement with each statement). A single-overall sub-scale was used to measure the following intentions: ready to do anything to be an entrepreneur, professional goal to be an entrepreneur, making every effort to start and run a firm, and determined to create a firm. Confirmatory factor analysis (CFA) suggested a single dimension of entrepreneurial intentions with an acceptable critical ratio for the items 0.76, average variance extracted of 0.65, and Cronbach's alpha reliability of 0.86. The average score of the six items was calculated and labeled *EI*.

TPB constructs

We assessed the TPB constructs, that is, personal attitude toward entrepreneurship (PATE), subjective norms (SN) and perceived behavioral control (PBC) using a similar scale to that used by earlier research (Liñán *et al.*, 2011; Liñán and Chen, 2009). PATE was measured as being an entrepreneur is advantageous, career as an entrepreneur is attractive, willingness to start given the resources, and being an entrepreneur would entail great satisfaction. The measures of SN were approval of the decision to create a firm by close family, friends, or colleagues. PBC was assessed using knowledge of necessary practical details to start a firm, knowing how to develop an entrepreneurial project, and having a high probability of success. For all TPB constructs, we employed a seven-point Likert scale to measure responses (1 = total disagreement to 7 = total agreement with each statement). CFA suggests that all three constructs of TPB are supported, and reliability testing also found strong support for PATE (CR = 0.82; AVE = 0.74 and α = 0.90), SN (CR = 0.81; AVE = 0.83, and α = 0.93), and PBC (CR = 0.62; AVE = 0.59 and α = 0.74). The three TPB constructs were labeled *PATE*, *SN* and *PBC*, respectively.

Cultural variables

The cultural variables change tolerance (CT) and group focus (GF) have been introduced to the TPB model for the first time through this study. Following Solomon and Schell (2009), we measured CT using change generally improves process, people should be encouraged to take prudent risks, comfortable introducing changes in life, and positive spin on new

ideas proposed. GF was measured by solving challenges in groups, team members clearing their work with each other, recognition as part of a team, and comfortable presenting business plan in a team. Measurement was performed using a five-point Likert scale (one = total disagreement to five = total agreement with each statement) for both CT and group focus.

Results

Measurement model

As outlined by Anderson and Gerbing (1988), a CFA model was employed to assess the overall fit of the measurement model. The results are presented in Table 1. Overall, we found strong support for the measures with acceptable standardized loading for all items as well as critical ratios above the threshold of 2.0. We examined the scale items, factor

Scales	Standardized loading	Critical ratio
<i>EIs (Entrepreneurial intentions) (seven-point Likert-type scale: 1 representing strong disagreement to 7 representing strong agreement)</i>		
1. I am ready to do anything to be an entrepreneur	0.74	14.1
2. My professional goal to become an entrepreneur	0.85	16.0
3. I will make every effort to start and run my own firm	0.80	15.1
4. I have thought very seriously about starting a firm	0.72	14.1
<i>PATE (Personal attitude toward Entrepreneurship) (seven-point Likert-type scale: 1 representing strong disagreement to 7 representing strong agreement)</i>		
1. Being an entrepreneur implies more advantages than disadvantages to me	0.73	17.7
2. A career as entrepreneur is attractive for me	0.89	24.1
3. If I had the opportunity and resources, I'd like to start a firm	0.86	24.1
4. Being an entrepreneur would entail great satisfaction for me	0.86	23.7
<i>SN (subject norm) (If you decide to create a firm, would people in your close environment approve of that decision?)</i>		
1. Your close family	0.87	26.2
2. Your friends	0.94	32.2
3. Your colleagues	0.89	31.5
<i>PBC (Perceived behavioral control) (seven-point Likert-type scale: 1 representing strong disagreement to 7 representing strong agreement)</i>		
1. I know the necessary practical details to start a firm	0.58	36.8
2. I know how to develop an entrepreneurial project	0.99	36.8
3. If I tried to start a firm, I would have a high probability of succeeding	0.63	33.2
<i>CT (change tolerance) (five-point Likert-type scale: 1 representing strong disagreement to 5 representing strong agreement)</i>		
1. I think that change generally improves process	0.65	10.7
2. I believe that people should be encouraged to take prudent risks	0.69	11.2
3. I am comfortable introducing changes into my daily life	0.65	10.5
4. When proposing new ideas, I like to put a positive spin on them	0.70	10.7
<i>GF (group focus) (five-point Likert-type scale: 1 representing strong disagreement to 5 representing strong agreement)</i>		
1. When confronted with a challenge, I prefer to solve it with a group	0.62	9.0
2. I believe that team members should clear their work with each other	0.65	9.0
3. I prefer to be recognized as part of a team (rather than alone)	0.60	8.6
4. I am most comfortable presenting a business plan as part of a team	0.58	8.4

Table 1.
Confirmatory factor
analysis (CFA) of items
and measurement
properties of the scales

loadings, reliability and fit statistics and found them all to be in the acceptable range. This suggests that the standardized loadings significant for the items and the constructs are acceptable. Convergent validity can be determined when the item coefficients of the latent construct are significant. Anderson and Gerbing (1988) suggest that when the corresponding *t*-values (critical ratios) are greater than 2.0, there is evidence of convergent validity. CFA was also achieved by observing that each item loaded significantly on the factor. The fit indices suggest that the model fits the data very well ($\chi^2/df = 1.605$, RMSEA = 0.039, TLI = 0.970, CFI = 0.974, GFI = 0.935). These approaches confirmed the discriminant and convergent validity of the constructs in the model (Anderson and Gerbing, 1988; Fornell and Larcker, 1981). The construct values, Cronbach's alphas, critical ratio and average variances extracted for each construct are reported in Table 2.

The correlations for the constructs used in this analysis are presented in Table 3. These findings provide further evidence for the discriminant validity of the measures employed herein.

Research model results

Following CFA, the structural model was examined using IBM-AMOS to validate the hypothesized model. We use a two-step analysis process following Anderson and Gerbing (1988). The first step involved a multistage process to validate the overall construct validity of the measures used in this study. The second step employed SEM to test our hypotheses simultaneously and the mediating effects of change tolerance and the TPB constructs on EIs. Following Anderson and Gerbing (1988), the error variances of the composite scores were used for the latent variables. The results of the final structural model, along with the standardized coefficients of each hypothesized path and the model fit indices, are reported in Table 4.

This study employed the bootstrapping technique. Data were bootstrapped with 5,000 samples to explain the relationships between cultural influences on TPB and EI. The overall hypothesized model is illustrated in Figure 2.

Construct	Cronbach's alpha	CR	AVE
EIs	0.86	0.72	0.61
PATE	0.90	0.78	0.70
SN	0.93	0.78	0.80
PBC	0.95	0.59	0.57
CT	0.77	0.80	0.45
GF	0.71	0.70	0.38

Table 2.
Summary of constructs

	1	2	3	4	5
1 EIs					
2 PATE	0.58**				
3 SN	0.61**	0.71**			
4 PBC	0.61**	0.72**	0.88**		
5 CT	0.27**	0.36**	0.22**	0.23**	
6 GF	0.03	0.23**	0.10	0.11*	0.40**

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

Table 3.
Correlations of
constructs

Hypotheses	Relationships/Structural path	Men	Women	Accepted/Not supported
<i>Theory of planned behavior</i>				
H1a	PATE → EIs	0.34***	0.18**	Accept
H1b	SN → EIs	0.30***	0.47***	Accept
H1c	PBC → EIs	0.12**	0.14**	Accept
<i>Cultural influences</i>				
H2a	CT → EIs	0.10 (ns)	0.11*	Not supported
H2b	CT → PATE	0.40***	0.27***	Accept
H2b	CT → SN	0.30***	0.14**	Accept
H2b	CT → PBC	0.32***	0.27***	Accept
H3a	GF → EIs	−0.09 (ns)	−0.19***	Not supported
–	GF → PATE	0.13*	0.05 (ns)	–
–	GF → SN	0.08 (ns)	−0.05 (ns)	–
–	GF → PBC	0.16**	0.11 (ns)	–
Chi-square		5.395		
df		2		
Adjusted Chi-square		2.697	<5	
p		0.067		
RMR		0.031	<0.08	
GFI		0.996	>0.9	
TLI		0.931	>0.9	
CFI		0.995	>0.9	
RMSEA		0.065	<0.0	
Note(s): *, **, *** = $p < 0.10$, $p < 0.05$, and $p < 0.001$, respectively. ns = not significant				

Table 4.
Results of the direct
hypothesized paths

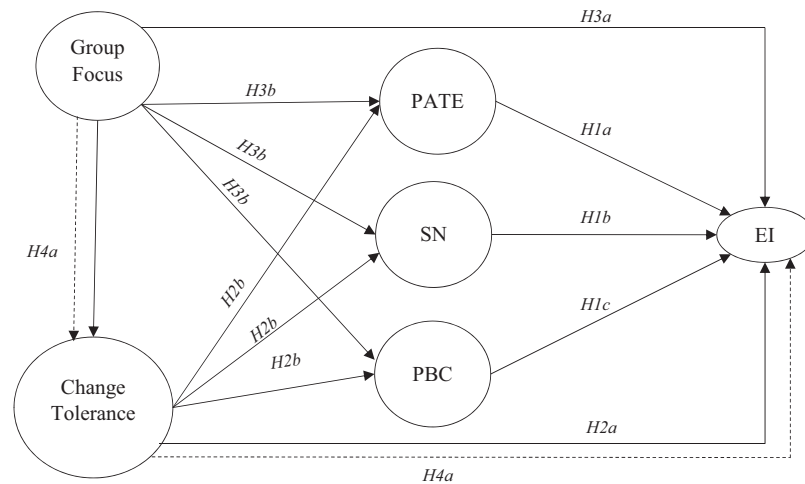


Figure 2.
Hypothesized model

Hypothesis testing

The results for the significance of each proposed path/relationship were evaluated. For the sample of men, the three dimensions (PATE = 23%, SN = 11%, PBC = 17%) and cultural indicators (CT = 21%) together explained 44% of the variance in EIs. For the sample of women, the three dimensions (PATE = 8%, SN = 2%, PBC = 10%) and cultural indicators (CT = 12%) together explained 44% of the variance in EIs.

Concerning *H1*, all three antecedents of TPB had a significant and positive impact on EIs for both men and women. The impact of PATE on EIs was stronger for men (0.34^{***}) than for women (0.18^{**}), supporting *H1a*. For SN and PBC, the impact was stronger in the case of women (0.47^{***} , 0.14^{**}) than in men (0.30^{***} , 0.12^{**}); thus, *H1b* and *H1c* were also supported.

Regarding *H2*, which concerns the cultural variable of change tolerance, there was a significant and positive impact of CT on the TPB constructs (i.e. PATE, SN, PBC) for both men and women. However, the impact of CT on EIs was not significant for men but was positive and significant for women. *H2a* was not supported as the path from CT to EIs in the case of men was not significant. However, *H2b* was accepted as the paths were significant and stronger for men (0.40^{***} , 0.30^{***} , 0.32^{***}) than for women (0.27^{***} , 0.14^{**} , 0.27^{***}).

H3, which was in relation to the cultural variable group focus, revealed that the direct paths from GF to PATE, SN, and PBC for women were not significant, while for men, there was a significant and positive direct impact from GF to PATE and PBC. Further, the direct relationship between GF and EIs was insignificant for men and significant and negative for women. Thus, *H3a* and *H3b* were not supported.

Mediating analysis

To examine the mediating role of CT and TPB constructs in the relationship between GF and EIs, we examined several indirect paths using PROCESS macro version 3 (Hayes, 2018) and bootstrapping analysis with 5,000 sub-samples in AMOS. Tables 5 and 6 report the results for specific indirect effects for men and women, respectively. Indirect effects analysis was applied to test the type of mediation (Zhao *et al.*, 2010). Zhao *et al.* (2010) identified five types of mediation effects: complementary, competitive, indirect only mediation, direct only non-mediation, and no effect non-mediation. Complementary and indirect only mediation are similar to Baron and Kenney's (1986) partial and full mediation, respectively. By examining the significance value of the direct path (see Table 4) and the role of the mediating variables, the variations and type of mediation can be detected between the two samples (see Tables 5 and 6). Where both the direct and indirect effects are significant, partial mediation is achieved. To determine the nature of partial mediation, the product of the direct and indirect effects was calculated; if the sign of the product is positive, then complementary partial mediation is achieved, otherwise, competitive partial mediation is achieved.

Relationships	Effect size	Sig/ns	Lower threshold	Upper threshold	Hypotheses	Mediation type
GF → PATE → EIs	0.042	ns	-0.019	0.114	<i>H3b</i>	–
GF → SN → EIs	-0.007	ns	-0.044	0.023	<i>H3b</i>	–
GF → PBC → EIs	0.015	ns	-0.004	0.054	<i>H3b</i>	–
GF → CT → EIs	0.045	ns	-0.017	0.114	<i>H4a</i>	No-effect (non-mediation)
GF → CT → PATE	0.184	Sig	0.113	0.273	–	Complementary
GF → CT → SN	0.135	Sig	0.067	0.219	–	Indirect-only
GF → CT → PBC	0.145	Sig	0.076	0.225	–	Complementary
<i>Multiple/serial mediation</i>						
GF → CT → PATE → EIs	0.061	Sig	0.020	0.123	<i>H4b</i>	Indirect-only
GF → CT → SN → EIs	-0.002	ns	-0.019	0.012	<i>H4b</i>	No-effect
GF → CT → PBC → EIs	0.013	ns	-0.002	0.033	<i>H4b</i>	No-effect

Note(s): sig = significant; ns = not significant

Table 5.
Specific indirect
effects (Men)

Table 6.
Specific indirect
effects (Women)

Relationships	Effect size	Sig/ns	Lower threshold	Upper threshold	Hypotheses	Mediation type
GF → PATE → EIs	0.008	ns	−0.021	0.049	<i>H3b</i>	–
GF → SN → EIs	−0.039	ns	−0.101	0.018	<i>H3b</i>	–
GF → PBC → EIs	0.012	ns	−0.009	0.038	<i>H3b</i>	–
GF → CT → EIs	0.036	ns	−0.006	0.087	<i>H4a</i>	No-effect
GF → CT → PATE	0.093	Sig	0.044	0.161	–	Indirect-only
GF → CT → SN	0.049	Sig	0.004	0.112	–	Indirect-only
GF → CT → PBC	0.092	Sig	0.043	0.160	–	Indirect-only
<i>Multiple mediation</i>						
GF → CT → PATE → EIs	0.017	Sig	0.001	0.042	<i>H4b</i>	Competitive
GF → CT → SN → EIs	−0.007	ns	−0.033	0.014	<i>H4b</i>	No-effect
GF → CT → PBC → EIs	0.009	Sig	0.001	0.023	<i>H4b</i>	Competitive

Note(s): sig = significant; ns = not significant

In the case of both men and women, *H4a*, which posited that CT mediates the relationship between GF and EIs, was not supported as the bootstrap confidence intervals included zero within the lower and upper threshold {men=(−0.017, 0.114); women=(−0.006, 0.087)}; thus, the indirect effect was not significant. For both men and women, the indirect effects of GF on TPB constructs through CT were significant and positive. For women, CT fully mediated the relationship between the GF and TPB constructs. GF explained EIs of women through the TPB. For men, following Zhao *et al.* (2010), the sign of the product of direct and indirect effects (in the case of PATE and PBC) was calculated. This was a case of complementary mediation, as the sign of the product was positive (Zhao *et al.*, 2010). Thus, there was complementary partial mediation through CT in case of the impact from GF to PATE and PBC, and full mediation through CT for GF to SN. GF indirectly explained the EIs of men through the SN and both directly and indirectly through PATE and PBC.

