

Somebody is hiding something: Disentangling interpersonal level drivers and consequences of knowledge hiding in international entrepreneurial firms

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Abstract

This research is set to address the scant research on the relationship between the key drivers and consequences of knowledge hiding within international entrepreneurial organisations at the interpersonal level. It further aims to compare knowledge hiding behaviour among international entrepreneurs in two diverse contexts of emerging countries versus advanced economies. Therefore, this research employs a total number of ten international entrepreneurs in Iran and Italy and takes advantage of the Multi-Criterion Decision-Making (MCDM) approach. In this regard, DEcision-MAking Trial and Evaluation Laboratory (DEMATEL) method is applied to disentangle the cause-effect relationship between knowledge hiding components and present conceptual frameworks for the interrelationship of knowledge hiding factors in each context. Furthermore, in order to assess the importance and ranking of factors in Italy and Iran Weight Assessment Ratio Analysis (SWARA) is performed. As such, this research provides different contributions to the knowledge hiding literature as well as key implications for practitioners.

Keywords: Knowledge hiding, International entrepreneurs, Interpersonal level factors, DEMATEL, SWARA, Comparative analysis

Introduction

Given that the global business environment has recently shifted to become more technology-intensive and knowledge-oriented (Jafari-Sadeghi et al., 2021; Jones & Ratten, 2020), firms leverage knowledge as a competitive advantage for their expansion to international markets (Piñeiro-Chousa et al., 2020; Rabeea et al., 2019; Rezaei et al., 2020). This particularly applies to small and medium entrepreneurial ventures that build on the knowledge-based capabilities to overcome their lack of resources (Jafari Sadeghi, Biancone, et al., 2019; Ratten et al., 2016). Indeed, managers encourage the circulation of knowledge to enhance innovative practices that lead to more efficient outcomes (Dong et al., 2017). That is, knowledge sharing is deemed as individuals' voluntary behaviour based on their experience, capability, willingness and motivation, which provide positive outcomes for firms (Carmeli et al., 2013; Collins & Smith, 2006). Despite that, there are still people who are not willing to reveal their knowledge with their peers (Jafari-Sadeghi et al., 2020; Michailova & Husted, 2003). For instance, when it comes to inter-organisational settings, entrepreneurs are hesitant against the request to share their knowledge and try withholding it in order to protect their business interests (Connelly et al., 2012; Pan et al., 2018). Depending on the value of its information, they might intentionally (or not) hide their knowledge so as to use it as a competitive advantage for their business (Jones & Ratten, 2020). This can happen in various ways from being ignorant against the request for knowledge to providing wrong and unrelated information (Connelly & Zweig, 2015).

Knowledge management literature has considerably invested in the exploration of the extent to which individuals hide their knowledge within their workplace from different perspectives. For instance, researchers have explored its social-psychological dimensions (e.g., Xiong et al., 2020), while others disentangled knowledge hiding in different sectors studies academia (Hernaus et al., 2019). However, various research gaps and shortcomings are found in the knowledge hiding research. First, the knowledge hiding phenomenon happens at the workplace at different levels. For example, from the organisational perspective, researchers have investigated knowledge hiding as being happened due to the venture's organisational climate and culture (e.g., Husted et al., 2012) whereas team level studies consider the context of teams and their motivational climate (e.g., Bogilović et al., 2017). Furthermore, the interpersonal level literature explains knowledge hiding as the consequence of inappropriate interaction among individuals such as distrust (e.g., Černe et al., 2017) while individualism research stresses the differences among employees in their capabilities and traits for knowledge ownership (Anaza & Nowlin, 2017). Although the literature has extensively explored knowledge hiding at the individual, team and organisational level, the interpersonal constructs yet required more investigation (Xiao & Cooke, 2019).

Second, prior studies have mainly focused on knowledge hiding within organisations regardless of the type of firms. For example, not much is known about knowledge hiding within international entrepreneurial ventures (such as born-globals). This is due to the fact that knowledge plays a crucial role in the operation of (particularly small) firms in the intricate international markets. Moreover, in their review to explore the extent to which knowledge hiding is harmful to organisations, Xiao and Cooke (2019) call on scholars for more comparative cross-cultural research to synthesis the differences in knowledge hiding among nations. In this regard, there has been an ongoing debate that emerging markets found less

attention by researchers comparing to advanced countries (Bruton et al., 2010). That is, this paper stresses the distinct characteristics of advanced economies compared to those of emerging markets. Hence, building on the wealth of theory of planned behaviour (Ajzen, 1991), the objective of this research is to explore and examine the key interpersonal factors of knowledge hiding in international entrepreneurial firms in different contexts. This is particularly important since in different contexts the interpersonal relationships may constitute diverse behaviours (M. Zhang et al., 2017). That is, exchanging knowledge is encouraged in contexts with good interpersonal interactions whereas knowledge hiding is most likely to happen in contexts with poor interpersonal behaviour. As such, the research questions asserted for exploration are: “What are the pertinent interpersonal level drivers of knowledge hiding in international entrepreneurial firms?” and “what are the (cause-effect) interrelationships among identified factors?” This study is also set to compare and contrast two diverse contexts in addressing the question of: “what are the relative importance/ ranking of knowledge hiding driver?”

Therefore, to address the aforementioned research questions, this paper takes advantage of an expert-based method and builds on the wealth of international entrepreneurs’ opinions in two contexts of Iran and Italy. To assess and rank the interpersonal level determinants influencing knowledge hiding among international entrepreneurs alongside investigating the cause and effect relationship between the drivers, a multi-criterion decision-making approach (MCDM) has been adopted. Due to the unavailability of rigid data and statistical records; besides, the qualitative type of knowledge hiding drivers, experts’ opinions (in this research international entrepreneurs) are the only available and reliable type of information. Thus, MCDM approaches are the most appropriate option for expert-based information. Among all available methods in MCDM, to address all designed research objectives and to provide the answer to research questions, the DEMATEL method has been employed. This method is capable to investigate the relationship among factors; furthermore, assessing and prioritising factors and presenting the relationship diagram among them (Bashan & Demirel, 2019; C. Singh et al., 2020). Eventually, the SWARA method has been used to measure and compare the importance of the extracted indicators in two case studies. This method is one of the most popular methods that have been used for many assessment problems (Beheshti et al., 2016). This method is different from other similar methods and makes the decision-maker capable to select their priority based on the current situation of the environment and economy. Moreover, the expert’s role in evaluations and calculating weights is significant (Mahmoudi et al., 2019).

Thus, the current study provides several theoretical contributions as well as managerial implications. This paper is most likely of the pioneering research to compare the reasons and consequences of knowledge hiding behaviours in international entrepreneurial firms in an advanced country versus the emerging market. In this regard, it focuses on interpersonal factors less investigated perspective of knowledge hiding and identifies eight factors to explore their function in concealing knowledge at the workplace. Hence, this paper contributes to the literature by synthesising the drivers of concealing knowledge (cause factors) as well as its consequences (effect factors). This is followed by proposing two conceptual frameworks which highlight the interrelationship among knowledge hiding factors at the interpersonal level. Moreover, the current research provides practical implications for international managers and

entrepreneurs and highlights the employees' negative interactions that contribute to higher knowledge hiding at the workplace and addresses some of its destructive consequences.

The rest of this paper is structured as follows. Initially, we synthesise the literature to explore important factors **that** make managers (international entrepreneurs) hide their knowledge within their organisation. Thereafter, it follows with the discussion of how international entrepreneurs from Italy and Iran are engaged in the research and explains the method, by which the data has been analysed to compare the knowledge hiding instances in two contexts. Furthermore, the findings of this research are presented, discussing important theoretical contributions and managerial implications. Finally, the concluding section summarises the research, discusses the angles that limit this research, and proposes the future direction for further exploration.

The concept of knowledge hiding

The late nineteenth century coincided with debates on the information economy where Davenport (1999) turned the attention to the concept of knowledge sharing. This later became a basis to explore the other side, **the extent to** which individuals hide their knowledge. Thus, the seminal knowledge hiding studies **are dedicated** to why academics withhold their information from their peers (e.g., Campbell et al., 2000). Subsequently, the literature has witnessed an increasing interest among researchers to disentangle unfavourable behaviours in knowledge management including knowledge sharing hostility as well as knowledge hoarding by people at different levels in their workplace (Haas & Park, 2010; Scuotto et al., 2017). Consequently, knowledge hiding became known as an interesting knowledge management research area that attracted scholars from different fields including organisational behaviour (e.g., Connelly et al., 2012), tourism management (e.g., Zhao et al., 2016), human resource management (e.g., Černe et al., 2017), etc.