H4b concerned serial mediation in the mediating role of both CT and TPB constructs (PATE, SN, and PBC) between GF and EIs. First, the specific indirect effects through CT and each TPB construct (serial mediation) were evaluated (see Tables 5 and 6), and the total indirect effects (parallel mediation) were then examined between the two samples (see Table 7). For men, the direct effect of GF on EIs was not significant, although the specific indirect effects of GF on EIs through CT and PATE were significant and positive (0.061 (0.020, 0.123)), thus confirming that CT and PATE together fully mediate the relationship between GF and EIs of men. However, for women, the direct effect of GF on EIs was significant and negative (−0.19^{**}). Moreover, the specific indirect effects of GF on EIs through CT and PATE (0.017 (0.001, 0.042)) and CT and PBC (0.009 (0.001, 0.023)) were significant and positive, thus confirming the presence of competitive partial mediation.

Table 7.
Comparison between
total indirect and direct
effects

Relationships	Men		Women	
	Effect size (Bootstrap CI/p value)	Sig/ns	Effect size (Bootstrap CI/p value)	Sig/ns
CT → EIs (direct effect)	0.099 (<i>p</i> = 0.142)	ns	0.107 (<i>p</i> = 0.063)	Sig
GF → EIs (direct effect)	−0.088 (<i>p</i> = 0.155)	ns	−0.190 (<i>p</i> < 0.001)	Sig
CT → EIs (through TPB)	0.262 (0.165, 0.367)	Sig	0.153 (0.062, 0.249)	Sig
GF → EIs (through CT)	0.249 (0.145, 0.360)	Sig	0.087 (−0.016, 0.188)	Sig

Note(s): sig = significant; ns = not significant

The other specific indirect effects through CT and SN, and CT and PBC were not significant for men. Likewise, for women, the specific indirect effects through CT and SN on the relationship between GF and EIs were not significant.

The total indirect effects are the sum of all the specific indirect effects through all the mediators of the causal antecedent on the consequent variable (Hayes, 2018). A comparison between the direct effect of GF on EIs and CT on EIs and the total indirect effects through the mediators are illustrated in Table 7. To explain the EIs of men, both CT and GF indirectly explain more through PATE, SN and PBC. TPB constructs fully mediate the relationship between CT and EIs, and CT and TPB constructs fully mediate the relationship between GF and EIs in men. On the other hand, for women, adding TPB constructs as mediators enhanced the relationship between CT and EIs. Furthermore, CT and TPB constructs as mediators to explain the relationship between GF and EIs of women, had a significant and net positive effect.

Discussion

This study developed an integrative model using two cultural dimensions (CT and GF) and the TPB model to understand how these dimensions influence students' intentions toward entrepreneurship.

Antecedents of intentions and gender

The significant relationship between PATE and EIs for both genders, even if stronger for men, reveals that young women no longer feel that they are less qualified than men for entrepreneurial careers, thus breaking gender stereotypes, which traditionally associate entrepreneurship with masculinity traits (Stedham and Wieland, 2017). While there were inconsistencies in previous findings about SN (Morianio *et al.*, 2012), the current study demonstrates the importance of this factor for both genders. The relationship between SN and EIs is stronger for women. This could be justified by the fact that women, more than men, tend to be strongly influenced by societal values and the roles ascribed to them (Haddad, 2017; Haddad and Loarne, 2015; Sweida and Sherman, 2020). Their social circle's positive view of entrepreneurship has an impact on their intentions. The link between PBC and EIs, which is positive and significant for male and female students, reiterates the importance of self-efficacy in explaining EIs (Elnadi and Gheith, 2021; Krueger *et al.*, 2000; Santos *et al.*, 2016). Consistent with Kickul *et al.* (2008), the current study revealed that the relationship is stronger for women. This could be explained by the fact that low self-efficacy is usually considered a major barrier to female entrepreneurship (Haddad *et al.*, 2016). Women with high self-efficacy tend to adopt unconventional paths (Bandura, 1977) and show eagerness to undergo the entrepreneurial process.

Change tolerance

This study examined the impact of CT on TPB antecedents and EIs, either directly or through mediating effects. The findings reveal a direct and positive relationship between CT and EIs for women students and not for men. However, the mediation effect between CT and EIs through EIs antecedents (PATE, SN, PBC) was stronger for men. This implies that women students who are tolerant to change tend to have higher EIs than their male counterparts. These results align with previous research demonstrating that risk-tolerant women show a strong tendency toward entrepreneurial activities (Anlesinya, 2019; Gurel *et al.*, 2021). One possible explanation of the findings on CT may stem from the French context of the study. In France, the role of women has been revolutionized and they have been encouraged to take initiatives and risks without fear of making mistakes or being rejected by their community.

Furthermore, the current research illustrated the positive and significant impact of CT on TPB antecedents for both genders; however, it exerted a stronger influence on men than women. This finding confirms the fact that men, being more change-tolerant and less risk-averse than women, show higher entrepreneurial propensity (Yukongdi and Lopa, 2017), and have a higher self-efficacy level (Serino and Buccino, 2019). Moreover, women with high levels of CT culture feel less conditioned by societal influences and less sensitive to SN (Haddad *et al.*, 2016).

Group focus and the mediating effect of change tolerance

The results reveal there is no direct link between GF and EIs for men; however, the relationship is negative and significant for women. This indicates that, in the men's sample, collective practices do not influence intentions toward entrepreneurship. In the women's sample, high-level GF leads to a low level of EIs. This contradicts the findings of Rantanen and Toikko (2017) and Lechler (2001) regarding the importance of collective practices in entrepreneurial development. The absence of an indirect effect between GF and EIs through TPB antecedents for both genders contradicts previous research (Farrukh *et al.*, 2019; Hueso *et al.*, 2020), which proved the mediating effect of SN between collectivism and EIs. A plausible reason for GF not positively and significantly impacting EIs, either directly or indirectly, could be the French environment itself. France is considered a developed country where people receive support from institutions such as the government, laws, and social programs. Students depend more on institutional rather than in-group collectivism to create new business ventures (Bullough *et al.*, 2017). Another reason could be that students may hold both an independent and dependent sense of self, and each of these two dimensions may prevail across different contexts (Markus and Kitayama, 1991).

Another important finding is the multiple mediation effect of CT and TPB antecedents between GF and EIs. This finding holds for both genders, but it is higher for men, which could be explained by the dissimilar effect of contextual influences on the perceptions of both genders (Byrne and Fayolle, 2010). One possible explanation for the mediation effects could be the multicultural context of international business schools in France. Students from different nationalities interact together and mutually influence each other, which may lead them to be more open minded and more tolerant regarding innovation and change (Matthews *et al.*, 2020; Shane, 1993). The shared cultural values among students may influence the extent to which they consider entrepreneurial behaviors as feasible and desirable, hence nurturing positive intentions toward entrepreneurship (Haddad *et al.*, 2021; Krueger *et al.*, 2013; Watson *et al.*, 2019).

Conclusion

Entrepreneurship is one of the primary drivers of economic growth; thus, it is essential to gain better insights into the factors that affect its development. To the best of our knowledge, no study has compared and contrasted gender differences in relation to the direct and indirect role of CT and GF in predicting EIs among business students. Thus, this study contributes to the literature on culture, gender, and entrepreneurship by developing an extended framework of TPB that integrates individual cultural dimensions and establishes comparisons between men and women.

Research implications

The theoretical implications of this study are threefold. The first is that national cultural dimensions fall short of explaining/predicting EIs in a diverse context, such as international business schools. Future research should focus more on the context, on multiculturalism, on

the individual dimensions, and the way they impact EIs. The second implication is that it explains the controversial findings about collective values and practices by revealing that, on their own, they fail to drive positive intentions toward entrepreneurship unless they occur in a culture that is open minded and tolerant to novelty, risk, and change. The third implication relates to gender differences. The study aligns with previous research, thus showing that men are more tolerant to change than women. However, women who are tolerant to change have higher EIs than their male counterparts and feel less conditioned by societal influences and SN.

This study has practical implications for business schools. It informs education managers about the need to create an environment that encourages diversity and fosters free thinking, risk taking, mistake-driven learning, and tolerance to change. Academics can work on implementing shared cultural values and beliefs regarding the importance of entrepreneurship and the increasingly growing role of women as major players in economic growth. Moreover, business schools could create an entrepreneurial environment with appropriate institutional infrastructure and culture that encourages and strengthens students' self-efficacy and ambition to become entrepreneurs. Thus, it is suggested that they provide entrepreneurship modules in their curricula to increase students' EIs. Entrepreneurial education needs to be based on practical actions and peer-to-peer learning that capitalizes on collective practices in a change-tolerant culture to reduce risk aversion and produce positive intentions toward entrepreneurship. Business schools could encourage the creation of culturally diverse teams where learners work collaboratively and try out a variety of new ideas. Taking actions among learners' diverse teams where mistakes are allowed increases creativity and self-efficacy, encourages risk taking, and enhances students' EIs.

Limitations and future directions for research

This study has some limitations. It was conducted in one country; it is recommended that the model be tested across different contexts. This research did not consider the biculturalism factor and did not conduct a comparative analysis that considers French students versus international students living in France. Future research may benefit from using nationality to control for such variances. This study emphasizes two cultural dimensions and future work may consider the integration of other dimensions to analyze their impact on the outcomes of this study.

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Between the assessment centre and reality: how and why biographical psychology makes human resource management more effective

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Abstract

Purpose – The article makes a conceptual contribution to the substantiation of the foundations in personnel management for the development and decision-making in personnel assessment based on the biographical method.

Design/methodology/approach – When substantiating the scientific direction, a comparative analysis, a comparison of the theoretical provisions of leadership and the methodology of personnel assessment, a critical appraisal of the assessment centre and biographical method were used.

Findings – Modern science contains information about effective leadership and few grounds for objective selection for leadership positions. Why do some individuals become leaders in the churches, while others become leaders of business corporations? The accepted assessment tools allow obtaining information about the candidate, but do not have a scientific basis for making a decision about leadership in recruiting. Biographical psychology brings together leadership theories and assessment tools; it allows to establish a connection between developmental psychology, social, applied and organizational psychology and provides the integration of various directions in science. It allows a deeper understanding of the relationship between a person's biographical facts and his/her suitability in the profession to justify the reasons for leadership, as well as the grounds for selection for managerial positions.

Originality/value – Substantiation of biographical psychology will allow in the future to legitimize the conduct of such studies, to come closer to the truth in the selection for leadership and not only positions, to understand the connection between the biography of leader and organizational culture. Biographical psychology will contribute to the creation of scientific basis for recruiting. To consider biographical factors more significantly (gender, age, sexual orientation, differences in personal development, and not just executive experience in the resume), this will reduce the economic costs of introducing and supporting costly procedures in organizations, as well as increasing the objectivity of the assessment and selection of personnel in organizations.

Keywords Leadership, Recruiting, Assessment centre, Biographic method, Biographic psychology

Paper type Invited paper

Introduction

Leadership is the most studied and obscure phenomenon to date. Leadership theories have various conclusions about good governance – shared leadership (Pearce *et al.*, 2000, 2009), values promotion (Casson, 2000), leadership behaviours' influence on the voice behaviour of



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the best-performing employees (Detert and Burris, 2007), servant leadership (Liden *et al.*, 2008), leadership styles focused on people and relationships and tasks only with connection of with job satisfaction (Cummings *et al.*, 2010), transformational leadership and corporate social responsibility (Groves and LaRocca, 2011), shared and vertical leadership, team composition in terms of honesty and empowerment (Hoch, 2013), decreased employee engagement with unethical leadership (Sharif and Scandura, 2014), creativity of employees with a high power distance and benevolent leadership (Lin *et al.*, 2018). The native effect of team cohesion negatively affects the moral leadership and its collective efficiency and positively on collective effectiveness and organizational commitment (Chen *et al.*, 2019). When studying the leadership of priests, it is indicated that they have a deep understanding of the organizational context and values (Grandy and Sliwa, 2017). In the 21 century, an organization must be sustainable and this requires leaders of extraordinary ability (Metcalf and Benn, 2013). Such leaders are those who understand and predict complexity, through demanding tasks, engage groups, adapt to organizational change and manage their own emotions associated with challenges in problem-solving. Leadership is seen as a practice (Bohl, 2019), and leaders are empowered regardless of their depth of knowledge, legitimate authority, or mastery of data. The success is based on collaboration, that is, social phenomenon. The most influential studies are about transformational leadership, and most prominent is about regarding collective leadership types (Tal and Gordon, 2016). The reason for this is the structure of Western transition which has transitioned from the industrial era to the era of knowledge and other phenomena like - democratisation, globalisation, and the complexity of the world. However, as Van Knippenberg and Sitkin (2013) emphasize, the most commonly used tools to measure charismatic transformational leadership are not valid in feeling that they cannot reproduce the dimensional structure given by theory, and cannot confirm other empirically proven aspects of leadership, and cannot determine cause-and-effect relationships.

Furthermore, the competence-based approach, assumes that leaders must have a set of competencies, like social intelligence (Boyatzis, 2008) or soft skills (Succi and Wieandt, 2019), which make a shem to succeed in the 21st century. The competence-based approach bears echoes of the theory of traits because, since the set can be endless, and it is extremely difficult to find a person corresponding to all the criter.

Moreover, there is a hypothesis that democratic leadership should generate more "leadership" organizations (Pinnington and Tourish, 2009). In recent years, management theory has changed its views on the problem of leadership as an alternative to the understanding of transactional and transpharmacy concepts—servant leadership (2017), Distributed Leadership (2018), Authentic Leadership and Followership (2018), Leadership and Role Modelling (2018), neocharismatic leadership (Angawi, 2021). A special type of business has been singled out – the family business – where the family is considered as the leader (Tobak and Nábrádi, 2020).

In each of these theories, leadership is associated with different behaviours of leaders. In one case, service and submission define the essence of the person, the community and the world. In another case, collective intelligence and thought systems, patterns of joint optimization of shared visions, values and ideals among all actors in group are in focus, rather than individual interests. These are the self-consciousness of leader, gender, psychological capital and purposefulness. Leadership is associated with altruism, vision, empathy, self-awareness as well as ownership, management, control, generations and the intention to pass the business down as an inheritance within the family.

However, it is unclear whether every leader is capable of serving, if it is possible to be productive, to abandon one's own interests in order to achieve goals and whether self-change is always positive. In a family business, the problem of loyalty and demotivation of personnel, and the lack of clarity in human resource management systems are important.

Any business is created to derive material benefits, but money is not an end in itself. Research on leader-follower dyads in North America and the United States showed that although there was evidence of differential association (performance of the subordinate on a role basis and ethics of the subordinate as assessed by the leader; virtuous leadership and happiness of the leader based on self-esteem; the relationship between happiness and life satisfaction as leaders, and followers in transformational leadership), many hypotheses remained unconfirmed (Nassif *et al.*, 2020).

There is emerging research on the relationship between excess human resources and profitability over time (Agusti-Perez *et al.*, 2020) or accumulation of knowledge for innovation (Ode and Ayavoo, 2020); however, the studies do not consider the role of leaders.