Known as a type of social behaviour, knowledge hiding has studied by different theoretical frameworks such as the theory of psychological ownership or social exchange theory (Pierce et al., 2001). Introduced by Ajzen (1991), however, the theory of planned behaviour (TPB) assists to provide a strong foundation to synthesise knowledge hiding from the behavioural perspective. According to this theory, antecedents of behavioural intentions are driven by the individual's control, normative and behavioural beliefs and perceptions (Xiong et al., 2019). As such, actual human behaviour is inspired by approval or pressure of perceived social norms, the individuals' intention, and control toward their behaviour. Therefore, TPB highlights that knowledge hiding appears in the workplace when organisational culture is against sharing knowledge, and employees are not only willing to withhold their knowledge but also confident to successfully perform this behaviour. Hence, the theory of planned behaviour provides a comprehensive understanding of knowledge hiding behaviour in small and medium organisations.

Building on the wealth of TPB, the extant research have shown a considerable endeavour to explore the extent to which knowledge hiding takes place in the workplace at various levels (Bogilović et al., 2017; Chatterjee et al., 2021). In this regard, a stream of research looks at knowledge hiding at the organisational level stresses the impact of organisational climate and culture (Connelly et al., 2019; Serenko & Bontis, 2016). For instance, Connelly et al. (2012)

argue that hiding information from peers is perceived as negative behaviour in organisations with a knowledge-sharing climate. Oppositely, knowledge hiding is deemed as a strategy for dealing with the high level of uncertainty, which is seen in firms with very hostile environments (Michailova & Husted, 2003, 2004). Furthermore, literature at the team level has considered the motivational climate and characteristics of teams as well as the behaviour of team leaders that increase or decrease the likelihood of the intention of individuals to hide their knowledge in their team (Bogilović et al., 2017; Černe et al., 2014). In this vein, exploring the relationship between knowledge hiding and team creativity, **Fong et al. (2018)** found that withholding knowledge among teams constitute lower organisational performance and losing competitive advantage. Finally, being extensively investigated, research at the individual level builds on the differences among individuals such as in individual cultural intelligence (e.g., Ali et al., 2019; Bogilović et al., 2017), reciprocal believes (e.g., Zhao et al., 2016), and other personal traits like Machiavellianism (e.g., Belschak et al., 2018; Connelly et al., 2019). However, the more recent literature highlights that knowledge hiding can also happen at the interpersonal level (Butt, 2020; S. K. Singh, 2019). In opposite to other studies at the organisational, team and individual level, the research at the interpersonal level is yet under-investigated (Xiao & Cooke, 2019). More studies are required to disentangle the knowledge hiding behaviour as the result of interaction among individuals (e.g., Babic et al., 2018; Černe et al., 2017).

Moreover, literature has extensively studied knowledge hiding in general and without considering firms' scope of operations. For instance, we do not know much about knowledge hiding in international SMEs, entrepreneurial internationalisers, etc. When it comes to cross-border operations, globalisation and the recent technological advancement have increasingly assisted international firms in collaborating with their foreign stakeholders, which led to a more intricate and higher level of knowledge exchange within and across organisations (Garousi Mokhtarzadeh et al., 2020; Horwitz et al., 2006). However, particularly in international small firms, individuals seem to be unwilling to share their knowledge with others since this is considered as their personal intellectual property. That is, knowledge is always considered as a precious competitive advantage for both individuals and international SMEs, in which breaching information can constitute not only the firm's advantage in international markets but also endanger the promotion and growth of individuals in their firm (Huo et al., 2016). Hence, interpersonal knowledge hiding is seen as a strategy among talented employees in international SMEs to maintain their self-efficacy and/or maximise their level of control on the strategic knowledge (Xiong et al., 2019).

Furthermore, important aspects of internationalisation such as its interlinguistic and intercultural context impact the level of knowledge hiding (Klitmøller & Luring, 2013). For instance, in the multinational environment, the language barrier influences the communication among stakeholders and consequently the likelihood of knowledge sharing among individuals (Martins et al., 2004). Similarly, it is important to note that some cultures do not always encourage individuals, thereby knowledge hiding is seen as discrete in different contexts and cultures (Bogilović et al., 2017; Cooke, 2018). This stresses the fact that in different societal contexts, knowledge hiding happens for various reasons (Issac & Baral, 2019). In this regard, the literature confirms that hiding knowledge at the workplace has different reasons and consequences in individualism cultures such as American and German societies (Burmeister et

al., 2019) as opposed to collectivist cultures such as Turkey (Demirkasimoglu, 2015). Moreover, comparing the antecedents of knowledge hiding in two divergent cultural societies, Issac and Baral (2019) argue that, in oriental contexts, distrust among individuals stimulates knowledge hiding while emotional intelligence is a major cause in occidental setting contexts. Therefore, a cross-cultural synthesis assists in comparing the extent to which individuals hide their knowledge in various contexts.

Interpersonal level drivers

At the interpersonal level, knowledge hiding can be connected to several reasons. To start with, workplace ostracism is a negative phenomenon in the organisation that reduces interpersonal engagements among employees (Leung et al., 2011; Zhao et al., 2013). It is defined as “the extent to which an individual perceives that he or she is ignored or excluded by others in the workplace” (Ferris et al., 2008). At the workplace, ostracism appears in two levels; where employees feel that they are being ignored and/ or excluded by their colleagues (co-worker/ horizontal ostracism) or perceiving ignorance and/ or exclusion by their supervisor (supervisor/ vertical ostracism) (Hitlan & Noel, 2009). **This is particularly evident in cross-cultural settings such as international firms, in which employees from different locations and sometimes contrasting cultures are working together in a competitive environment.** As such, ostracism, in any sense, is deemed to increase the level of tension at the workplace, where employees’ responses can lead to higher intensity of knowledge hiding behaviours such as playing dumb or evasive hiding within the organisation (Riaz et al., 2019; Zhao & Xia, 2017).

Further, as an interpersonal phenomenon, workplace gossip an unavoidable (knowledge) management issue that impacts on behaviour of **individuals** in their job (Zou et al., 2020). It is mainly referred to as the informal conversation (whether positive or negative) about a third party without informing her/ him, which normally includes some unproven details (Brady et al., 2017; Zou et al., 2020). **In the international context, some cultures accept gossip while others consider it as a negative behaviour.** At the workplace, gossip can be seen as integrated into either formal or informal interactions, in which positive gossip aims at stimulating interrelationship cooperation and thereby boosting sensemaking in the organisation (Mills, 2010). However, negative workplace gossip tends to spread negative news about the working environment (Wu et al., 2018). This decreases the level of trust within the organisation (Ellwardt et al., 2012), and puts job pressure **on** employees, increasing the likelihood of protecting their unique information or knowledge hiding (Grosser et al., 2012; Yao et al., 2020).

Moreover, workplace incivility is deemed as misbehaviour at the interpersonal level, which can lead to erosion of empathy and termination of the relationships due to disregard and rudeness toward others (Pearson et al., 2000). Andersson and Pearson (1999) define it as a “low-intensity deviant behaviour with ambiguous intent to harm the target, in violation of workplace norms for mutual respect”. Literature highlights (e.g., Holm et al., 2019; Schilpzand et al., 2016) that workplace incivility is considered from different angles such as from **the** victim’s perspective (experienced incivility), from observer’s standpoint (witnessed incivility), and instigator's point of view (instigated incivility). **Regardless of whether operating domestically or internationally, this brings negative reciprocity to the organisation (Ishaque et al., 2020). Consequently, employees are more likely to** conceal their knowledge when they

perceive that an uncivil atmosphere **is dominated** in their workplace (Arshad & Ismail, 2018; Irum et al., 2020).

Within an organisation, the intensity of trust among employees can impact the complexity of interpersonal relationships, and consequently, the likelihood of knowledge hiding versus sharing (Jarvenpaa & Majchrzak, 2008). Considered as an ineffective social interaction, interpersonal distrust is caused by imprecise mutual norms (Blau, 2017). According to Grovier (1994), distrust is regarded as a “lack of confidence in the other, a concern that the other may act so as to harm one, and that the other does not care about one's welfare, intends to act harmfully, or is hostile” which can be conceptualised as “the willingness of a party to be vulnerable to the actions of another party” (Mayer et al., 1995). Therefore, at the workplace, interpersonal distrust results in the higher intention for knowledge hiding, simultaneously, lead to the proliferation of withholding from hider to seeker and creates a reciprocal loop that increases the probability of higher knowledge hiding in future (Demirkasimoglu, 2015; Xiao & Cooke, 2019; Xiong et al., 2019). **Moreover, the intensity of distrust is deemed to be higher in international entrepreneurial firms since employees are potentially new to the environment, have different backgrounds and cultures, and need more time to understand and build trust.**

Furthermore, competition as another important knowledge hiding driver exists in two levels. At the individual level, personal competitiveness is deemed to stimulate individuals in maximising their personal benefits over their counterparts, leading to more knowledge withholding among competitive employees (Cegarra-Sánchez & Cegarra-Navarro, 2017; Hernaus et al., 2019). As such, personal competitiveness can contribute to the intensive competitive environment at the workplace- interpersonal level (Ishaque et al., 2020; Kumar Jha & Varkkey, 2018). In this vein, managers prefer to promote interpersonal competition and might use incentives to increase the effectiveness and performance within their firm, whereas highly perceived competition might not lead to better performance but in knowledge hiding (Boz Semerci, 2019; Garousi Mokhtarzadeh et al., 2020). For instance, in knowledge-intensive competition among employees within organisations, individuals tend to leverage their knowledge and hide it from their counterparts so as to gain and keep their competitive advantage (Kumar Jha & Varkkey, 2018). **Hence, given that internationalisation brings more complexity and competition, the likelihood of knowledge hiding rises.**

In addition to distrust, the absence of reciprocation is another important interpersonal driver of knowledge hiding among employees at their workplace. Reciprocal behaviour is seen “in terms of one person expressing a similar emotion or change in emotion right after the partner had indicated similar feelings” (Baumeister et al., 2001; **Michaelis et al., 2015**). Jahanzeb et al. (2019) highlight that reciprocal behaviour can happen at different levels and **for** various reasons, which might terminate knowledge hiding. In this vein, reciprocation can be either positive or negative (Cropanzano & Mitchell, 2005). In positive reciprocity people prefer to respond **to a perceived positive** behaviour positively- if you share your knowledge with me, I will share mine with you, whereas lack of reciprocation (negative reciprocity) takes place when individual tend to hide their knowledge from their counterparts (Al-Ubaydli & Lee, 2009; Offerman, 2002). In this regard, Kube et al. (2013) argue that negative behaviours are strong

and sustainable, thus, lack of reciprocation significantly **increases** the likelihood of hiding knowledge in an organisation (Haas & Park, 2010; Kumar Jha & Varkkey, 2018).

The literature highlights task interdependence as another reason for the decision of individuals to share or hide their knowledge at the workplace (e.g., Bock & Kim, 2002; Cropanzano & Mitchell, 2005). It is regarded as the type of job complexity, in which different activities are twisted together to complete the work (Černe et al., 2017). As an interpersonal activity, task interdependence is deemed to contribute to higher cooperation, information-sharing, and more effective communication (Bachrach et al., 2006; Staples & Webster, 2008). It confirms that the high level of the **interdependency** of tasks at a workplace leads to a lower likelihood of employees **hiding** their knowledge (Fong et al., 2018). Conversely, **in small firms** when tasks are less interdependent (or independent), individuals do not need to collaborate with each other to get their job done (Sargent & Sue-Chan, 2001), hence, knowledge hiding is more likely to happen (Černe et al., 2017).

Finally, territoriality is another reason that discusses when and why individuals conceal their information and knowledge from their counterparts (Bhattacharya & Sharma, 2019; S. K. **Singh, 2019**). Perceived as an interpersonal mechanism (Altman, 1975), territoriality is conceived as individuals' impetus to establish their control over (in)tangible territories (Harrison, 1982), which involve human's territorial cognition, emotion, and behaviour (Boudlaie et al., 2020; Li et al., 2020; Mensah et al., 2021). In this regard, Brown and Robinson (2007) confirm that employees (at any level) can feel territoriality and behave it in all perspectives of their career life. This thus includes individuals' territoriality over their creative ideas, information and knowledge (Peng, 2013), which **results** in a monopoly in knowledge and a higher level of knowledge hiding in an organisation (Li et al., 2020). **That is, in their cross-cultural context, international firms struggle to balance the knowledge sharing among employees with individualism culture versus those collectivist employees.**

Methodology

Three types of research purposes are definable including exploratory (e.g. discovering, uncovering, exploring), descriptive (e.g. gathering info, describing, summarizing), and explanatory (e.g. testing and understanding causal relations) (Kowalczyk, 2015; Khaldi, 2017). The main purpose of this research is to investigate the cause-effect relationship between knowledge hiding components; hence, an explanatory research has been scheduled. Besides, many scholars classify quantitative researches in four groups including descriptive, correlational, Causal-comparative/quasi-experimental and experimental (Ahmad et al., 2019). According to the objectives of this research, casual research has been considered in this article. In this research, to identify, assess, and prioritise determinant factors of knowledge hiding among international entrepreneurs, a three-stage methodology has been scheduled. Initially, by screening different factors affecting knowledge hiding, those pertinent to international entrepreneurs and interpersonal levels were emanated. Subsequently, to prioritise and compare the results engendered from an emerging economy versus an advanced economy, data gathering has been scheduled. Eventually, to analyse the relationship among the knowledge hiding **determinants** at the interpersonal level and to rank them according, a multicriteria

decision-making method has been applied. Figure 1 presents a schematic picture of the adopted methodology in this research. Each stage has been elaborated in detail in the following sections.

Insert Figure 1 here

Stage 1. Screening and selection.

The first stage aims to extract the most relevant or determinant factors to knowledge hiding among international entrepreneurs at the interpersonal level. In this regard, initially relevant keywords including “knowledge hiding indicators”, “knowledge hiding factors”, knowledge hiding drivers” etc. were searched through popular and reputable databases encompassing “google scholar”, “Scopus”, “science direct”, “web of science”, etc. As a result, 51 items were identified in the first attempt from relevant literature published between 2015 to 2020. These identified factors in knowledge hiding were classified as presented in Table 1.

Insert Table 1 here

After identifying the initial list of influencing factors in knowledge hiding, a screening has been employed to identify the pertinent and determinant factors according to the scope of this research. As this study is set to investigate knowledge hiding determinants at the interpersonal level among international entrepreneurs, some screening criteria were employed to extract the essential factors. Hence, repeated factors and similar factors with different labels are all eliminated. Moreover, inclusive factors, interpersonal level factors, and factors effective in international entrepreneurship were selected. Consequently, eight determinant knowledge hiding drivers were identified as revealed in Table 2.

Insert Table 2 here

Stage 2. Data Gathering

After extracting determinant drivers of knowledge hiding at the interpersonal level among international entrepreneurs, to assess and prioritise them, required data has been gathered. As the selected drivers are qualitative and records and statistics regarding them were not accessible, expert's opinions have been collected to rank the drivers. Furthermore, to compare the results emanated from an emerging economy versus a developed economy, Iran and Italy (due to the accessibility of their international entrepreneurs) have been investigated, relatively. As the results of this study significantly rely on the expert's opinion, several criteria and thresholds for expert selection have been considered as follows:

- Age. Minimum 30s
- Education. Minimum Bachelors
- Job Position. Minimum department-level manager
- Working experience. Minimum of five years

- Industry sector. Manufacturing or service-oriented sector

Considering the access of the authors to the international entrepreneurs in Iran and Italy, these two countries were considered from an emerging economy versus a developed economy. Next, the authors used the screening criteria and thresholds mentioned above (age, education, job position, and working experience), to list the qualified entrepreneurs for more investigation. Afterwards, the authors contacted the international entrepreneurs from the emanated list via email and telephone and described the research objectives and research questions. Those international entrepreneurs who were eager to participate in the research were selected. Thus, due to the availability, knowledge, and enthusiasm of international entrepreneurs in each country from the initial list (Iran and Italy), five experts from each country were chosen. As multicriteria decision-making methods (MCDM) are implemented in the data analysis section of this research, the number of experts in these mathematical decision-making approaches could vary between 3 to 15 (Beheshti et al., 2016; Mahdiraji et al., 2019, 2020); therefore, the number of experts was acceptable. The expert profile is illustrated in Table 3.