None of the research on leadership contains data on leaders – people who may be identified as having characteristics of effective leadership. Currently, the most effective tool for assessing personnel is testing and assessment centre. In 2008, a three-modal assessment approach was proposed - result-oriented tests, behaviour-based modelling and biographical information (Schuller, 2008). Today, leadership theories are divorced from the methods of personnel assessment, and the conclusions on leadership are not linked, which complicates the assessment procedure. In addition, individual studies and approaches have not been developed, although the results stemming from them were obtained by more valid methods, in particular, the biographical method, the meaning of which will be shown and disclosed later in this study. There is evidence of the relationship between biographical facts and suitability for the job – examples are police officers (Tidwell, 1993), camp leaders (Miller, 1981), women education administrators (Dickson, 1988). People with basic medical education change careers more often and more diversely, compared to people with technical education (Hudiyakov and Mashoshina, 2016). Economic studies show that the inclusion of non-executive directors on the board of directors and overinvestment can lead to risks for the business (To *et al.*, 2020), was made to a psychoanalytic approach to understanding the mechanism of newly created organizations creating (Metallo *et al.*, 2021), deepening knowledge both in the field of personnel assessment and leadership and the need to substantiate biographical psychology as an scientific direction.

Methodology and analysis

When substantiating the scientific direction, a comparative analysis, a comparison of the theoretical provisions of leadership and the methodology of personnel assessment, a critical appraisal of the assessment centre, and biographical method were used. Comparison of personnel assessment methods shows that the different types of testing used in recruiting – cognitive assessment, performance testing, achievement test – have merits. In particular, they allow the assessment of how well a person is able to process, acquire, retain, conceptualize and organize sensory, perceptual, verbal, spatial and psychomotor information, is able to act in a certain area of cognitive, psychomotor or physical functioning, and how much knowledge or skills he/she has acquired. However, the assessment through tests contains some degree of error. There is no recommendation on guidelines for using the personality data obtained to make hiring decisions, as results can vary and the range of job profiles is wide. Moreover, it is noted that hiring associated with poor-quality use of tests leads to significant costs associated with turnover and replacement of bad employees, productivity losses associated with ineffective employees negatively affect efficiency and increase the cost of operations (Boylan, 2014).

An individual approach is often used to assess specialists, while a group approach is used for leadership positions. In a group approach, interaction with people, communication style and how a person solves problem together with other people are assessed, and these are most often necessary for effective work in leadership positions.

In particular, the 360-degree method can be used as a tool for internal recruiting (Rogers, 2001) from a mid-level position to a higher one. Its purpose in the candidate selection procedure is the development of criteria (positions) by managers for measuring the effectiveness of work, the use of scientific research results on labour efficiency in specific position, the development of assessment criteria based on the positions of management and scientific data, and the assessment of employees by their managers, colleagues of equal status and subordinates from departments that they are in direct contact with based on hierarchy of the organisation. However, the results of using this approach show that performers devoid of individuality fall into places of leaders. The British Civil Service Commission first adopted the simulation for first non-public use in the public sector, followed by the United States Strategic Services Administration (1948). Although the method has not been documented, India has used the selection system based on behavioural responses since 1941. This approach allows to see how a person acts when encountering certain conditions, which is important when making decisions on who to nominate for leadership positions. Among the activities noted by human resources specialists are observable behaviour ("hands-on tasks", group discussion, role plays and presentations) and vivid personal experience. However since the Assessment Centre is a non-psychometric instrument, it does not allow the prediction behaviour in situations of uncertainty. In addition, the requirements for the Assessment Centre are quite steep: work analysis; behavioural classification; assessment methods; multiple ratings; modelling the work of appraisers; evaluation training; written recording of behaviour; assessment; and data integration. It requires using a large amount of resources, both for its construction and for use in practice. Unlike the Assessment Centre, biographical research refers to qualitative research. Obtaining biographical material is a laborious process from establishing trusting relationships with the respondent, to constructing a life path, the most significant people and events in the life of a leader.

Biographical psychology – history, development and future

Biographical methods are most often understood as methods of research, diagnosis, correction and the design of a person's life path. They are also associated with the description of lives. We find the origins of biographical psychology in ancient times (Momigliano, 1971) - 10 books by Diogenes Laertius "On the life, teachings and sayings of famous philosophers", written in the third century before Christ, "Parallel Lives" by Plutarch, "The Life of the Twelve Caesars" by Suetonius and in the Renaissance - "Lives of Great Artists" by G. Vasari, which reflects the biographical facts of Italian art' figures.

The scientific approach to biography was developed in the 1920 and 1930s, and then rethought in the 1970s, receiving the general name "psychobiography". It is defined as the way of creating a biography and creating a psychology—one whole human being or one life in time (Elms, 1994).

G. Murray was the first to try the creation a biography through science. He denied eclecticism, moving towards motivational analysis and collections of life combined with standardized autobiographies. Subsequently, this made it possible to lay the foundations for the study of holistic individuality. Russian psychologist Sergei Rubinstein in the 30s of 20th century drew attention to the fact that a person develops not only as biological organism, but also has his own history (Rubinstein, 2015).

In the 1970s, a thesis on Biographical History in Social Studies (Johns, 1974) was defended in Stanford University. In this study, steps were taken—from the biographical method used in research and the study of individuals' lives—to the connection of persons' biographies with their role in history. Subsequently, the interpretation of the personality structure appeared, carried out from the perspective of life history.

Kronik and his inner circle (Kronik and Golovakha, 2008) distinguish five layers of life: compositional, which consists of core of significant memories and 5–7 events, a reserve of experience and expectations about 15 events, and the periphery of life, which is the most mobile and less significant layer. All these three layers form the layer of values: an unconscious layer that forms the “I” (creative core). Depending on the temporal affiliation, the authors distinguish three types of inter-event connections: realized, actual, and potential, determined by motivation of the individual. In this case, it is not so much connections that are important as the course of life.

Despite the fact that biographical methods are disputed as contingent on the uncertainties of experience, biographical psychology has undeniable advantages:

- (1) Vitality, a higher level of validity in comparison with experimental and test methods;
- (2) Consideration of the person in natural dimensions, based on the history of personality formation, which includes - the past, the present (current experiences), life situations and the future (plans, predictions, expectations, dreams);
- (3) The study of humans lives as a whole, not just simple sensory systems.

In this regard, biographical psychology has more complicated foundations and requires a more complex explanation. For example, difficulties in achieving success are attributed to poverty from generation to generation and education as a predictor (Nestor, 2015).

An analysis of interviews with leaders of organisations in Russia shows that there are events in their lives that determined the success and position they achieved. In one case, participation in a village in the collection of medicinal herbs for pharmacies, and trading for scarce item of clothing for women and its subsequent sale in the city, which led to a leader's creation of a trading company. In another case, visiting slums in Latin America and Asia lead to the foundation of a beauty company. In particular, the author of the article cannot drive, since at age of 12 he was the victim of a road accident resulting from car brake failure. In other words, individual events become, on the one hand, factors pushing for leadership, and on the other hand, the reasons for determining human behaviour in the future.

In none of the latest interpretations, leadership is viewed as forming one's own path in the world based on life events and their influence on leadership choices—the leader's own mission. There are many studies that use the biographical method, but not enough predictive studies. In this is the future of biographical psychology.

Critical appraisal of the assessment centre and biographical method

The Assessment Centre itself is considered a flexible method and can vary depending on the types of simulations and exercises. However, in practice, assessment methods are called assessment centres, but the requirements are not met—which leads to the term's misuse and a large number of errors in the assessment and selection of personnel. In addition, knowledge is important for experts appraisers, since the choice, and subsequently the future of the organisation, depends on their qualifications. For example, experiments with several groups outside the organization in another country where the language, culture and customs are different and three experimental groups of builders, teenage schoolchildren and Church youth showed that the most important factors in management are proxemics (use of personal space), facial expressions, head actions/eyes, gestures/touch and smile (Colbert, 2007). Smiling, head actions and gestures were weak signals when considered individually. However, smiling accompanied by posture or eye contact was a strong indicator of mutual understanding, which is important for leadership and management results. Smiling was communicated primarily when drafting a highly declarative statement about relationships, such as intercultural interactions trying to convey friendship. Furthermore, observation of

individuals has shown that friendliness alone does not provide leadership. In particular, the following observations of behaviour were recorded: unfamiliarity with the environment, aggression when approaching people, knowledge about the agenda, combine with lack of attention to others in a meeting, hypersocialism to the point of being invasive, taking to people who are involved in conversation with others, and introducing topics, as if they should be included in every conversation, constantly violates the personal space of other people. However, only a few people possess such expert knowledge.

In addition the lack of social intelligence, which is the ability to accurately determine the behaviour of others when limited information is provided about people who have been convicted, or lower accuracy in evaluations due to lack of clinical judgment skills, can be impediments to assessment (Problems and solutions in human assessment: Honoring Douglas N. Jackson at seventy, 2000).

An analysis on a sample of 15 leading Russian actors, actresses and singers showed that their biographies contains the fact of fatherlessness. This phenomenon is what I call « father identity disorder». The biographical fact of father's identity disorder does not mean that a person will be good actor or singer in the future, but it does indicate a greater likelihood of a person's aptitude and success in the profession. In addition, it was revealed (Chirkovskaya *et al.*, 2019) that the system-forming component of the personality is the scale of thinking, which includes expert readiness, actual readiness, readiness for self-development, self-governing competence, and expert competence, and act as factors of success in all spheres of life. The use of the biographical method showed that people with these characteristics were not necessarily successful in school.

Furthermore, the hallmark of personality is the presence of one's own history, talent, character, worldview, and philosophy of life; individuality as a whole cannot be understood without the biography of the personality and, therefore, without the use of the biographical method (Loginova, 2001).

Conclusions and discussion

Modern science contains information about effective leadership and few grounds for objective selection for leadership positions. For instance, why some individuals become leaders in the churches, while others—become leaders of business corporations. The accepted assessment tools allow obtaining information about the candidate, but do not have a scientific basis for making a decision about leadership in recruiting.

Biographical psychology brings together leadership theories and assessment tools—it allows the establishment of a connection between developmental psychology, social, applied and organisational psychology – it provides the integration of various directions in science. It allows a deeper understanding of the relationship between individual's biographical facts and heir suitability in the profession—to justify the reasons for leadership, as well as the grounds for selection for managerial positions.

The main limitation of the study is that the methodology for assessing the biographical material has not yet been developed in science in general, and not just in relation to this research. The study conducted using the biographical method remains, as before, the subject of manual and interpretative work, which does not obey the system of rules and regulations, and can only indicate its character. This requires the researcher to have disparate professional skills—motivation to study a holistic personality, empathy, analytical skills, and the art of interpretation. A key factor in biographical research is trust in in-depth interviews, as general directors of commercial organisations are reluctant to talk about their life paths. This is contrary to the opinion about the ease of biographical research based on the support of the respondent's egoistic interest in the story about oneself.

Substantiation of biographical psychology will allow the legitimisation of the conduct of such studies in the future, to come closer to the truth not just about the selection for leadership

positions, but also to understand the connection between the biography of leaders and the organisational culture.

The adoption of new international standards in relation to the assessment centre will have a significant social impact on society and politics in the strengthening of biographical psychology as a personal assessment tool (possible only for official use and for use by professionals).

Biographical psychology will contribute to the creation of scientific basis for recruiting; that is, biographical factors should be considered more significantly (gender, age, sexual orientation, differences in personal development, and not just executive experience in the resume). This will reduce the economic costs of introduction and supporting procedures in organisations, as well as increasing the objectivity of the assessment and selection of personnel in organisations.

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Mapping research trends on strategic agility over the past 25 years: insights from a bibliometric approach

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Strategic
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Abstract

Purpose – Strategic agility is a fuzzy concept that has become crucial to cope with environmental uncertainty and instability; hence, more in-depth studies are highly needed. The aim of this paper is to shed light on the still diffuse research area of strategic agility by clarifying its scope and concept, as well as identifying the different topics that have been examined thus far. Finally, the intent of this paper is to show the existing gaps in the literature to provide scholars with a clear roadmap for future research.

Design/methodology/approach – Bibliometric and content analyses are used in this study to review the most impactful papers in strategic agility between 1996 and 2021. Citation and mapping analyses are conducted through SciMAT software, and a dynamic approach is adopted by assessing and discussing the evolution of strategic agility throughout five different periods.

Findings – This study reveals that strategic agility is a research line that has neither gained consensus nor reached maturity and that it is linked to several thematic areas or topics. The study offers a complete understanding of the state of the art of strategic agility over time and underscores its main future research lines.

Originality/value – This study presents a complete map of the strategic agility research thus far by using novel bibliometric techniques. This approach is especially interesting because it allows for identifying the dynamic relationships among themes within the topic over five different periods.

Keywords Strategic agility, Bibliometric analysis, Science mapping, Co-word analysis

Paper type Research paper

1. Introduction

Strategic agility has grown as a topic of interest in recent years, with many authors investigating the subject; in particular, strategic agility has gained considerable attention in the current turbulent period caused by the global COVID-19 pandemic (Al-Omouh *et al.*, 2020; Hartwell and Devinney, 2021; Zahra, 2021; Shaikh, 2021), which has accelerated changes already underway in consumer behaviour and in new communication platforms (Hsu and Tang, 2020).

According to Weber and Tarba (2014), the concept of strategic agility was introduced about two decades ago, but it remains ill-defined. Since the work of Abshire (1996), the concept of strategic agility has been used across a series of industries, and authors have

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related this research line with several topics and organisational areas. Furthermore, the authors use the concept with and without proposing a definition.

Starting with agility as a wider topic, consensus on it seems to exist, that is, agility entails rapid responses to changes in the market. For example, Weill *et al.* (2002, p. 64) define agility as “*the set of business initiatives an enterprise can readily implement*”; Sambamurthy *et al.* (2003, p. 238) describe agility as “*the ability to detect and seize market opportunities with speed and surprise*”; Cohen *et al.* (2004) argue that being agile means delivering quickly and changing quickly and often; Da Silva *et al.* (2011) mention that agile methods help deal with growing complexity while reducing time to market; and Aronsson *et al.* (2011) assert that the focus of agility is being able to compete in a state of constant change and that agile organisations are those that swiftly respond to changes in demand.

The first mention of strategic agility appeared in the late 1990s, when Abshire discussed “*a strategy of agility*” around the US policy and how to maintain the country’s leadership in the world. This author explained that the strategic landscape after the Cold War was characterised by an information age that was unpredictable and unstable. Thus, the US needed to use a strategy that was agile enough to seize opportunities and protect against threats (Abshire, 1996). Several authors have since continued contributing to the interrelationship of both terms.

We find authors who use the terminology “business agility” in relation to strategy and the competitive advantage of a firm. For example, Mathiassen and Pries-Heje (2006) assert that agility is fundamental when planning business strategy and, to be properly implemented, agility must be aligned with the information technology (IT) strategy. These authors highlight the idea that the main path to maintain the competitive strategy is designing an agile business. In this line, Van Oosterhout *et al.* (2006) focus their research on explaining how the business environment is highly dynamic and that businesses need to be not only flexible but also agile. Thus, business agility is defined as the capability of a firm to rapidly transform business models and processes beyond regular “flexibility” to respond to unpredictable external threats with successful internal changes. More recently, Hendriyani and Raharja (2019) even use the expression “business agility strategy” to define the capacity of a Fintech start-up to detect opportunities and threats and develop an appropriate response.

When explicitly discussing strategic agility, some authors use the term without providing a specific definition. For example, Weill *et al.* (2002) discuss how the IT infrastructure should be responsive to the demands of enterprise-wide and business unit strategies to ensure strategic agility. Doz and Kosonen (2010) similarly relate strategic agility to the ability to transform and renew business models.

On the contrary, some scholars have clearly defined the topic. For instance, Ekman and Angwin (2007, p. 361) refer to strategic agility as an acknowledgement of “*the ever-increasing complexity and turbulence of their environments by developing requisite capabilities of flexibility and responsiveness*”; Lewis *et al.* (2014, p. 58) describe it as “*flexible, mindful responses to constantly changing environments*”; Weber and Tarba (2014, p. 5) pertain to strategic agility as the “*ability to remain flexible in facing new developments, to continuously adjust the company’s strategic direction, and to develop innovative ways to create value*”; Denning (2018, p. 119) argues that “*strategic agility is generating innovations that create entirely new markets by turning non-customers into customers*”; and Clauss *et al.* (2020, p. 3) refer to strategic agility as “*a firm’s ability to renew itself continuously and to maintain flexibility without compromising efficiency*”.

In addition to having several definitions, the concept of strategic agility is often related to other topics. In this sense, Sambamurthy *et al.* (2003) relate agility with ambidexterity, and Ananthram and Nankervis (2013) argue that strategic agility is synonymous with other topics such as dynamic capabilities. Ambidexterity pertains to the organisation’s ability to exploit its current capabilities while simultaneously exploring new competencies

(Raisch *et al.*, 2009; O'Reilly and Tushman, 2013; Pasamar, 2019; Vargas *et al.*, 2021). Although we can perceive a connection between strategic agility and ambidexterity, they are separate concepts (Clauss *et al.*, 2020) that are intertwined at different levels of analysis. Regarding dynamic capabilities, they are defined as the firm's ability to integrate, build and reconfigure internal competencies to address changes in the business environment (Teece, 2017; Schilke, 2018). Accordingly, strategic agility is considered a meta-capability that combines several dynamic capabilities (Ahammad *et al.*, 2021; Shams *et al.*, 2021; Nyamrunda and Freeman, 2021). In this sense, Doz and Kosonen (2010) and Clauss *et al.* (2021) propose that strategic agility is formed as a combination of strategic sensitivity, leadership unity and resource fluidity; and very closely related Hock *et al.* (2016) and Ivory and Brooks (2018) also include strategic sensitivity, resource fluidity but considers collective commitment as the third dynamic capability that forms part of strategic agility.

A common pattern seems to emerge, which is related to how organisations can adjust their direction and confront environmental changes. However, a common definition for this concept is lacking, even though it is simultaneously the most demanding item on the leadership agenda for CEOs (Doz and Kosonen, 2008), which makes a compelling case to enhance the understanding of what strategic agility implies both for academics and practitioners. To do so, we first use citation analysis to show that the topic of strategic agility has still not reached the stage of maturity. We subsequently use science mapping analysis to study how the topic has evolved over time and uncover that, while it has attracted significant attention across different sectors, it has still not been fully clarified. Science mapping analysis is a powerful technique that has been previously used (Kamdern *et al.*, 2019; Garcia Buendia *et al.*, 2020), and this method has several advantages over other literature review tools. It allows for handling hundreds of papers to analyse the relationships among elements of the papers (e.g. citations, keywords) and provides comprehensive information about the research area. Finally, we examine all the selected papers to enrich the bibliometric results through the content analysis method that deepens the discussion with the contributions obtained by the academia thus far.

Therefore, the purpose of this study is to analyse the evolution of strategic agility over the 1996–2021 period, attempting to identify a comprehensive definition and the key themes in this field, which have drawn the attention of the research community, and the gaps in the literature. The objective of our paper is threefold. First, we aim to understand the level of maturity of the topic of study. In other words, we intend to ascertain whether this topic is a growing one in the literature or whether it has started to plateau. We also seek to verify the degree of homogeneity of the distributions of authors and journals to explore for other authors the feasibility of publishing on this topic.

Second, we aim to confirm the presence of any key theme to which strategic agility is specifically related and to identify the main gaps in the literature.

Third, we intend to determine the definition that could summarise the meaning of strategic agility.

These three objectives are expected to clarify the topic of study and help in advancing other studies that require a more solid definition of the topic under investigation and its relationship with other subjects.

This paper is organised into several sections. Section 2 introduces the methodology. Section 3 describes and discusses the results of the science mapping analysis. Finally, Section 4 presents the conclusions, limitations and potential areas for further research.

2. Methodology

Systematic review papers come in several forms such as structured reviews, bibliometric reviews and hybrid narratives (Dabic *et al.*, 2020). We use a hybrid-narrative approach through which we examine the conceptual structure and set an agenda for future research.

Specifically, we use (1) citation analysis to study the maturity of the topic of strategic agility through time and identify the top journals and the most productive authors in this field and (2) science mapping to assess the conceptual structure of the topic of strategic agility over time. Science mapping is a powerful technique that makes a spatial representation of how different fields or specialties are related to each other (Morris and Van der Veer Martens, 2008; Cobo *et al.*, 2011b). We also conduct (3) content analysis, a qualitative method that complements bibliometric techniques by interpreting and discussing the contribution of papers (Rodriguez Ruiz *et al.*, 2019; Furrer *et al.*, 2008).

Five steps comprise the methodology (Cobo *et al.*, 2011a), namely (1) collection of raw data; (2) selection of the type of item to analyse; (3) extraction of relevant information from the raw data; (4) calculation of similarities among items; and (5) use of a clustering algorithm.

(1) Collection of raw data

This phase is homogeneous for both the citation and science mapping analyses. Bibliometric analyses typically use Thomson Reuters' Web of Science (WoS) and Elsevier's Scopus (Rodriguez Ruiz *et al.*, 2019). To select the most suitable database for our research, we replicated this first phase in both. To download data from WoS and Scopus, we build a query, including descriptive keywords in the topic to collect the relevant documents from the research field (Cobo *et al.*, 2011a). We search for relevant words (e.g. strategic agility, agile strategies, strategic business agility) in the title, abstract or keywords, limiting the type of document to only the ones that are classified as an "article" or a "review". This step ensures that we only consider those publications that have undergone a peer review analysis, guaranteeing a high level of quality of the publications selected (Ramos Rodriguez and Ruiz Navarro, 2004; Fernandez Alles and Ramos Rodriguez, 2009).

On November 19, 2020, the query is run, retrieving 181 results in WoS vs 307 results in Scopus (dated from 1996 to 2021). This result is consistent with the finding of other authors where WoS is less comprehensive than Scopus (Chadegani *et al.*, 2013) and that almost all journals indexed in WoS are also covered by Scopus (Singh *et al.*, 2021). Therefore, after analysing the characteristics of each source and the results provided, we selected Scopus as our dataset because of its broader coverage of journals and citations (Chadegani *et al.*, 2013; Mongeon and Paul-Hus, 2016; Harzing and Alakangas, 2016; Zhu and Liu, 2020). Therefore, we choose to work with the dataset of 307 articles provided by Scopus, in place of the 181 provided by WoS. Notably, even when we could manually identify the few papers from WoS that are not included in Scopus with the intention of integrating the results from both article sources, we do not merge the results from Scopus and WoS because the criterion we use to evaluate documents is the number of citations, and this criterion is not homogeneous among sources. WoS and Scopus codify "citations" following different approaches (Martin-Martin *et al.*, 2018); hence, we only use the results from Scopus to obtain unbiased results.

By running the query in Scopus, we also perform a citation analysis, as Elsevier's website provides a 15-year evolution of the citations in the selected documents. As Figure 1 shows, a growing trend in the topic is apparent, and authors link an increase of citations to the evolution of an emerging phase to a mature one (Terjesen *et al.*, 2016; Rodriguez Ruiz *et al.*, 2019). Strategic agility has not yet reached a maturity level.

We use SciMAT to perform our bibliometric analyses because it has a wider range of features than other software tools (e.g. BibExcel), and it enables a longitudinal framework across different time periods (Cobo *et al.*, 2012). Moreover, the tool enriches the results by using impact measures (e.g. h-index, sum of citations) that help improve the interpretation of the results. It also presents key features unseen in other mapping tools, such as a pre-processing module, the use of bibliometric measures and a wizard to configure the analysis (Cobo *et al.*, 2012).

After reviewing the 307 documents downloaded from Scopus, we eliminate the ones that are far from the concept of the study, eventually obtaining a final dataset of 293 documents (Rodríguez Ruiz *et al.*, 2019; Xue *et al.*, 2020).

The most productive journals and authors in the dataset are outlined in Table 1. We observe that the distribution in the journals and authors is quite homogeneous, suggesting that it is a concept covered by several disciplines and that new authors might find that publishing on this research line could be a feasible option.

Journal	Documents
<i>California Management Review</i>	8
<i>Strategic Direction</i>	6
<i>Cutter IT Journal</i>	6
<i>European Journal of Information Systems</i>	5
<i>MIS Quarterly Executive</i>	5
<i>Human Resource Management Review</i>	5
<i>International Journal of Supply Chain Management</i>	5
<i>International Journal of Production Economics</i>	4
<i>Journal of Information Technology</i>	4
<i>Management Decision</i>	4
<i>IEEE Software</i>	4
<i>Global Journal of Flexible Systems Management</i>	4
<i>Journal of International Management</i>	4
<i>International Marketing Review</i>	4
<i>Author</i>	
Luftman, J	7
Ambler, S.W	7
Liu, Y	5
Zadeh, H.S	4
Gomes, E	4
Muthuveloo, R	4
DozY, L	4
Kosonen, M	3
Ben-zvi, T	3
Tarba, S.Y	3
Derksen, B	3
Santana, M	3
Vrontis, D	3
Denning, S	3

Table 1.
Journals and authors
with the most
publications

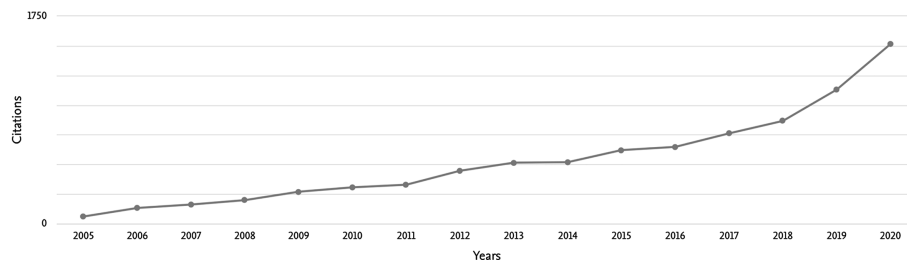


Figure 1.
Evolution of the
citations per year

(2) Selection of the type of item to analyse

We continue the science mapping analysis and choose “keywords” as our object of analysis. “Keywords” is one of the most commonly selected metrics to evaluate (Börner *et al.*, 2003), and we use keywords to analyse and track the evolution of the main topics in the literature.

(3) Extraction of relevant information from the raw data

As we download and import the data into SciMAT, we run a deduplicating process over the keywords to group those terms with the same concept (i.e. grouping plural and singular words, integrating acronyms with the respective keywords, adding together different spellings of the same words). Finally, some keywords with a very broad and general meaning, such as “agility”, are removed (Cobo *et al.*, 2014).

To develop the study, the entire time period (1996–2021) is divided into five consecutive periods of time (Figure 2), namely, 1995–2005 with 25 documents, 2006–2009 with 43, 2010–2013 with 38, 2014–2017 with 84 and 2018–2021 with 103 documents. Providing periods of the same length is a common practice, while fixing the first period to cover a larger number of years as the study field begins to consolidate as a discipline (Cobo *et al.*, 2011a).

(4) Calculation of similarities among items

To normalise the co-occurrence of keywords, we use the equivalence index, which is regarded as the most appropriate measure for normalising co-occurrence frequencies (Callon *et al.*, 1991). This index ranges from 0 to 1, where 1 means that the keywords always appear together and 0 denotes that the keywords are never associated (Cobo *et al.*, 2011a).

(5) Use of a clustering algorithm

Clustering is the process of identifying those subgroups of keywords that are strongly linked with each other. Clustering has different types, including spectral clustering and modularity maximisation (Chen and Redner, 2010; Chen *et al.*, 2010), but we use the simple centre’s algorithm because it is straightforward and extensively used in the context of co-word analysis (Bailon-Moreno *et al.*, 2005, 2006; Coulter *et al.*, 1998; Courtial, 1990; Courtial and Michelet, 1994; Lopez-Herrera *et al.*, 2009, 2010; He, 1999).

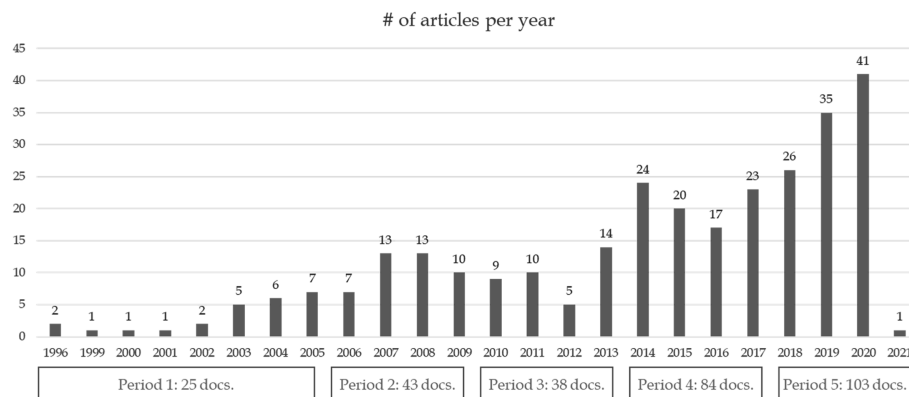


Figure 2.
Number of
publications per year of
papers focussed on
“strategic agility”

3. Science mapping analysis of the topic of strategic agility

3.1 Results and discussion

After running the analysis with SciMAT following the approach described above, we obtain two different viewpoints (longitudinal and period views). In the longitudinal representation (Figure 3), we observe a thematic evolution of the research field across the five periods.

We observe that for the first two periods (1996–2005 and 2006–2009), the academia was focussed on discussing strategic agility in relation to two main (and related) topics: “information technology” (IT) and “information systems”. However, from 2010 onwards, various research topics began to emerge, with the most recent years (2018–2021) seeing the greatest proliferation of research topics.

Regarding the period representation, we complement the previous longitudinal approach with a strategic diagram that presents a two-by-two matrix. This figure represents on its abscissa axis, the centrality (that measures the degree of interaction of a network with other networks), and on its ordinate axis, the density (measures the internal strength of the network) (Callon *et al.*, 1991; Cobo *et al.*, 2011a, b, 2012). Therefore, the strategic diagram comprises four quadrants illustrating four types of topics according to the quadrant in which they are positioned (Cahlik, 2000; Callon *et al.*, 1991; Courtial and Michelet, 1994; Coulter *et al.*, 1998; He, 1999). The (1) topics in the upper right are the ones known as “motor” themes, being externally related to concepts applicable to other themes that are conceptually closely related; (2) topics in the upper left are isolated themes that are only of marginal importance for the field; (3) topics in the bottom right are important themes for a research field but not developed; and (4) topics in the bottom left are emerging or declining themes.

SciMAT incorporates features that allow for conducting performance analysis, such as the number of citations or h-index (Cobo *et al.*, 2012). It facilitates the identification of the degree of importance of each theme according to the selected metric. In this case, strategic diagrams show themes in different sizes according to their h-index (i.e. the larger the size of the bubble, the higher is the h-index).

Figure 4 depicts the results of the analysis and shows that in the study of strategic agility, “information technology” and “information systems” are key topics during the periods 1996–2005 and 2006–2009, respectively. Although these topics are sometimes used interchangeably (Checkland and Holwell, 1997), they are not the same. According to Lee (1997) and Onn and Sorooshian (2013), “information technology” is a narrower topic, which refers to the technologies and infrastructures used for processing, storing and transmitting the information. By contrast, “information system” is a broader topic that pertains to the management of information, and it includes computer-based and non-technological systems. However, we acknowledge that both topics are referred to in a similar manner with respect to strategic agility because information systems can hardly be properly developed without considering information technology (Zhu, 2009).