Insert Table 3 here

As this research has employed MCDM methods (specifically DEMATEL), an appropriate questionnaire has been designed for data gathering. In the designed questionnaire, the experts were asked to evaluate the direct effect of drivers of knowledge hiding on each other. As quantitative records are not usable, the experts have answered each question using linguistic variables including seven terms (strongly effective, effective, nearly effective, neither effective nor ineffective, nearly ineffective, ineffective, strongly ineffective) in a Likert spectrum. A total number of 56 questions have been answered each indicating the effect of knowledge hiding driver (i) on (j) measured by the expert (p) known as Z_{ij}^p . The data gathered from the questionnaire were transferred to the square matrix (8*8) with an empty main diagonal (as the effect of each driver on itself is meaningless). Afterwards, the linguistic terms used in the questionnaire were all transformed to numbers based on Table 4 (Hajiagha et al., 2018; Mokhtarzadeh et al., 2018).

Insert Table 4 here

By using Table 4, all linguistic terms are transferred to numbers; therefore, 10 quantitative matrices were resulted, five from each country.

Stage 3. Assessment and Prioritisation

The merit of the DEMATEL approach is its capability to visualise the intricate relationship between metrics using diagrams. This method was first used by Fontela and Gabus (1973) to plot the strength of the relationship between different components and has been widely used in different areas of science. For instance, this method has been employed to assess and prioritise industry 4.0 enablers (Rajput & Singh, 2019); supplier relationship management indicators

(Pothal et al., 2020), or implementation of critical success factors in knowledge management (Mousavizade & Shakibazad, 2019). Since ten business volunteers have filled the questionnaires, the average Z_{ij}^p is calculated and then transferred to the DEcision-MAking Trial and Evaluation Laboratory (DEMATEL) matrix. In this methodology, it is presumed that several elements exist. These measures are put in a pairwise direct relation matrix for evaluation. In the next step, the influence matrix is constructed through the normalised direct-relation matrix. Following the total relation matrix formulation, a cause-effect relationship emerges between components. In other words, the DEMATEL approach is translated as below (Liu et al., 2018; W. Zhang & Deng, 2019).

- (1) According to the proposed Table 4, linguistic variables are transferred to numerical values, and the influence comparison scale for criterion is defined.
- (2) The pairwise influence relationship $n \times n$ matrix is formulated by the average Z_{ij} value as follows.

$$Z_{ij} = \frac{1}{p}(Z_{ij}^1 + Z_{ij}^2 + \dots + Z_{ij}^p) \quad (1)$$

- (3) The normalised direct-relation matrix known as (N) is formulated using the following equations.

$$s = \text{Min} \left\{ \frac{1}{\max_{1 \leq i \leq n} \sum_j Z_{ij}}, \frac{1}{\max_{1 \leq j \leq n} \sum_i Z_{ij}} \right\} ; \quad \forall_{ij} = 1, 2, \dots, n \quad (2)$$

$$N = s \times Z \quad (3)$$

- (4) Constructing the total relation matrix known as (T) by using the following formula and MATLAB software.

$$T = N + N^2 + N^3 + \dots = \sum_{i=1}^{\infty} N^i = N \times (I - N)^{-1} \quad (4)$$

- (5) For each row and column, the sum is calculated. The results (R_i) and (D_j) represent the direct and indirect effect of each knowledge hiding driver (i, j) on overall drivers.

$$R_i = \sum_{j=1}^n t_{ij} ; \quad \forall_i \quad (5)$$

$$D_j = \sum_{i=1}^n t_{ij} ; \quad \forall_j \quad (6)$$

- (6) The net effect (E_i) and the overall prominence (P_i) is calculated from the following expressions.

$$P_i = \{R_i + D_j | i = j\} \quad (7)$$

$$E_i = \{R_i - D_j | i = j\} \quad (8)$$

The maximum value of (P_i) determines the highest impact of the corresponding criteria on overall relationships. The positive or negative (E_i) value demonstrates the cause or reliable nature of **the** criterion on the decision-making matrix (Mahmoudi et al., 2019). Eventually, the relationship diagram illustrates the cause and effect status of investigated knowledge hiding determinant drivers (C. Singh et al., 2020).

Results and discussion

According to the aforementioned methodology, the results are presented based on eight determinant factors and expert's opinions gathered from the DEMATEL questionnaire. First, the aggregated matrix of expert's **opinions** regarding the impact of knowledge hiding determinants has been measured by equation (1). Table 5 illustrated the aggregated matrix for Iran versus Italy.

Insert Table 5 here

By implementing equations (2) to (4) the total relationship matrix has been emanated by using MATLAB software as presented in Table 6 for two cases.

Insert Table 6 here

The threshold value for the above matrix is 0.6996 for Italy and 0.5560 for Iran. Thus, the values less than these thresholds were considered as effects and above these values as causes. The effects are separated with red colour for easy tracking. Eventually, by implementing equations (5) to (8) the assessment and prioritisation of the drivers are measured and illustrated in Table 7.

Insert Table 7 here

Table 7 presents the cause (C) and effect (E) analysis among international entrepreneurs at the interpersonal level according to the threshold values. In this vein, the analysis of **the** Italian context suggests that workplace ostracism (WO), interpersonal distrust (ID), lack of reciprocation (LR), and low task interdependence (LTI) are causal factors for knowledge hiding. This implies that the existence of these interpersonal factors is the main reason for concealing knowledge at the workplace. Conversely, effect factors are those that can be appeared as the consequence of knowledge hiding behaviour at the workplace. For instance, for international entrepreneurial businesses in Italy, the **dominant** behaviour of knowledge hiding constitutes the rise of workplace gossip (WG) and incivility (WI) as well as competitive work environment (CWE), and territoriality (T) in the organisation. Figure 2 illustrates the cause and effects classification and their importance among the determinants in Italy. The causes are trackable above the horizontal line (positive P_i values) and the effects are below it

(negative P_i values). Besides, the more important drivers with higher priority are positioned at the right-hand side of the figure.

Insert Figure 2 here

Similarly, as depicted in Figure 3, causes and effect analysis for knowledge hiding behaviour in the Iranian context highlights five **causes** (above the horizontal line - positive P_i values) and three effects (below the horizontal line (negative P_i values) factors. As such, among identified factors, workplace ostracism (WO), workplace gossip (WG), interpersonal distrust (ID), lack of reciprocation (LR), and low task interdependence (LTI) are found as causal factors that can lead to higher intensity of knowledge hiding. On the other hand, for the context of Iran, the effect factors suggest that knowledge hiding practices terminate to appearing behaviours such as workplace incivility (WI), competitive work environment (CWE) and territoriality (T) among individuals in their international small firms.

Insert Figure 3 here

Comparing the cause and effect analysis in two contexts confirms that, for both countries, the existence of workplace ostracism (WO), interpersonal distrust (ID), lack of reciprocation (LR), and low task interdependence (LTI) constitute knowledge hiding behaviour at the workplace (cause factors) whereas knowledge hiding terminates to negative interpersonal interactions (effect factors) such as workplace incivility (WI), competitive work environment (CWE) and territoriality (T). However, workplace gossip (WG) has a different function, in which **it** acts as an effective factor in Italy and **a causal** factor in Iran. Moreover, in the Italian context, WO, WG, WI, and LTI are very close to the horizontal line which suggests their potential to act as both cause and effect for knowledge hiding. This potential has been also seen for WO, WG, CWE, and LR in the Iranian context.