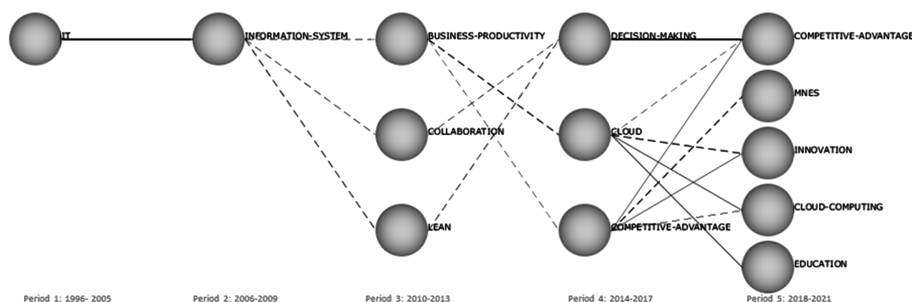


Figure 3.
Longitudinal view of
the topic across the five
study periods

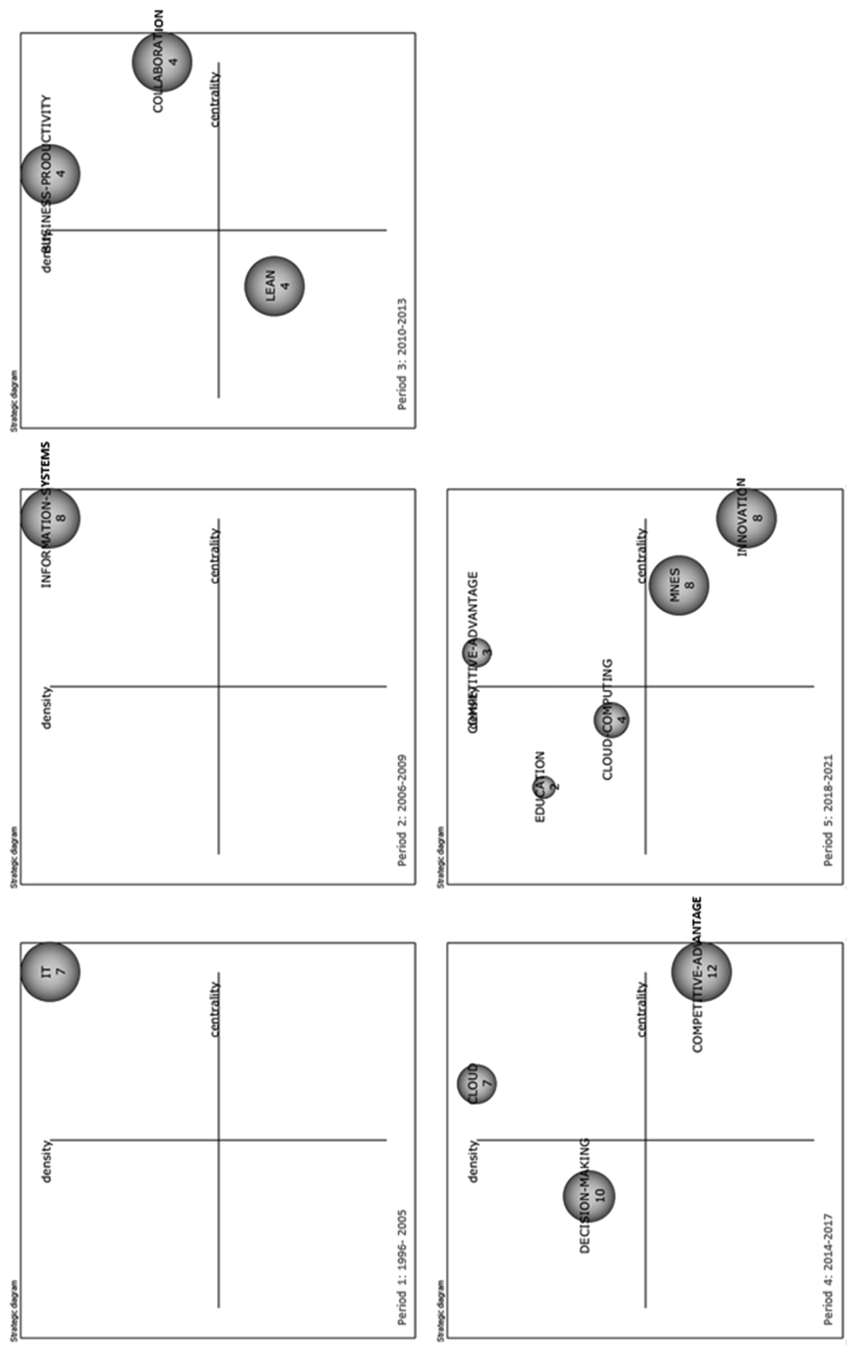


Figure 4.
Strategic diagrams for
each study period

From 1996 to 2005, most authors focus their research on discussing how different aspects of “information technology” (IT) are fundamental to the achievement of a more agile strategy (Worthington, 2004). For example, Weill *et al.* (2002) state that developing an IT infrastructure is a core requirement for attaining strategic agility. In this sense, these authors unpack the elements needed to develop a robust IT infrastructure (i.e. channel management, security and risk management, communication, data management, application infrastructure, facilities management, IT management, IT architectures and standards, IT education and IT research and development). Sambamurthy *et al.* (2003) explain that IT includes elements such as data warehousing, web services and customer relationship or supply chain management technologies; they also propose that investing in IT enhances the strategic agility of a firm, and this undertaking has a positive impact on its financial performance. Ross and Westerman (2004) go one step further by suggesting that outsourcing IT will facilitate strategic agility because accessing specialised IT services when needed enables firms to reduce costs and to fully exploit environmental opportunities.

From 2006 to 2009, the main focus shifted towards the broader concept of “information systems”, although references to IT are not abandoned. For example, Fink and Neumann (2007) posit that “information technology” reinforces strategic agility only when “information systems” implement agile procedures. Meanwhile, Ekman and Angwin (2007) jointly study “information systems” and “information technology” and how they are the antecedents of strategic agility in the sense of leveraging resources, mastering change, enriching customers and cooperating to compete.

In the third period, covering 2010–2013, different topics start to emerge, and we observe how “business productivity” and “collaboration” position as the motor themes. In this sense, Kristianto *et al.* (2010) support that agile strategic inventory allocation reduces the inventory level and increases production output and variety. Bottani (2010) examines the profiles of agile companies, collaboration being one the metrics or the one from Aronsson *et al.* (2011) who study the relevance of combining lean and agile process strategies to develop the supply chain in the health-care sector. “Lean” is, therefore, an emerging theme in this period, and it is jointly analysed with strategic agility as a response to dynamic and non-stop changes that maintain the competitiveness of firms. Thus, some authors use the term *leagility* as the combination of “lean” and “agility” (Aronsson *et al.*, 2011; Vinodh and Aravindraj, 2013) because agility is a determining factor for a correct supply chain strategy (Fernando and Wulansari, 2020), and supply chain strategies are critical for the competitiveness of firms (de Jesus Marques and Guerra, 2019). Nonetheless, agility is different from leanness. As previously mentioned, agility refers to a rapid response to and the exploitation of profitable opportunities in the dynamic environment; on the contrary, leanness is mainly focussed on reducing the number of suppliers, creating beneficial supplier collaborations, identifying the best just-in-time principles, fostering productivity and reducing time (Naim and Gosling, 2011; Naylor *et al.*, 1999; Aronsson *et al.*, 2011). Thus, lean production implies moving away from vertical integration and relying on cooperation (Badillo *et al.*, 2017).

In the fourth study period of 2014–2017, we observe how the topic of “information technologies” is once again present in the analysed articles; however, during this period, the particular focus is on the “cloud”. “Cloud” is the motor theme, with several articles tackling the relationship of the cloud and the achievement of agility. Wang and He (2014) explain how the “cloud” (referring to IT concepts such as SaaS, PaaS and IaaS) is one of the major “information technologies” for achieving strategic agility, and these authors support their proposal in the context of Taiwan. “Competitive advantage” appears as an important topic that is yet to be fully developed, emerging in only a limited number of studies. For example, Kappelman *et al.* (2014) underscore that cloud computing is one of the largest and most important IT investments undertaken by organisations, and that the “cloud” is used for reinforcing the “competitive advantage” of a firm and developing strategic agility. Finally,

“decision making” appears as a topic of marginal importance. In this vein, Lewis *et al.* (2014) indicate that leadership is a fundamental attribute of handling tensions in situations in which managers apply a decision-making process characterised by a strategic agility approach. Haider and Mariotti (2016) investigate the managers’ process of “decision making” in which strategic agility is considered an essential managerial competency that enables firms to constantly adapt and remain competitive.

In the fifth and final period covering 2018–2021, “competitive advantage” matures to become the motor theme. Nejatian *et al.* (2019) define strategic agility as a meta-capability comprising three dynamic capabilities, namely, strategic sensitivity, leadership unity/collective commitment and resource fluidity (previously identified by Doz and Kosonen (2010) and Doz and Kosonen (2008)), and this meta-capability is crucial to achieving “competitive advantage”. Similarly, with a sample of 150 German mid-sized firms, Clauss *et al.* (2020) analyse the relationship between ambidexterity (exploitation and exploration approaches) and strategic agility with “competitive advantage”. They explain that ambidexterity is intended to neither enhance the “competitive advantage” of firms nor gain superior benefits, so they obtain a negative effect. However, the interaction between strategic agility and the firm’s exploitation positively affects the “competitive advantage” of firms, as these firms report more innovations and higher financial returns.

In the lower right quadrant of this last period, we find “MNEs” and “innovation” as themes of relevant importance, which have yet to be fully developed, and only a small number of articles tackle these topics. Regarding “MNEs”, Luo *et al.* (2020) find evidence about the role of strategic agility, foreign subsidiary autonomy and global integration capability in Chinese “MNEs” in the sense of potential boosters of the geographic dispersion on productivity. With regard to “innovation”, Kohtamäki *et al.* (2020) define three practices and nine micro practices to shape what they consider strategic agility in “innovation”. They propose that following these practices, firms will obtain positive profits from entrepreneurial orientation and absorptive capacity. Furthermore, considerable attention is paid to business model “innovation” and the lean and agile principles that must be adopted to foster its accomplishment. Ghezzi and Cavallo (2020) conclude that a lean start-up approach facilitates business model “innovation” (within the perspective of strategic agility) in digital environments.

Finally, “education” and “cloud computing” materialise as isolated themes. Although some articles are still related to cloud computing, they seem to be less predominant than in other periods. On the contrary, the topic of “education” makes its appearance, with authors studying agile strategies for teams in online higher education (Noguera *et al.*, 2018). As a summary, we observe a high number of very different topics related to the research line of strategic agility.

As a complementary analysis, SciMAT plots cluster networks for each theme. We found results similar to the previous ones [1].

3.2 Holistic considerations about the science mapping results

3.2.1 IT as a recurring theme. Overall, we note a recurring theme of the topic of strategic agility and IT. This observation is consistent with the fact that the first mentions of strategic agility occur with IT-related topics (Weill *et al.*, 2002; Sambamurthy *et al.*, 2003). IT remains a concept of study across the five periods, in which it is treated as a more generic topic in the first years, and it specialises towards cloud-related topics in the later years. In the first period (1996–2005), Weill *et al.* (2002) posit that strategic agility requires investing in IT infrastructure; Sambamurthy *et al.* (2003) argue that IT and IT capabilities enable firms to develop agility; and Ross and Westerman (2004) link strategic agility with utility computing

(which in turn they define as a collection of technologies and business practices that enables computing to be delivered seamlessly and reliably across multiple computers).

The second period (2006–2009) includes further studies on the effect of IT capabilities on strategic agility, such as Fink and Neumann (2007) who argue that infrastructure capabilities and strategic agility are directly correlated, and Ekman and Angwin (2007, p. 361) who examine the issue of whether information services/IT “*is not only part of the industry-level problem of ever-increasing complexity and turbulence, but also is a part of an organisational-level solution as an enabler of strategic agility*”.

The third period (2010–2013) continues to be characterised by studies relating to strategic agility and IT, such as Mavengere (2013) who asserts that several IT services are required to promote such strategic agility. The other studies that emerge link strategic agility with IT and organisation, such as Bottani (2010) who indicates that two attributes (employees’ role and competency and technology) are the most relevant in agile companies, and Ananthram and Nankervis (2013) who investigate the links between human resource management (HRM) and strategic agility. In this third period, some articles start exploring the relationships with the cloud (e.g. Nguyen *et al.* (2012); Luftman *et al.* (2013)).

In the fourth period (2014–2017), additional studies on strategic agility and IT arise, particularly focussing on the cloud and other additional topics. These topics include (1) small- and medium-sized enterprises, where Wang and He (2014) examine the strategies of small cloud service providers in Taiwan as they are associated with firm agility; (2) institutions, where Turner (2014) argues that the cloud has transformed the way that organisations consume IT services as they promise greater agility; and (3) leadership, where Lewis *et al.* (2014) conclude that leadership is central to managing the tensions of strategic agility and illustrate their point with several examples, one of which (IBM) is in the IT consulting sector.

Finally, in the fifth period (2018–2021), IT remains a concept of the study, but it is decoupled in two areas. First, the authors write about strategic agility and IT in relation to competitive advantages, such as Suradi *et al.* (2020) who study the mediating effect of strategic agility in supply chain activities and firm performance, and Hamsal *et al.* (2020) who examine the impact of IT and supply chain management on competitive advantage in the Indonesian retail industry. Second, the authors in the fifth period write about how cloud computing plays a particular role in Industry 4.0, such as Sharma and Sehrawat (2020) who explore cloud computing adoption in the manufacturing sector in India and reveal that this sector is in the transformation phase of Industry 4.0.

Altogether, we observe that information technologies are fundamental to the development of responsive strategies (Kazakov *et al.*, 2020). Hence, they constitute a key element in the implementation of strategic agility.

3.2.2 Interrelationship of strategic agility with other topics. In addition to the recurring theme of IT across the five periods (including cloud in the later ones), we observe other topics to which strategy agility is related.

Mentions of leadership and organisation are made, where Lewis *et al.* (2014, p. 58) argue that “*Leadership is central to managing tensions of strategic agility*” and explain that “*Leadership entails the ability to identify and leverage opportunities and threats, and to exploit internal and external competencies*”. Furthermore, Doz and Brannen (2012) investigate the importance of language in the organisation and conclude that language conditions the strategic agility of organisations.

Mentions of manufacturing and supply chain are similarly made, such as Vazquez-Bustelo *et al.* (2007) who study the main manufacturing strategies and policies of industrial companies in Spain and suggest that firms must adopt agility enablers or practices during turbulent conditions, Qi *et al.* (2009) who explain how different researchers have extended the idea of agility to supply chains, and Gligor *et al.* (2015) who conduct an investigation that establishes a positive relationship between an improved ability to meet customer

requirements and an increase of supply chain agility in an organisation. Other authors discuss the topic of strategic agility intertwined with knowledge management, including Malhotra (2005) who highlights the critical importance of integrating knowledge management with business processes to achieve strategic agility; or marketing, where Johnston (2009) extends the marketing myopia concept to promote strategic agility.

3.2.3 Strategic agility across industries. The academia has evaluated strategic agility across different industries. These industries include (1) telecommunications, where Doz and Kosonen (2008) analyse Nokia's evolution over 20 years and propose a framework for enabling organisations to maintain and regain strategic agility as they mature; (2) tourism, where Buhalis and O'Connor (2005) argue that agile strategies are required to enhance the innovation and competitiveness of tourism organisations; (3) automotive, where Elmoselhy (2013) explores how agile strategies could be implemented in the automotive sector, simultaneously with lean ones; (4) oil and gas, where Shuen *et al.* (2014) use the dynamic capabilities framework for enhancing the strategic agility of high-tech firms operating in high-velocity markets such as the upstream oil and gas sector; (5) electronics, where Clauss *et al.* (2021) study German firms in the electronics industry and conclude that strategic agility is positively related to business model innovation; (6) fashion, where Cerruti *et al.* (2016) examine agile supply partnerships in Italian fashion companies and empirically evaluate the supply characteristics required to foster an agile strategy; (7) banking, where Ezcan *et al.* (2020) analyse large construction organisations in Turkey to highlight that IT needs to be adopted/diffused to support agility; and (8) education, where Noguera *et al.* (2018) review how agile strategies are useful for team regulation and project management.

3.2.4 Comprehensive definition and scope of strategic agility. After reviewing the 293 papers, we define strategic agility as a meta-capability that enables organisations to anticipate, react and seize rapid changes in the environment by redefining their corporate strategies and adapting their competitive and functional strategies to survive and create value.

Strategic agility heavily relies on IT for information surveillance to accurately and rapidly implement new or modified strategies. Depending on the strategic level that is affected, strategic agility can be linked with (1) corporate elements such as collaboration agreements and internationalisation (Ahammad *et al.*, 2021), (2) competitive elements such as innovation and productivity (Dabic *et al.*, 2020), or (3) functional elements such as HRM, marketing and operation systems (Ambituuni *et al.*, 2021; Cheng *et al.*, 2020).

3.2.5 Future lines of research. Through bibliometric and content analyses, we have identified the main topics examined in the strategic agility line of research. We observe that the relationship between strategic agility and IT has gained the considerable attention of the academia; however, the rest of the topics require a higher level of analysis and contrast. In addition, we find that a vast range of topics have not yet been addressed or are just emerging. For example, Santiago (2019) explains that human capital is extremely important for firms in order to enhance their sustainability and growth, and Simoes *et al.* (2019) highlight the relevance of corporate social responsibility and ethical infrastructure when examining human resources practices. Therefore, a line of research with great potential would be to analyse how to identify the most suitable professional profiles to support the strategic agility of organisations and how to retain such profiles with ethically HRM practices.

Furthermore, literature on international business analyses how different firm-specific advantages impact on firm's internationalisation (Rugman, 1981; Buckley and Casson, 1976), and some recent research analyses the reverse effect of how different outputs of internationalisation has a positive impact on enhancing internationalisation itself. For example, how different international "contacts" impact positively a firm's innovation (Almodóvar *et al.*, 2014, 2021; Salomon and Shaver, 2005; Jin *et al.*, 2019). Therefore, an interesting new approach would be to investigate the effect of strategic agility on the

internationalisation process of firms, as well as its reverse effect, and to determine whether more internationalised firms require and encourage more agile decision-making.

4. Conclusions

A literature review of strategic agility is conducted in this research, in which the authors not only explore the key themes through bibliometric techniques but also perform a revision of the key literature to uncover the relationships between strategic agility and other themes. This research line has become particularly important in recent times, especially since the pandemic caused by COVID-19, which has created strong disruptions in all industries. The agility in response has been decisive for the survival of firms. However, the review of the literature indicates that strategic agility is a concept with ambiguously defined limits and scope and that many gaps exist in the literature.

The concept of agility began to be discussed in a generic and imprecise manner. It was subsequently applied to different areas of the company. Hence, strategic agility should be a perfectly clear concept placed at the corporate level and implemented at the competitive and functional levels. However, these boundaries are not clearly defined thus far.

In this line, we review the authors and journals on the topic of strategic agility. We find that the concept of strategic agility has yet to reach the maturity stage. In addition, we recognise an increasing interest in the academic literature both in the number of papers published and in the number of citations these papers obtain. However, we do not observe an outlier in authors and journals that write on the topic; instead, we find a relatively homogeneous distribution, with a large number of authors publishing in a sizeable quantity of journals. Furthermore, we propose a definition that encompasses the key aspects reviewed in the literature. We consider that strategic agility is a meta-capability that enables organisations to anticipate and/or react to rapid changes in the environment by redefining their corporate strategies and adapting their competitive and functional strategies accordingly, with the purpose of surviving and creating value.

Our study shows that strategic agility is a promising line of research; hence, many aspects merit an in-depth exploration and new ones await development. Through our scientific mapping techniques, we have dynamically analysed the evolution of strategic agility over five time periods. Our longitudinal view allows us to observe IT as a recurring topic from 1996 to the present day. Thus, from the very beginning, special attention has been paid to how IT development and improvements are key elements in making the company agile in the implementation of its strategies. Over time, strategic agility has been analysed with respect to the concepts of lean production and collaborative agreements, as well as how strategic agility is related to business productivity. In the fourth stage, we observe that strategic agility is considered a key element to achieve the competitive advantage of a firm. We also observe how decision-making should be conducted so that the company is capable of reacting in a more agile way to changes in the environment, and special attention is paid to cloud technologies to improve the agility of a strategic firm. Finally, in the fifth and final stages, we uncover that more areas begin to emerge. Competitive advantage is again a relevant topic; research focusses on its relationship with business innovation; and it is once again analysed with respect to cloud computing technologies. Notably, strategic agility is discussed in the international arena by investigating how MNEs strive to become agile. Finally, this area of research is transferred to the specific industry of education.

Our study not only highlights the academics' growing interest in strategic agility and its impact on different key areas of the firm but also identifies areas where the impact of strategic agility has not yet been adequately analysed. Strategic agility might be examined with respect to the firm's corporate level (e.g. its link with corporate social responsibility, how to implement rapid and precise changes on corporate strategies such as mergers and

acquisitions or even how internationalisation might compel firms to become more strategically agile); firm's competitive level (e.g. its impact on radical or incremental innovations, or how to reconfigure the firm's competitive strategy to remain cost or quality leaders); firm's functional level (e.g. how to adapt marketing mix strategies to maintain or enlarge the market share, or how to qualify employees to foster the firm's agility). Further analysis regarding the ways in which companies achieve agile strategic decision-making and, in turn, the evaluation of its impact on different measures of firm performance, are needed.

Our study is not without some limitations. First, our sample compiles 293 papers. Although this quantity is an appropriate number to conduct a bibliographic analysis, sample sizes of 1,000 papers are more commonly used (Rogers *et al.*, 2020); hence, having had a larger sample might have been beneficial. Notably, the small number of papers found in Scopus underlines that this area of research is in a growth phase and that there is still much room for further research.

In addition, the analysis in this study was performed by downloading from Scopus a set of documents that matched specific keywords. Scopus database is the largest searchable citation and source of searching literature (Chadegani *et al.*, 2013), and the overlap with other databases such as WoS is considerable (Jacso, 2005). However, Scopus does not cover the entire universe of publications (Vieira and Gomes, 2009).

Note

1. Figures for cluster networks and comments are available upon request.

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Being stressed in the family or married with work? A literature review and clustering of work-family conflict

Work-family
conflict

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Abstract

Purpose – Work-family conflict is an important topic which had an evolution, starting from a static definition, where work and family domains were divided, to a more dynamic and complex balance. COVID-19 has influenced society and created a significant distress among families and working activity, and this topic has been characterised by a major interest, considering some old definitions where this balance was considered problematic but not as an enriching opportunity.

Design/methodology/approach – The authors used SCOPUS to find all records mentioning work-family conflict, by considering book, article and review, excluding conference paper and considering only records written in English language. After a duplicated and not pertinent record removal, the authors obtained a number of 675 records. The authors considered 437 records from SCOPUS to create a cluster map.

Findings – Using SCOPUS and VOSviewer the authors have clustered 5 different areas, which are regrouped in next clusters considering keywords with most co-occurrence and significance: Work-life balance and burnout gender cluster job stress and performance social and family support job satisfaction.

Research limitations/implications – Cluster map is originated only by SCOPUS database.

Originality/value – This work aims to find a state of art about this topic, creating hypothesis where this problem has been exacerbated by 2020 due to important society modifications created by COVID-19, where recent evolution of work-family balance has been complicated by papers which come back to consider this balance as problematic.

Keywords Role, Stress, Work-family balance, Organisations

Paper type Literature review

1. Introduction

Work-family conflict is a situation wherein, recalling the theory of motivated behaviour (Castelfranchi, 2014; Castelfranchi and Miceli, 2004), work and family needs mutually interfere with each other throughout life, sometimes creating an important, daily internal conflict, as some activities of these domains are incompatible (Burke, 1994; Arjmand *et al.*, 2012; Andres, 2014; Weer and Greenhouse, 2014). Sometimes, family-related and professional roles come into a hard conflict (Greenhaus and Beutell, 1985; Treister-Goltzman and Pereg, 2016), generating phenomena of turnover intention (Flinkman *et al.*, 2008; Buddhapriya, 2009; Blomme *et al.*, 2010; Carlson *et al.*, 2011; Chen *et al.*, 2018; Singh *et al.*, 2018) and workaholism (Russo and Waters, 2006; Falco *et al.*, 2012; Bakker *et al.*, 2014; Schkoler *et al.*, 2017; Tahir and Aziz, 2019). It is prevalent in couples who wish to grow their children (Belsky *et al.*, 1985;



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Moore, 2004; Bouchard and Purier, 2011; Buehler and O' Brien, 2011; Fellows *et al.*, 2016; Fillo *et al.*, 2015) and where there are already children to nurture (Borelli *et al.*, 2017) when both members of the couple are partners in an enterprise (Werbera and Danes, 2010; Xie *et al.*, 2018) or work together (Noonan and Corcoran, 2004; Hedberg and Danes, 2012). Today, there are gender differences in the management of this conflict, with some studies describing a man's suffering (Winslow, 2005; Simbula *et al.*, 2011) and women often having to choose between family or career (Halryngyo and Lyng, 2009), since the work-family conflict dimension depends on gender equality (Bozzon and Murgia, 2021). Studies in this area have evolved in recent years, and this topic has been cited since the end of XIX century, having an industrialisation-modified society (Kleinberg, 1989). We can define three approaches to work-family roles, following different sociological approaches born during the twentieth century (Lavassani and Movahedi, 2014):

- (1) Conflict view, born during early 1900, adopting a structural-functionalist approach, is based on a clear and static role separation between gender and functional roles in society and family.
- (2) The compensation view, introduced in the late 1970s, is based on a more fluid separation between family and work roles, wherein the individuals adopt a compensation strategy and invest more energy to resolve a lack of satisfaction
- (3) The balanced view, initiated in the late 1980s, grants a connection between work and family roles, which have to be balanced, enriching this new approach with the gender role theory, which considers the different female components in marital and family entities, for a long time considered as individuals who had to passively accept their role and not be involved in the working world. Women are involved in this approach, wherein the family and working roles have to be in contrast, not on a continuous alternation, but have to coexist and enrich each other.

We think that the three distinct approaches to this topic, which theoretically follow a chronological progression, still coexist, while also considering the influence of the cultural context in which they are threatened (Hemmert *et al.*, 2019) and have an important influence on human resource management which is interested in pursuing employee satisfaction (Hennessy and Lent, 2008; Binde and Coad, 2013; Minnotte *et al.*, 2015; Elrehail *et al.*, 2020).

In the past, most family roles, especially within the middle class, were more linear than today, as a family had just one income from the male's work, while the woman had her role at home, managing the house and educating children. Since the beginning of the XIX and XX centuries, social and economic changes have modified the familiar equilibrium, which was revealed to be unsatisfactory, especially in the second half of 1900, with feminist movements which requested equal treatment and rights. Society has become more complex, less linear, sometimes disorienting (Bauman, 2000) and the first approach of conflict view cited before became insufficient; families got in trouble because some partners could not manage this change, but others also created new families and creative adaption strategies. During the last decades, some families maintained traditional roles, recalling the conflict view that we mentioned before, which did not tolerate a change in family and social structure; others created new families, where work mostly maintained fundamental importance not only on the economic side but also in placing an important border between marital and working problems, where each working partner had his or her private space, properly managed with a flexible strategy by the working organisation itself (Boraha *et al.*, 2020). It also worked for couples who were working together, because even in the same workplace, there was the possibility to be separated, having different

functions within the organisation. The new way to treat and analyse the interaction between work and family is considering a balance and not a conflict, even if means to increase complexity (Carlson *et al.*, 2006; Willis *et al.*, 2008; Peters *et al.*, 2009; Elwart and Konradt, 2011; Zhao Roy and Mattilla, 2013; Crom and Miller, 2018; Boiraha *et al.*, 2020; Yang and Cheng, 2020). The COVID-19 pandemic which plagued China and the rest of the world in 2019 has changed life in almost all countries. Beyond the medical risk of killing many people, this pandemic – as most epidemic diseases – has created economic, political and social damage which will have negative consequences even after the end of the pandemic. Countries infected by this virus are not only in danger of human losses, but also of important limitations that most world governments have created to face this disease. If it can be a macrosocial impairment in terms of economic loss and institutional credibility, it can be a problem even in the lives of individuals and their families, increasing the work-family conflict risk (Burke, 1994; Liu *et al.*, 2019; Osadchuck *et al.*, 2020). While nations that have reduced their services and movement of people or continued their pre-COVID activities have paid in terms of life losses and the overload of their hospital structures and sanitarian personnel (Bergman *et al.*, 2008; Yildirim and Aycan, 2008; Blomme *et al.*, 2010; Takeuchi and Yamazaki, 2010; Nelson, 2012; Battistelli *et al.*, 2013; Ruokolainen *et al.*, 2014; Sharma *et al.*, 2016; Dinibutun, 2020; Manzano-Garcia and Ayala Calvo, 2020), countries that have significantly restricted people's movement to just going out for essential activities have forced their citizenship to cope with important stress. Quality of life changed, and this adaptation was predominantly negative if we consider substance abuse (Taylor *et al.*, 2021), family violence (Griffith, 2020) and psychic suffering (Fellows *et al.*, 2016; Banerjee *et al.*, 2021; Jokic-Begic *et al.*, 2021; Szmulewitz *et al.*, 2021). Most families restricted their activities and movement in 2020, administering a significant change in their work and free-time management.

This problem has been relevant in countries conducting the lockdown strategy, forcing people to suspend or convert their work activities to remote mode. This means that many people, who used to leave their houses to go to the workplace, interact with clients, colleagues and superiors and create a daily routine, have to stay at home with their partners and sometimes with their children (Battistelli *et al.*, 2013; Beham *et al.*, 2015; Kim and Wollensbe, 2018). Using a psychoanalytical similitude, there is a precise setting regarding the physical workplace, invested by psychological meanings, and these meanings help the worker to separate the job from the family both physically and psychologically. If the worker is forced to work in the same place where he/she works with his/her family, this separation decreases, and the conflict risk increases. This study stresses on a bio-psycho-social approach (Engel, 1977). There is no supremacy between any of these three dimensions, but it is important to understand that they have different kinds of evolution: while the biological risk related to COVID-19 will be vanquished in 1–2 years, thanks to the creation and administration of a proper vaccine, psychosocial consequences regarding individual, socioeconomic and interpersonal aspects will be elaborate with a different timing and mode. Work-family conflict, in this case, can be harmful, creating an emotive contagion between workers (Wang *et al.*, 2020a, b) and damaging coordinators (Wilkinson *et al.*, 2017; Dixon *et al.*, 2020).