Moreover, the results of cause and effect **analysis help** to explore the interrelationship among studied knowledge hiding factors in Italy as an advanced economy and Iran as an emerging economy. The constructs are designed via VENSIM software and based on the results emanated from total relationship matrices in Table 7, in which the relationship values higher or equal to threshold value have been considered as inputs (arrow) to draw the following diagrams. The conceptual framework of the interrelationship among knowledge hiding behaviour (at the interpersonal level) for international entrepreneurial business in Italy and Iran are presented respectively in Figure 4 and Figure 5.

Insert Figure 4 here

For the context of Italy, as Figure 4 suggests that, among eight factors, territoriality (T) and competitive work environment (CWE) are impacted by other factors only, of which

territoriality receives the highest influence by other factors whereas competitive work environment is impacted by solely interpersonal distrust (ID). Also, based on the presented framework, interpersonal distrust (ID) shows the highest interaction including two one-sided relationships and five interdependent relationships where for instance workplace ostracism (WO) impacts workplace incivility (WI) vice versa. Similarly, Figure 5 highlights the conceptual framework for the context of Iran. In this regard, the Iranian framework highlights that territoriality (T) is a central dependant knowledge hiding factor, being impacted by five factors while no influence on others. competitive work environment (CWE) is found as mostly isolated by receiving influence from low task interdependence (LTI). Recognised as the most interacting factor by being connected to the other seven factors.

Insert Figure 5 here

The Comparison between the proposed conceptual framework highlights that the knowledge hiding behaviour is more complicated in advanced countries such as Italy comparing to emerging economies. In this regard, although both countries proposed frameworks represent that the territoriality (T) is the central and the most dependent and competitive work environment (CWE) is the least interacting factor, the number of interdependent relations and consequently the level of complexity in Italy is higher than Iran.

Furthermore, to compare the prioritisation emanated from the DEMATEL, the authors have employed another MCDM method for more clarification. In this section, by implementing A Step-wise Weight Assessment Ratio Analysis (SWARA) on the (D+R) indicator of Table 7, the importance of each knowledge hiding driver has been resulted in each country. The comparison of the ranks and weights of each determinant factor in two studied countries has been illustrated in Table 8.

Insert Table 8 here

Finally, the rank and importance of factors regardless of their function in both contexts suggest that the low task interdependence (LTI) is the most important factor for both countries (as it has 22% and 28% importance in Italy and Iran), which is followed interpersonal distrust (ID) as the second significant driver of knowledge hiding at the interpersonal level. The major difference for the ranking and importance among factors is for territoriality (T) as it has the third place (with 16% importance) in Italy whereas with 8% importance territoriality (T) stands at the sixth position in Iran. Eventually, at the bottom of the table, workplace ostracism (WG) and competitive work environment (CWE) are placed as the least important knowledge hiding factors with respectively 6% and 3% contribution in both contexts.

Theoretical contributions and managerial implications

The findings of this paper make outstanding additions to the literature which discuss various dimensions of knowledge hiding, hence making important theoretical contributions and practical implications. From theoretical perspectives, this research is probably of the earliest

studies to explore and compare knowledge hiding behaviours in international entrepreneurial firms in an advanced country versus the emerging market. Hence, this paper broadens the research context to international entrepreneurial firms that have been less considered by scholars. This is particularly important since international entrepreneurial firms, which are often small and medium in size, are known to use their knowledge capabilities to overcome their low access to resources, gain competitive advantage and survive and/or grow in an international environment (Jafari Sadeghi & Biancone, 2018; Ratten et al., 2016; Sukumar et al., 2020). Moreover, the comparison between advanced and emerging countries contributes to the literature by providing a better understanding of knowledge hiding behaviours in two divergent countries, of which they are known differently from national, societal, and cross-cultural perspectives.

Prior studies investigated knowledge hiding mainly at the individual level (e.g., Anaza & Nowlin, 2017; Bogilović et al., 2017) while more studies at the interpersonal and organisational level are required (Xiao & Cooke, 2019). Therefore, this research looks at knowledge hiding as a consequence of interaction among individuals and contributes to the literature by stressing the interpersonal level determinants. In this vein, previous studies have mostly focused on distrust as a strong driver factor of knowledge hiding (e.g., Connelly et al., 2012), whereas this paper explores eight important interpersonal level factors for its analysis. Moreover, as a novel and alternative tool for statistical methods, the current paper takes advantage of expert-based analyses and employs DEMATEL and SWARA, which contribute to assessing and ranking and investigating the relationship among factors of knowledge hiding at the interpersonal level. The expert-based methods are particularly appropriate where the existing designs may fail to capture, or the sample size is too small for statistical analyses (Bashan & Demirel, 2019; C. Singh et al., 2020). Hence, this research highlights that researchers can use these tools to explore similar complex qualitative concepts (such as knowledge hiding) with a small number of expert participants (like international entrepreneurs) quantitatively.

Furthermore, in this study, knowledge hiding is seen as either a consequence of interpersonal behaviour at the workplace or it is a cause that leads to interactions among employees. Therefore, this paper goes beyond common hypothesis testing in the field and synthesises the cause and effect factors of knowledge hiding and contributes to the literature by identifying and comparing the drivers and consequences of knowledge hiding in two divergent countries. For example, our findings suggest that workplace ostracism is a causal factor, confirming that this is an important player that constitutes knowledge hiding. Conversely, the existence of knowledge hiding in an organisation leads to territoriality behaviour among employees. More importantly, building on the wealth findings of cause and effect analysis, this research proposes two distinct conceptual frameworks regarding knowledge hiding in Italy (advanced economy) and Iran (emerging country), highlighting the interrelationship among knowledge hiding factors at the interpersonal level. The proposed frameworks assist scholars in their hypothesis development and further exploration of relationships among interpersonal knowledge hiding factors in different contexts.

Regarding the practical implications, this study sheds the light on the function of knowledge hiding in international entrepreneurial firms and highlights that a better understanding of

knowledge hiding will assist international entrepreneurs to manage the circulation of knowledge in their firms. This particularly important for small and medium-sized firms since they are known to leverage their knowledge for gaining/ keeping a competitive advantage in the highly competitive international markets (Jones & Ratten, 2020). As such, the current study stresses interpersonal interactions and explores how reciprocal behaviours contribute to individuals hiding or share their knowledge at the workplace. For instance, the findings of this paper inform international entrepreneurs that the lack of trust among their employees can lead to higher intensity of concealing knowledge from hider to seeker, which can create a reciprocal loop that promotes the likelihood of more intense knowledge hiding in the future (Demirkasimoglu, 2015; Xiong et al., 2019). Moreover, this research warns international entrepreneurs about the negative implications of knowledge hiding in their firms. For example, based on our findings, in an organisation with a dominant knowledge hiding atmosphere, it is most likely to experience destructive behaviours such as territoriality, workplace incivility, and (negative) competition. Therefore, (international) managers and entrepreneurs can implement initiatives and design programmes (for increasing task interdependence) not only to promote knowledge sharing at their workplace but also to avoid negative consequences of knowledge hiding such as incivility.

Conclusion

Recognised as a negative organisational behaviour, the concept of knowledge hiding has been investigated from different perspectives. To address the scant research on what makes individuals conceal their knowledge (Škerlavaj et al., 2018), this paper is set to explore the relationship between the key drivers and consequences of knowledge hiding within organisations. In this regard, Xiao and Cooke (2019) emphasised the need for more research to compare interpersonal (level) drivers of knowledge hiding in different places. Although many scholars focused on identifying factors affecting knowledge hiding and sharing in organisations (e.g. Anand et al., 2020), extracting knowledge hiding determinants in international organisations has rarely been considered by researchers. To the knowledge of the authors, Xiong et al (2019) focused on the knowledge hiding factors in international R&D organisations. Therefore, from the scope of research perspective, this research could be considered amongst the first in identifying knowledge hiding determinants in international entrepreneurial organisations. As described in Table 2, eight interpersonal level drivers of knowledge hiding were extracted from literature including workplace ostracism, gossip, incivility, interpersonal distrust, competitive work environment, lack of reciprocation, low task interdependence and territoriality. All of these factors resulted from a deep literature review and screening process described in section 2 (e.g. Fong et al., 2018; Isaac and Barrel, 2019; Anser et al., 2020).

To the best knowledge of the authors, the relationship and analysis of these factors and drivers have not been previously investigated in any relevant research. Therefore, the deep investigation of the relationship amongst the knowledge hiding drivers at the interpersonal level, alongside the comparison of these drivers in international entrepreneurial organisations in an emerging economy (Iran) versus a developed economy (Italy) could be beneficial for the scholars. To address its objectives this paper takes advantage of a multi-criterion decision-

making approach and employed the DEMATEL method to explore the cause-effect relationship that emerges between components. As such, conceptual frameworks are provided to highlight the interrelationship of knowledge hiding factors in each context. Furthermore, this has been followed by SWARA analysis, which led to assessing the importance and ranking of factors in each context. This assisted to better compare of interpersonal level factors of knowledge hiding in Italy and Iran.

Limitation and future research

This research is restricted from different point of views. To start with, as this paper takes advantage of an expert-based method, its sample for data collection was limited to international entrepreneurs. In this regard, Jafari Sadeghi et al. (2019) argue that recruiting the most knowledgeable person attest to the accuracy of responses. Therefore, the selection of participants to this research was performed to identify entrepreneurs who are whether a founder, owner or a key central decision-maker in an international firm. However, the collected data for this research is done in accordance with the self-reporting process, within which international entrepreneurs reflected their opinion to the specialised questionnaire based on their experience and preferability. This increases the likelihood of being biased for their desirable responses, particularly for this complex social behaviour. Future research would look at confirming the outcome of this study using a larger samples from different entrepreneurial firms in order to verify whether experts' opinion has similar implications for businesses in the broader context. Moreover, the findings of this research proposed two constructs, representing the interrelationship among knowledge hiding factors for each selected context. Hence, future studies can employ empirical analyses and target a broader sample to test the validity and generalisability of proposed frameworks.

Furthermore, this paper was designed to compare the knowledge hiding behaviour in two contexts of emerging countries and advanced economies. In this vein, the context of this study was limited to Iran and Italy as representative of targeted economies. Thus, we call for further research, in which scholars can consider and compare more comprehensive representatives such as BRICS countries (for emerging markets) and G7 (for advanced countries). Moreover, in regard to the level of analysis, the current research limited its focus to the interpersonal level. However, considering that literature has considerably investigated knowledge hiding at the individual level (Cerne et al., 2015; Xiao & Cooke, 2019), we call for more research on the team and organisational level. For instance, researchers can investigate whether organisations can allocate resources to synthesise and review their jobs in order to increase task interdependencies as a solution to decreasing knowledge hiding behaviour at the workplace.

From the methodology perspective, this paper has scheduled a three-stage method to investigate the importance of interpersonal level knowledge hiding determinants among international entrepreneurs. After the literature review and data gathering, the DEMATEL method has been employed in this matter. Although, this method is capable to present the importance and relationship among several determinants or factors (Singhal et al., 2018); however, some limitations are also discussable. Many scholars have identified the benefits of combining this method with other similar methods to present more validated and reliable results. For instance, some hybrid approaches including DEMATEL and Failure Modes and

Effects Analysis (FMEA) (Tsai et al., 2017), DEMATEL and Interpretive Structural Modelling (ISM) (Kumar & Dixit, 2018), or DEMATEL with ISM and Principal Component Analysis (PCA) (Rajput & Singh, 2019) are all applicable for future studies to demonstrate more reliable results.

Moreover, some scholars criticise the assessment capability of DEMATEL and argue that this method is more efficient for cause and effect classification rather than evaluation. Accordingly, the combination of DEMATEL with more popular assessment and evaluation techniques has been used widely in the MCDM era. As a case in point, the combination of DEMATEL with the analytical network process (ANP) (Kiani Mavi & Standing, 2018), or with the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) (Karasan & Kahraman, 2019) are recommendable for future researches. Ultimately, the MCDM method used in this research was analysed based on deterministic numerical values. However, considering the uncertainty and challenging competitive environment, uncertain methods could have been illustrated more realistic results. Hence, future research can apply more complicated and uncertain values including Fuzzy sets, Interval values, Hesitant Fuzzy sets, and Intuitionistic values for future investigations.

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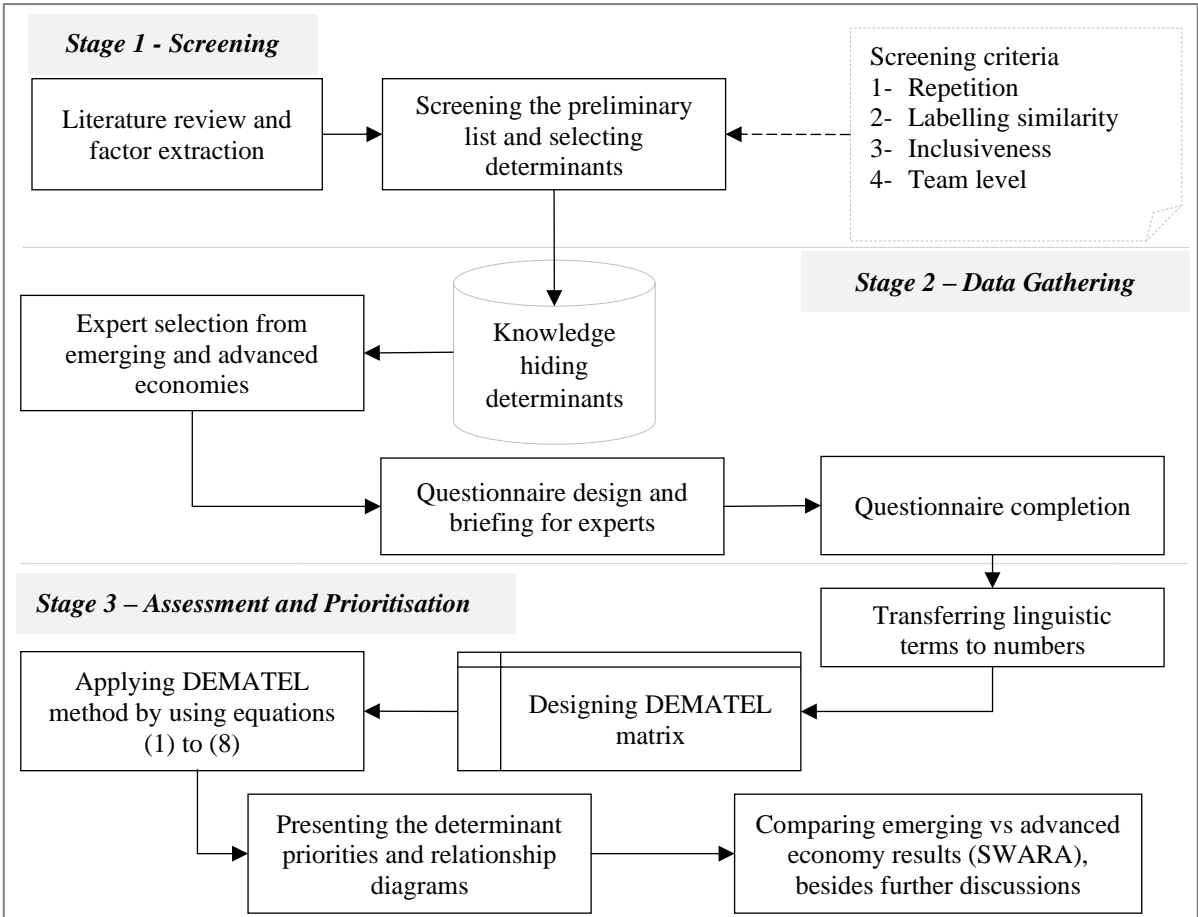