2. Study design, exclusion/inclusion criteria and used instruments

This study aims to determine, starting from three different approaches cited before about work-family conflict (Lavassani and Movahedi, 2014), how much literature about this topic is today-oriented. We hypothesise that globalisation has improved communication between developed and developing countries but is still present an ancient societal mode which regards also work-family relation, considered obsolete for Western developed countries standards (Chandra, 2012; Adepti *et al.*, 2020). Additionally, we considered the influence of the COVID-19 pandemic which has strongly modified lifestyles in countries that have adopted a

strict lockdown strategy, which in different cases has negatively modified people's social behaviours (Pietz *et al.*, 2019; Prosser *et al.*, 2020). We used 2 database systems of WOS and SCOPUS for this review, using the Boolean String: "work-family" OR "work family" OR "work" AND "family" AND "conflict" AND "role" AND "employee" OR "entrepreneur*". We considered only articles and review articles written in English, focussing on group, individual, organisation, social psychology and other sociologic and anthropological studies. We excluded other contribution areas, such as:

- (1) Medicine
- (2) Arts and humanities
- (3) Engineering
- (4) Biochemistry
- (5) Neurology
- (6) Mathematics
- (7) Energy
- (8) Agricultural and biological sciences
- (9) Pharmaceutical
- (10) Material sciences
- (11) Physics
- (12) Immunology
- (13) Chemistry
- (14) Dentistry
- (15) Computer science
- (16) Veterinary.

We have started to use English as the only language since it is used in 90% of the publications in this area. In Figure 1 we represent our records selection procedure with PRISMA statements (Mother *et al.*, 2009) (see Figure 2).

3. Database description

The first mention of this topic concerns work-family conflict during parenthood transition (Belsky *et al.*, 1985). As shown in Figure 3, there has been a mild constant growth in the last 20 years in works that talk about this kind of conflict, stating that it is an important matter. However in recent decades, sometimes this growth is reduced or elevated; for example, around the world financial collapse of 2009, due to the economic/working stress among families, a significant down in the next year and then a new incrementation trend to the rearrangement which probably influenced the family lifestyle and role. It is likely that an economic crisis can also affect the family system, and family problems can interfere with job performance, but a global crisis can trigger family suffering (Repetti *et al.*, 2002; Richter *et al.*, 2010; Chelariu and Stump, 2011; Richter *et al.*, 2015; Canet-Giner *et al.*, 2020; Dong *et al.*, 2020; Wang *et al.*, 2020a, b). Research has also produced an assessment instrument to measure the intensity of this conflict (Kim *et al.*, 2019). The most important increasing trend is during 2020, the first year of this pandemic, and consequently, an important modification of social interaction around the world.

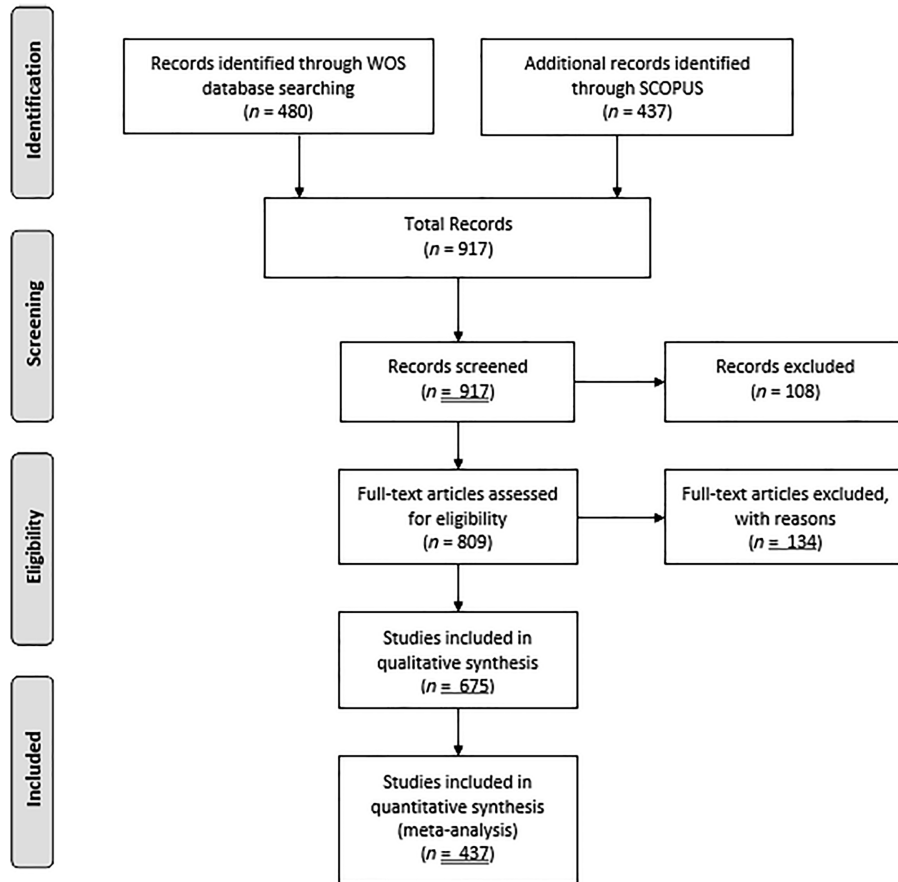


Figure 1.
PRISMA statement
selection flow

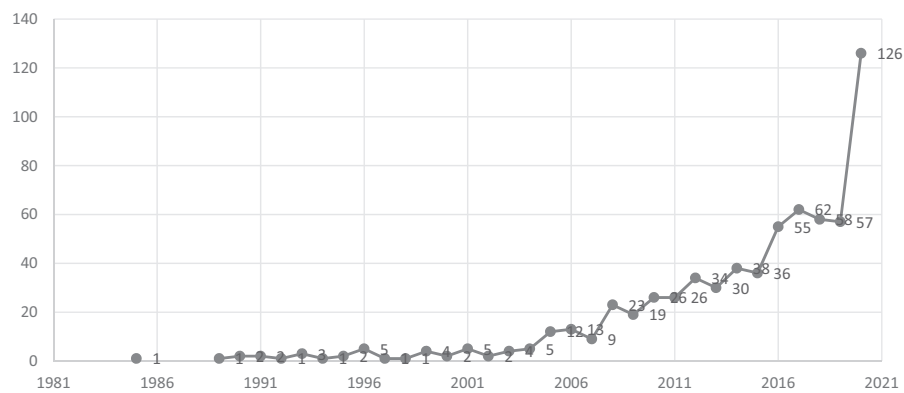
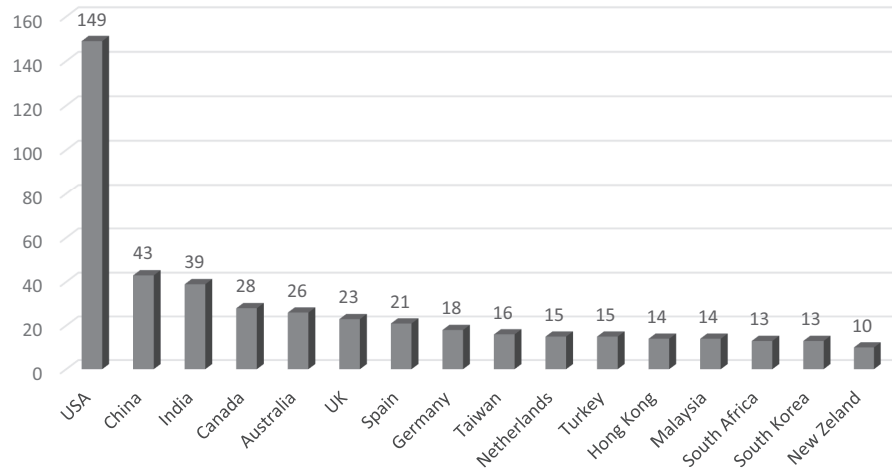


Figure 2.
Publication trend
during last years

Figure 3.
Representation of 15
most active countries
publishing papers
about the article's topic

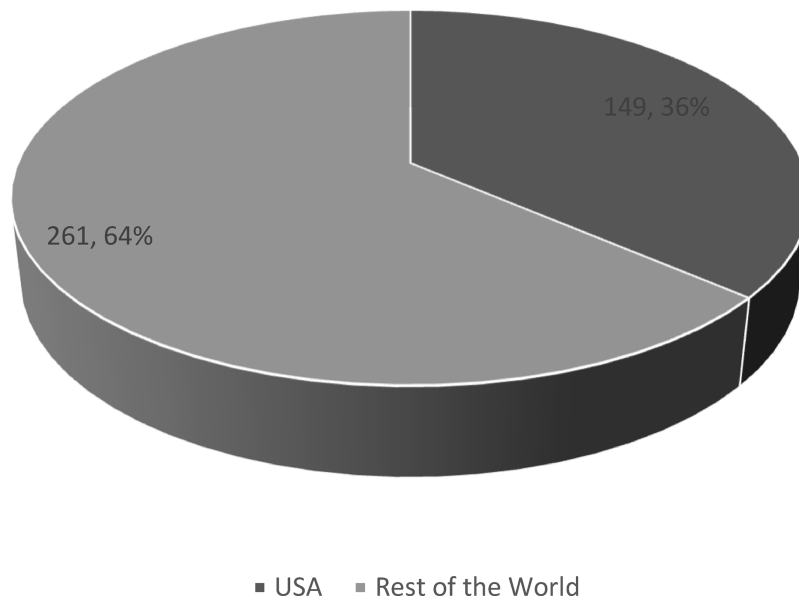


Considering the 13 most prolific countries around the world regarding this matter, it is unavoidable to consider the United States, officially the first country in the world to record the most COVID-positive people and COVID-related deaths. The USA is already the most prolific country in almost every area, but we underline here a significant superiority of papers about this topic, stating again how much this pandemic is socially, psychologically and economically disruptive, even more than from a simple medical point of view.

The gap between the USA publications and others is more evident when we consider the entire sum of every publishing and compare it with the record number of the others in Figure 4.

This research line is quoted in many journals in Table 1, regarding social science, human resources and organisational behaviour. The sensitivity of inner individual conflict is important because personal problems, even if related to extra-working life, risk being an excessive stress load for the worker, who could have a significant working performance deficit or decide to leave a job. That is why organisations have to consider the need to create a work routine that is not excessively demanding, avoids the efficiency obsession, or does not force workers to neglect their free time and families.

The most important researchers investigating this topic are from different countries. Most of them are Americans, but some authors are from other countries, where this issue has received attention. We think that the work-family conflict has not only psychological and organisational importance, but also cultural relevance in Western countries and is particularly sensitised in Israel and Finland, and Islamic countries such as Turkey, where there is actually a “work in progress” regarding female rights. For example, work-family conflict is an emerging matter in hospitality management, wherein hotel managers of a particular culture are used to a specific family model — for example, based on a traditional asset where women do not work (Kasper *et al.*, 2005; Wang *et al.*, 2010; Fackrell *et al.*, 2013; Nasuridin *et al.*, 2013; Lee *et al.*, 2019; Morgan and Pritchard, 2019; Tobak and Nábrádi, 2020). Hospitality workers often treat them differently from how they behave in the family, creating a dissonance between their work and family roles (Karatepe and Uludag, 2008a, b; Karatepe, 2013; Karatepe and Kilic, 2015). Most studies are oriented to organisational and working psychology (Griggs *et al.*, 2013; Allen *et al.*, 2019; Hunter *et al.*, 2019), educational psychology (Cinamon *et al.*, 2005; Cinamon, 2009), social psychology (Mauno and Ruokolainen, 2017; Wayne *et al.*, 2019) gender psychology (Cinamon *et al.*, 2002; Lee *et al.*, 2017) and hospital psychology (Rantanen *et al.*, 2013) (see Table 2).



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Figure 4.
Comparison between
USA and the rest of the
world publishing
countries

No	Journals	<i>h</i> -index	Research Area
34	International Journal of Human Resource and Management	114	Management of technology and innovation, organisational behaviour and human resource management, strategy and management
21	Journal of Managerial Psychology	80	Organisational behaviour and human resource management, management sciences and operations research, social psychology
19	Personnel Review	71	Organisational behaviour and human resource management, applied psychology
17	Journal of Vocational Behavior	151	Organisational behaviour and human resource management, applied psychology, education
13	Journal of Managerial Psychology	80	Organisational behaviour and human resource management, management sciences and operational research, social psychology, applied psychology
13	Human Resource Management	94	Management of technology innovation, organisational behaviour and human resource management, strategy and management
12	Frontiers in Psychology	110	Psychology (miscellaneous)
11	Community Work and Family	39	Social sciences, sociology
10	Journal of Applied Psychology	284	Psychology, applied psychology
10	Career Development International	60	Organisational behaviour and human resource management, social sciences

Table 1.
Representation of the
10 most prolific
publishing journals

4. Cluster analysis

Starting from this previous database analysis, we used the VOSviewer to divide the group of articles on SCOPUS into clusters using their keywords. We stated 5, the minimum number of occurrences, extrapolating 43 items. We revealed a graphical representation that regrouped five different clusters. These clusters, with their co-occurrence, are graphically represented in Figure 5.

Cluster 1: Work-life balance and burnout (12 items, 24%)

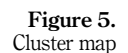
Table 2.
Table of 10 most active
Authors

No	Author	Affiliation	<i>h</i> -index	Prevailing Research Area
8	Karatepe O. M	Mersin University, Turkey	44	Social sciences; hospitality management; health professions; business, management and accounting
6	Carlson D., S	Baylor University, Waco, USA	38	Psychology; social sciences; econometrics and finance
5	Casper W. J	The University of Texas, Arlington, USA	24	Psychology; business management and accounting; arts and humanities
5	Hammer L. B	Portland State University, USA	34	Psychology; gender psychology; social psychology
5	Mauno S	University of Jyväskylä, Finland	32	Psychology; medicine; economics, econometrics and finance
5	Kwan H K	University of Windsor, Canada	21	Computer science, decision science
5	Wayne J. H	Wake Forest School of Business, Winston Salem, USA	18	Psychology; social psychology; decision sciences
5	Kacmar K.M.	Texas State University System	9	Psychology; social psychology; organisation psychology
4	Allen T D	University of South Florida, Tampa, USA	58	Organisational psychology; business, management and accounting; decision sciences

This is the third most numerous cluster, mostly related to a negative conception of suffering. In this case, we observe the coexistence of two different ways to consider work-life balance (Carlson *et al.*, 2006; Arjmand *et al.*, 2012; Weale *et al.*, 2019; Akanji *et al.*, 2020; Boiraha *et al.*, 2020; Chen *et al.*, 2020; Dixon *et al.*, 2020; Haar and Brougham, 2020), following the role theory (McClosely, 2016; Piszczek *et al.*, 2018). Role interaction can be defined through its positive way of mediation (Brown and Pitt-Catsoupes, 2016; Soomro *et al.*, 2018) between the work and family domains (Boyd *et al.*, 2016) and the negative way, which results in emotional exhaustion (Nauman *et al.*, 2020) and burnout (Curnoyer, 1988; Westman *et al.*, 2004; Haar, 2006; Innstrand *et al.*, 2008; Lambert and Hogan, 2010; Dai *et al.*, 2014; Gholitabar *et al.*, 2020; Kao *et al.*, 2020). The worker has to avoid this situation by finding support in others or in the organisation itself (Boyar *et al.*, 2007; Casper *et al.*, 2011; Liao, 2011; Baral and Sampath, 2019), saving his psychological inner resources (Babic *et al.*, 2020) and considering other variables of vulnerability and interaction (Brewin *et al.*, 2000; Bouchard and Purier, 2011; Baltes *et al.*, 2011; Michel *et al.*, 2011; Deuling and Burns, 2017; Sanchez-Vidal *et al.*, 2020).