Figure 1. The research framework



Figure 2. Cause-effect and importance diagram in Italy

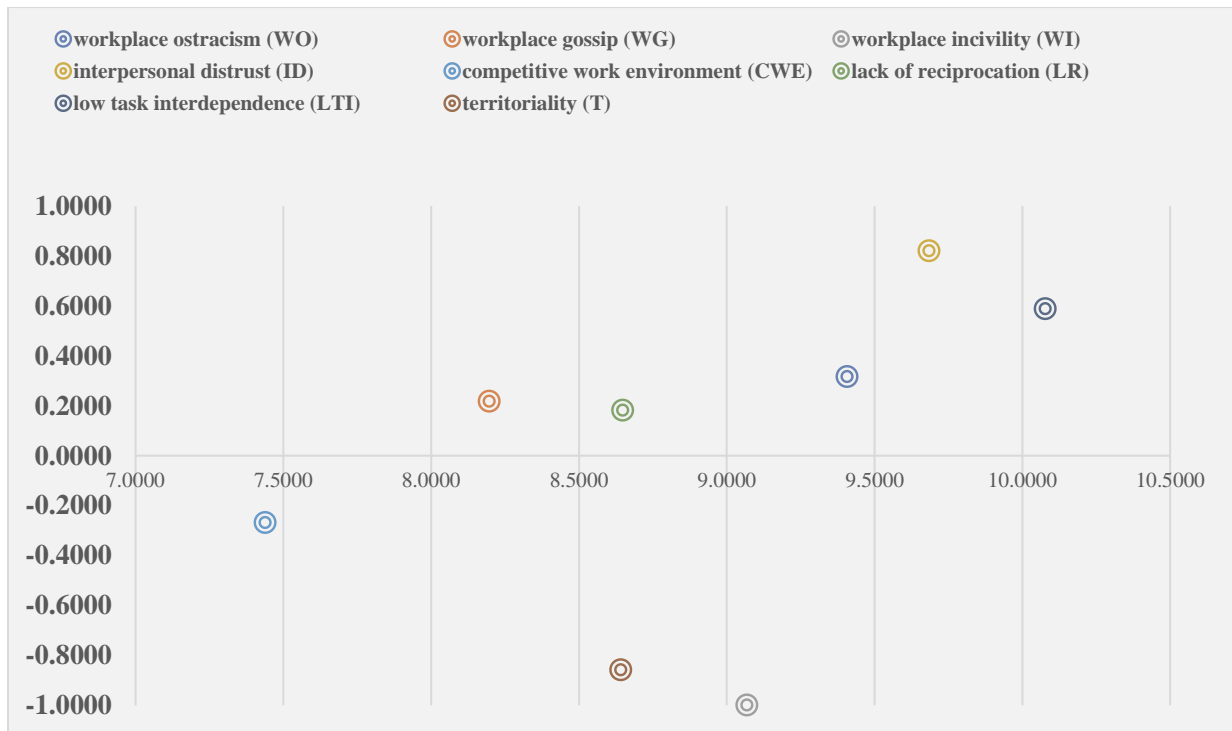


Figure 3. Cause-effect and importance diagram in Iran

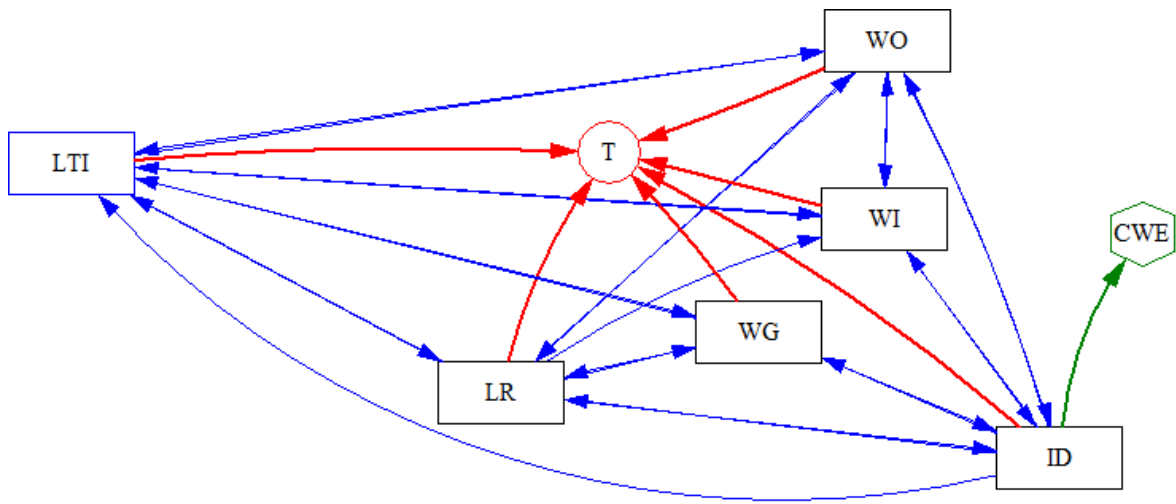


Figure 4. Conceptual framework in Italy

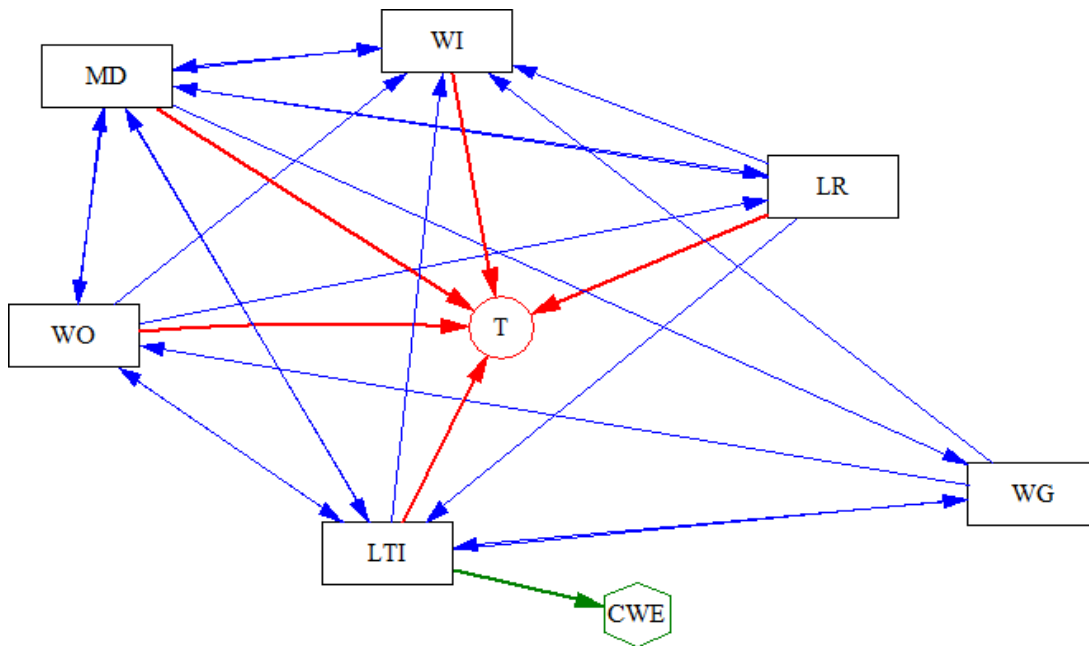


Figure 5. Conceptual framework in Iran

Table 1. Initial results from literature review regarding determinant factors in knowledge hiding

Author(s)	Year	Factor	(+/-)	Context
Zhao et al.	2016	Workplace ostracism	+	Service organisations/ China
Serenko & Bontis	2016	Job insecurity	+	Credit unions/ north America
		Positive organisational knowledge culture	-	
Huo et al.	2016	Organisational justice (procedural, result, Team task dependency	-	Universities, research Institutes and enterprises/ China
Bogilovic et al.	2017	Cultural intelligence	-	International students
Fong et al.	2018	Task interdependence	-	Knowledge worker teams/ China
Khalid et al.	2018	Abusive supervision	+	Hospitality industry/ Pakistan
Skerlavaj et al.	2018	Perceived time pressure	+	Self-report
Jha & Varkkey	2018	Distrust	+	R&D Professionals/ India
		Competitive work environment	+	
		Perceived career insecurity	+	
		Lack of recognition	+	
		Lack of reciprocation	+	
		Lack of confidence in own knowledge	+	
Arshad & Ismail	2018	Workplace incivility	+	Private sector
Arian et al.	2018	Supervisor-supervisee distrust	+	Knowledge worker teams/ Saudi Arabia
Xiong et al.	2019	The environment of collaboration and knowledge sharing	-	International R&D teams
		Common and understandable knowledge hiding culture	+	
Zhao et al.	2019	Poor relationships of leaders	+	Self-report
Zhu et al.	2019	Performance-proven goal orientation	+	Self-report
Butt	2019	Restricted permissions by business	+	R & D teams
Semerci	2019	Task conflict	+	Software development companies
		Relationship conflict	+	
Isaac & Baral	2019	Job insecurity	+	Engineering industry/ America
		Reciprocity	+	
		Non-availability of knowledge	+	
		Task interdependence	+	
		Task complexity	+	
		Task uncertainty	+	
		Personality traits	+	
		Emotional intelligence	+	
		Workplace ostracism	+	
		Interpersonal trust	+	
		Territoriality	+	
Xiao & Cooke	2019	Workspace ostracism	+	Literature review
		Transformational leadership	-	
		The motivation for knowledge hiding	+	
		Distrust	+	
		Negative reciprocity	+	
Lin et al.	2020	Differentiated empowering leadership	+	Hotels/ China
		Individual focused empowering leadership	-	
Ali et al.	2020	Job insecurity	+	Knowledge experts/ Saudi Arabia
		Perceived well-being	-	
Anser et al.	2020	Ethical leadership	-	Service Sector/Pakistan
		Harmonious work passion	-	
Jahanzeb et al.	2020	Organisational injustice	+	Service Sector/ Pakistan
Mohd et al.	2020	Resource Scarcity	+	Project-based teams
		Task interdependence	+	
		Goal orientation performance	+	
Yao et al.	2020	Negative workplace gossip	+	Knowledge experts/ China