Cluster 2: Gender cluster (10 items, 26%).

This is the second most numerous cluster. It recalls the gender topic (Yavas *et al.*, 2008; Mauno *et al.*, 2012; Cloninger *et al.*, 2015; Akanji *et al.*, 2020; Liu and Fan, 2020) because psychological distress is usually related to women due to role conflict (Posig and Kickul, 2004; Aaltion and Huang, 2007; Edwards, 2008; Battistelli *et al.*, 2013; Buehler and O' Brien, 2011; Ma *et al.*, 2014). Most cultures around the world are used to excluding or inflicting stress upon women more than on men (Noor, 2003; Raskin, 2006; Wang *et al.*, 2010; Ren and Foster, 2011; Beigi *et al.*, 2012; Janasz *et al.*, 2013; Huffman *et al.*, 2014; Hassan *et al.*, 2017; Scott, 2018), thus expecting a woman to be more bound by family roles in the management of the house and children. Women are forced to make a choice between work and family life or between working as an employee, freelancer, or entrepreneur (Winter *et al.*, 2006; Karatepe, 2010; Deng and Gao, 2017) and organising their work-family balance (Beutell, 2010; Zhanh *et al.*, 2012;



Cluster 3: Job stress and performance (8 items, 53%).

Cluster 4: Social and family support (seven items, 10% co-occurrence)

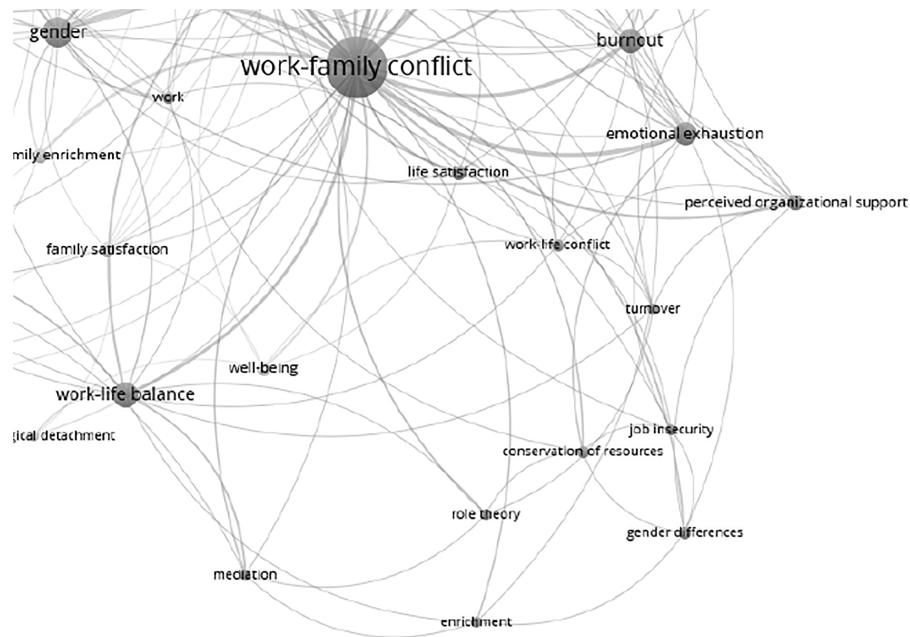
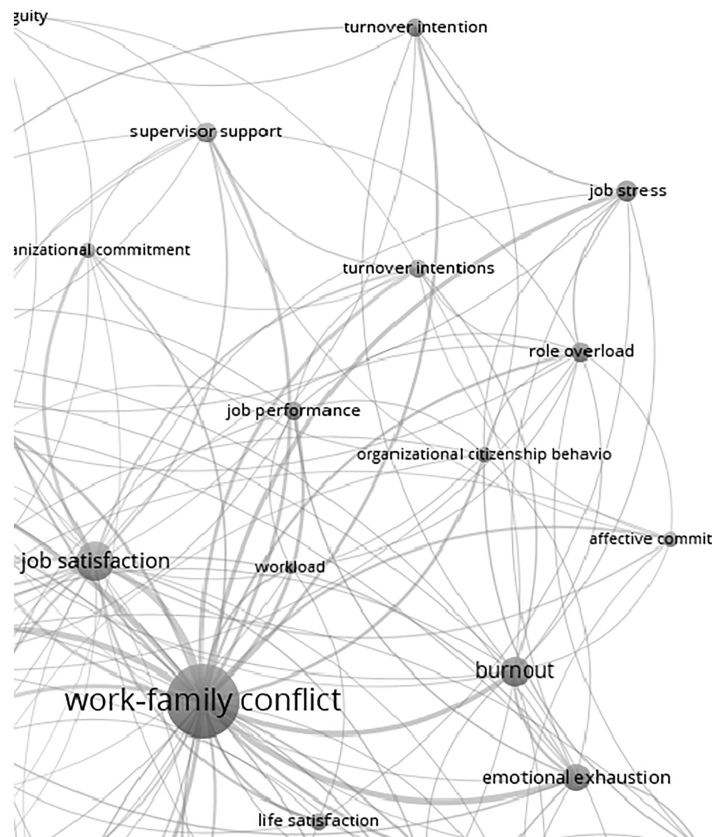


Figure 6.
Work-life balance/
burnout

While the previous clusters are focused on individual and organisational dimensions, this cluster is related to the family and its interpersonal functioning. In this specific case, the family becomes a resource (Cazan *et al.*, 2019), and not just a problematic element with role expectations, but also a buffering factor for a worker's well-being (Kinnunen *et al.*, 2003; Deng and Gao, 2017; Xu *et al.*, 2018), wherein the family offers support (O'Driscoll *et al.*, 2003; Goh *et al.*, 2015; Jamaludin *et al.*, 2018), personal enrichment and detachment (Mauno *et al.*, 2011; Wang, 2017; Jain and Nair, 2020), reaching work-life satisfaction and enrichment (Lim *et al.*, 2012; Lu and Kao, 2013; Dishon-Berkowitz, 2014; Kalliath *et al.*, 2017; Nielsen *et al.*, 2020). The gender theme wherein female entrepreneurs offer a different point of view about entrepreneurship from the perspective of sensitivity and creative thinking is mentioned again (Cloninger *et al.*, 2015).

Cluster 5: Job satisfaction (5 items, 16% co-occurrences).

A happy worker is a positive element within an organisation. Is fundamental to preserve job satisfaction (Deng and Gao, 2017; Cazan *et al.*, 2019; Nielsen *et al.*, 2020) to grant positive working feedback. A worker needs to effectively invest in his or her organisation, without considering its working activity with the only goal of earning money (Chan and Fung, 2015). A proper organisation that could reduce role ambiguity and assign the right role division between workers, avoiding an excessive workload to some of them and constant supportive activity by the supervisor rational organisation reduces work-family conflict and turnover intention (Karatepe and Udulag, 2007; Culbertson *et al.*, 2009; Ngah *et al.*, 2010; Hammer *et al.*, 2011; Karatepe and Azar, 2013; Proost *et al.*, 2010; Mihelic, 2014; Chen *et al.*, 2016; Schierman and Glavin, 2017; Zhu and Li, 2016; Raza *et al.*, 2018; Talukder, 2019), acting positively on working stressors.



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Figure 7.
Job stress and
performance cluster

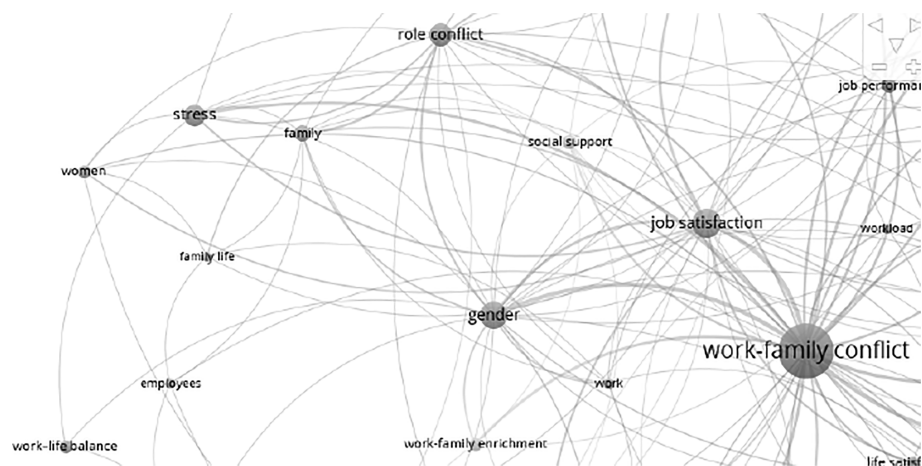


Figure 8.
Gender cluster

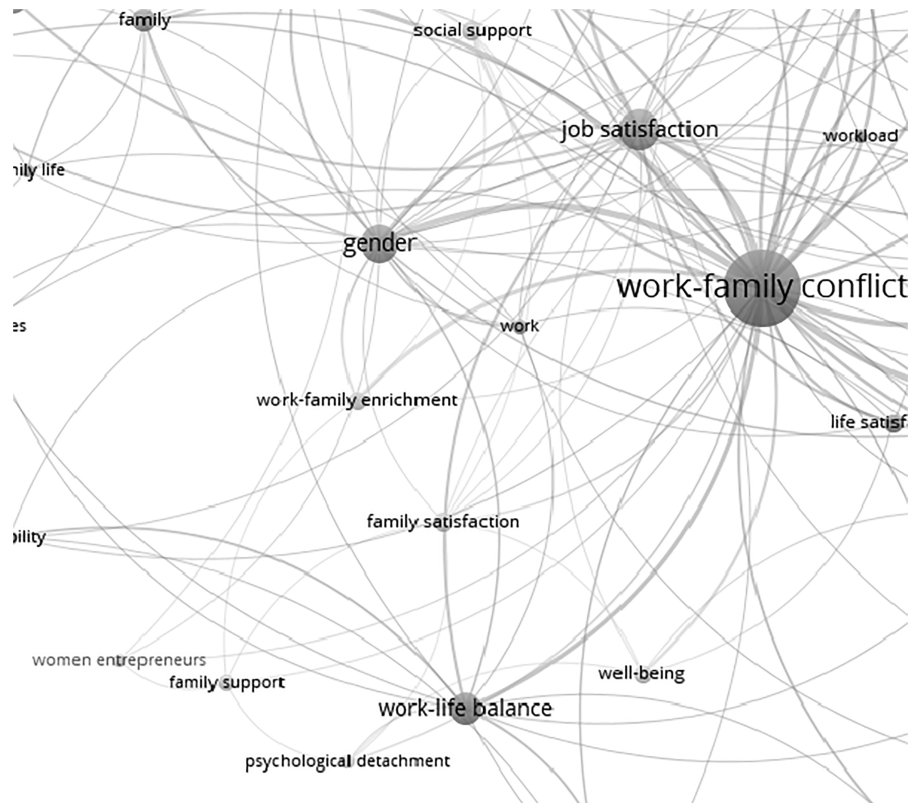


Figure 9.
Social and family
support

5. Conclusions

This paper begins with a consideration of the topic of work-family conflict, which has evolved during the last century and the social evolution and complexification of society. The first conception of work-family conflict stresses the word “conflict” because work and family are different domains in a linear society, which must be strictly separated and divided. The evolution of the family, passing through a series of family members, needs to create new and innovative ways to consider work and family interactions. Recent years have also included Eastern and developing countries in the research, although their cultures are still evolving in the definition of family roles. Additionally, the COVID-19 pandemic has stressed world societies beyond the biological risk, disorientating people and organisations, creating poverty, anxiety, anger, depression, as well as weakening beliefs and strong institutions we used to consider as solid. Our cluster analysis shows that most clusters, such as 1 and 3 (Figures 6 and 7), are embedded in the ancient and negative conception of work-family conflict, wherein a superior complexity among families and society brings distress due to difficulties in facilitating change. Previously, this separation between work and families was clearer, with men mostly dedicated to work and women within domestic walls. However, during recent centuries, this situation has been modified in industrialised countries, creating a new role disposition with many decades of debate and manifestations for civil and women’s rights, which are still in progress. The COVID-19 pandemic has forced millions of people to reduce or change their activities, sometimes

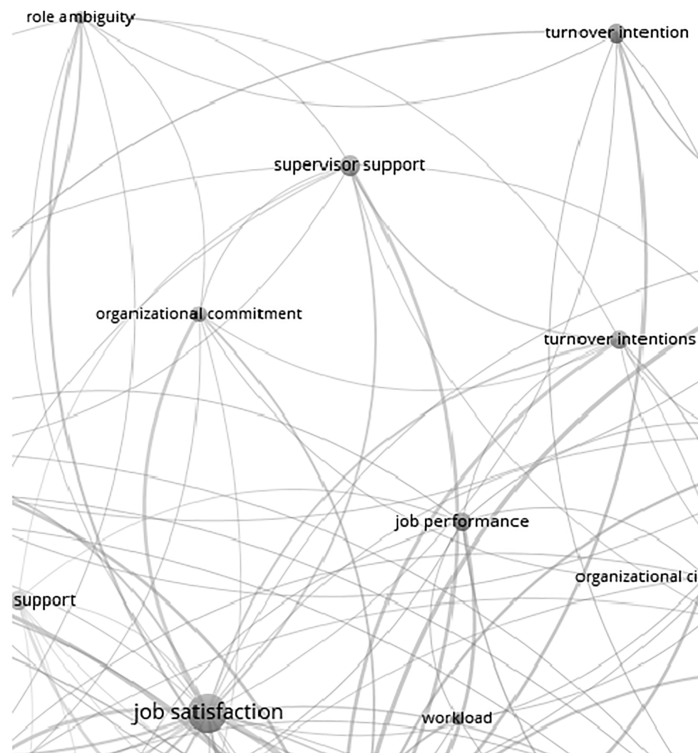


Figure 10.
Job satisfaction cluster

resulting in job loss or significant money and job reduction and an increased state of insecurity or job stress. This change has also been felt inside the family, with an unexpected modification in daily life and activities. The COVID-19 pandemic did not create work-family conflict, which already existed by the end of the last century, but it hit on different points of weakness in the modern system, as it overcharged some National Health Systems which were already vulnerable because of lack of financial funds, corruption, disorganisation, structural and equipment obsolescence, or personnel inadequacy. Similarly, work-family conflict was a significant matter before the 2020 pandemic and was caused by different factors, such as individual psychological difficulties, organisational problems which created excessive stress, lack of separation between work and private life, insecurity due to socioeconomic factors and a lack of serenity. Work-family conflict studies are vital to formulating prevention protocols to limit this psychological suffering and are useful for finding some diagnostic criteria to determine these warning bells as well as for creating a better working environment or allowing the worker to have a personal space to “destress” (Spencer *et al.*, 2019) before returning to the family.

This last part is not practical with a worker forced to work remotely at home every day, but this aspect has to be managed gradually, an aspect which has not been applied in many countries that have suddenly adopted radical lockdowns and hasty reopenings. It is noteworthy that this discomfort has created another psychological wound without adopting an immediate and premature return to pre-COVID routines, demonstrating that collective trauma (Nadler and Ben-Shusham, 1989) is not sufficiently elaborated but rather removed, although this element also emerges as a more complex way to create a balance,

not a conflict between work and family. Gender studies (Figure 8) are dedicated to this topic, with women as the main characters involved and valuable members of the family, being competent in working activities, but characterised by a special sensitivity to both work and family (Cardella *et al.*, 2020), allowing the family to be a resource for support and not only a problematic and stressful element (Figure 9). The family, following more recent studies on this topic, can become an element of enrichment in this case (see Figure 10).

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