Table 2. Selected determinant knowledge hiding drivers

Code	Factor	Sample references
WO	Workplace Ostracism	Zhao et al (2016); Isaac & Baral (2019); Xiao & Cooke (2019)
WG	Workplace Gossip	Bogilovic et al (2019); Yao et al (2020)
WI	Workplace Incivility	Arshad & Ismail (2018); Ali et al (2020)
ID	Interpersonal Distrust	Arian et al (2018); Jha & Varkkey (2018); Xiao & Cooke (2019); Semerci (2019); Isaac & Baral (2019)
CWE	Competitive Work Environment	Jha & Varkkey (2018); Ali et al (2020)
LR	Lack of Reciprocation	Jha & Varkkey (2018); Xiao & Cooke (2019); Isaac & Baral (2019)
LTI	Low Task Interdependence	Huo et al (2016); Fong et al (2018); Isaac & Baral (2019); Mohd et al (2020); Semerci (2019)
T	Territoriality	Isaac & Baral (2019); Anser et al (2020)

Table 3. Experts' profile

Country	Gender (M/F)	Age groups (20s/30s/40s/50s+)	Education	Job position	Working experience (years)	Sector
Italy	M	40S	MSC	CEO-Funder	8	Service
	M	40S	MSC	sales manager	16	Manufacturing
	M	40S	MSC	Manager	18	Manufacturing
	M	50S	BSC	Manager	35	Service
	F	50S	MSC	CEO-Funder	25	Manufacturing
Iran	M	50S	MSC	CEO-Funder	30	Manufacturing
	F	40S	MSC	sales manager	16	Manufacturing
	M	30S	DBA	CEO-Funder	9	Service
	F	30S	BSC	factory manager	7	Manufacturing
	F	40S	MSC	deputy manager	13	Manufacturing

Table 4. Transformation table

Linguistic Variable	Value
Strongly Effective	9
Effective	7
Nearly Effective	6
neither effective nor ineffective	5
Nearly Ineffective	4
Ineffective	2
Strongly Ineffective	1

Table 5. Aggregated matrix

Italy	WO	WG	WI	ID	CWE	LR	LTI	T
WO	0.0	4.4	5.8	7.6	4.8	7.2	6.8	5.8
WG	6.4	0.0	3.2	5.4	4.8	4.2	8.0	6.0
WI	5.2	5.0	0.0	4.6	7.0	5.0	5.8	9.0
ID	8.0	8.2	7.0	0.0	3.6	6.0	8.2	7.2
CWE	4.2	5.0	5.0	2.4	0.0	5.4	3.4	6.6
LR	7.0	5.8	6.8	6.8	4.6	0.0	5.4	6.0
LTI	7.4	6.2	7.0	6.2	5.2	5.0	0.0	8.0
T	3.8	4.6	6.8	5.0	6.0	5.2	6.0	0.0
Iran	WO	WG	WI	ID	CWE	LR	LTI	T
WO	0	4	8	6	4.4	6	6.8	5
WG	6	0	3	5.6	5.2	6	4.6	3.8
WI	4.6	2.8	0	3.6	4.2	3	6	9
ID	6.4	7.8	6.4	0	2.8	5.2	7.4	7.8
CWE	4.4	5.8	4	5.4	0	4.6	2.8	1.8
LR	6.8	2.6	6	5.4	5	0	5.2	5.2
LTI	6.4	6.8	8	6.6	5.4	5.8	0	6
T	3.2	3	6.2	4.2	4.4	4.4	6.2	0

Table 6. Total relationship matrix

Italy	WO	WG	WI	ID	CWE	LR	LTI	T
WO	0.6471	0.6925	0.7566	0.7348	0.6584	0.7242	0.7965	0.8479
WG	0.6990	0.5463	0.6469	0.6387	0.6014	0.6146	0.7496	0.7761
WI	0.7104	0.6724	0.6193	0.6547	0.6735	0.6607	0.7476	0.8679
ID	0.8656	0.8244	0.8493	0.6692	0.7064	0.7728	0.9006	0.9571
CWE	0.5631	0.5484	0.5804	0.4977	0.4303	0.5466	0.5714	0.6774
LR	0.7690	0.7107	0.7673	0.7178	0.6526	0.5901	0.7704	0.8467
LTI	0.8039	0.7446	0.8008	0.7349	0.6906	0.7119	0.7006	0.9142
T	0.6397	0.6201	0.6926	0.6152	0.6120	0.6173	0.6991	0.6521
Iran	WO	WG	WI	ID	CWE	LR	LTI	T
WO	0.5193	0.5366	0.7309	0.6228	0.5287	0.5994	0.6758	0.6487
WG	0.5691	0.3957	0.5624	0.5504	0.4842	0.5383	0.5616	0.5453
WI	0.5189	0.4361	0.4804	0.4931	0.4507	0.4634	0.5689	0.6234
ID	0.6852	0.6404	0.7474	0.5465	0.5365	0.6266	0.7305	0.7389
CWE	0.4743	0.4523	0.5031	0.4812	0.3238	0.4503	0.4592	0.4411
LR	0.6025	0.4694	0.6438	0.5662	0.4985	0.4379	0.5977	0.5993
LTI	0.6937	0.6305	0.7829	0.6823	0.5892	0.6435	0.5954	0.7157
T	0.4823	0.4281	0.5832	0.4897	0.4415	0.4742	0.5553	0.4377

Table 7. Final analysis of the knowledge hiding drivers

Italy	R	D	R+D	R-D	C or E
WO	5.8580	5.6979	11.5559	0.1601	C
WG	5.2726	5.3595	10.6321	-0.0869	E
WI	5.6065	5.7133	11.3198	-0.1068	E
ID	6.5454	5.2630	11.8084	1.2824	C
CWE	4.4154	5.0253	9.4406	-0.6099	E
LR	5.8247	5.2381	11.0627	0.5866	C
LTI	6.1016	5.9358	12.0374	0.1658	C
T	5.1482	6.5394	11.6876	-1.3912	E
Iran	R	D	R+D	R-D	C or E
WO	4.8622	4.5453	9.4075	0.3169	C
WG	4.2071	3.9893	8.1963	0.2178	C
WI	4.0348	5.0340	9.0688	-0.9992	E
ID	5.2521	4.4322	9.6843	0.8199	C
CWE	3.5854	3.8531	7.4385	-0.2677	E
LR	4.4152	4.2335	8.6487	0.1817	C
LTI	5.3331	4.7444	10.0775	0.5887	C
T	3.8920	4.7502	8.6422	-0.8582	E

Table 8. Comparing knowledge hiding determinants at the interpersonal level

	Rank		Importance	
	Italy	Iran	Italy (Blue)	Iran (Orange)
LTI	1	1	22%	28%
ID	2	2	18%	20%
T	3	6	16%	8%
WO	4	3	14%	16%
WI	5	4	11%	12%
LR	6	5	9%	8%
WG	7	7	6%	6%
CWE	8	8	3%	3%

