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Future workplace reimagination: A multiscenario analysis on entrepreneurial small and medium internationalisers

Hannan Amoozad Mahdiraji[1] | **Fatemeh Yaftiyan**[2] | **Vahid J. Sadeghi**[3] | **Demetris Vrontis**[4,5,6]

[1]Birmingham Business School, University of Birmingham, Birmingham, UK

[2]Faculty of Management, University of Tehran, Tehran, Iran

[3]Aston Business School, Aston University, Birmingham, UK

[4]Gnosis: Mediterranean Institute for Management Science, School of Business, University of Nicosia, Nicosia, Cyprus

[5]Department of Management Studies, Adnan Kassar School of Business, Lebanese American University, Beirut, Lebanon

[6]S P Jain School of Global Management, Singapore Campus, Singapore

Correspondence
Vahid J. Sadeghi, Aston Business School, Aston University, Birmingham, UK.
Email: v.sadeghi@aston.ac.uk

Abstract

This paper aims to encounter the scholarly demand for comprehensive identification and investigation of the factors that highlight the sense of the "workplace of the future." Besides, this study sheds in-depth qualitative and quantitative insights into analysing such drivers in international entrepreneurial small and medium enterprises of emerging economies like Iran. A mixed method of systematic literature review and hesitant triangular fuzzy Delphi was initially employed to identify and finalise the significant factors. Afterwards, the causal level-based relationship network and the finalised factors' power map were accomplished for three distinct scenarios (i.e., the pessimistic, probable and optimistic conditions). To this end, a novel integration of hesitant triangular fuzzy sets and interpretive structural modelling-matrix-based multiplication applied to a classification was designed and applied. As a result, future workplace concerns were systematically reviewed. From the initial list of 34 factors, eight were selected from the perspective of three panels of experts (15 international entrepreneurs) as the most crucial for international small and medium enterprises due to implementing the hesitant triangular fuzzy sets. Furthermore, the selected factors were categorised and levelled according to the novel interpretive structural modelling-matrix-based multiplication applied to a classification method developed in this article. Accordingly, for each scenario studied, from low to high uncertainty and indeterminacy, a separate conceptual model illustrating the relationship among the factors propelling the reimagining of the future of the workplace was presented.

KEYWORDS

hesitant triangular fuzzy set, hesitant triangular fuzzy Delphi, interpretive structural modelling, small and medium enterprises, the workplace of the future

INTRODUCTION

The widespread concern about reimagining the future workplace resulted from the metamorphosis of work and workers (Antonacopoulou & Georgiadou, 2021). Recent technological feats have generated a constant workplace evolution from human capital to automation. Thus, the future of work is no longer sci-fi, and it has already appeared in some developed countries' organisations. As evident, around 50% of job positions will soon be replaced by smart robots embedded with artificial intelligence (Schwartz et al., 2018). As a result, it will reduce physical and psychological workplace injuries by 11% in 2030 (CSIRO, 2018). Despite such practical advantages, several challenges remain (Cheng et al., 2022). For instance, in the case of disruptive technologies, the most controversial distress of automation, that is, conflicts between knowledge staff and smart machines, has

exacerbated the need to reimagine the future workplace and workstyle (Brougham & Haar, 2018; Howard, 2019; Leonard & Tyers, 2021).

On the other hand, the future workplace configuration covers environmental and societal facets as well as technological ones (Anthony, 2022). These aspects have parallelly amplified the necessity of the considered concern. For instance, ageing staff have surrounded a considerable portion of the human capital in most regions (e.g., 41% of the Canadian labour market) (NUPGE, 2022). Accordingly, the future ergonomic redesign of workplaces is urgently necessary for labour health (Cheng et al., 2022). Similarly, reshaping the future workplace can inspire psychological needs of knowledge and diverse capital such as self-sufficiency, freedom, innovation, communication, collaboration and well-being (Selimović et al., 2021). Above all, empowering employees to work from anywhere and anytime is a modern business obligation, which can be conducted by reimagining future workplace flexibility (Bal & Izak, 2021). This issue is more critical in developing countries, such as Iran, which seeks to be compatible with the gig economy (Ungerer, 2021). Because workplace flexibility is the central pillar of holding the gig knowledge capital as independent contractors and freelancers (Bal & Izak, 2021; Ungerer, 2021), conversely, some external factors have equally encouraged reshaping the future workplace. In this vein, the deregulation of administrations can be considered, such as modern labour law made in the 21st century (Bellace, 2018). Besides, the global economy and trade liberalisation have triggered this notion by increasing the number of competitors and the possibility of benchmarking (Love et al., 2019; Schermuly et al., 2021). Tragically, a distressing signal of global warming has led to reshaping the workplace towards an eco-friendly one (Schell & Bischof, 2022). Recently, the urgent need to have safe and secure work due to the COVID-19 pandemic has often been discussed (Hou et al., 2021), and its post-effects have exacerbated this imperativeness.

Consequently, the workplace of the future is rooted in different internal and external factors. Inevitably, decision-makers must precisely evaluate such significant factors to be pioneers in this theme. Nonetheless, multiple integrated frameworks of the internal and external agents still need to be improved, illustrating how they interact and relate in different conditions. Moreover, there is no reliable measuring of the factors' priority in reimagining the future workplace (Cheng et al., 2022). As both scholarly and practical demand, evaluating the rank, interactions and dependencies between such factors is missing from most future workplace guidelines (Anthony, 2022; Selimović et al., 2021).

Methodologically, qualitative procedures like systematic literature review (SLR) are mainly applied to identify such factors. Recently, Schermuly et al. (2021) employed the traditional Delphi technique. Nevertheless, recent researchers have often employed a combination of SLR and fuzzy Delphi to identify and screen the research items (Mahdiraji et al., 2022). To the best of our knowledge, the integration of fuzzy Delphi and hesitant triangular fuzzy sets (HTFS) has yet to be developed, which can concurrently consider both the hesitation and fuzziness of human thinking and the ever-changing environment. There are several pros to the quantitative approaches, such as providing worthwhile insight into the sequence of reality and materialised arguments, prejudice reduction, vast data collection in less time and measurable and computer-based outputs (Savela, 2018).

Nonetheless, statistical analysis and structural equation modelling were hardly employed as quantitative methods in this area (Selimović et al., 2021). However, multicriteria decision-making (MCDM) is a useful quantitative tool for achieving a rapid universal decision. As such, the multilayer MCDM methods can provide decision-makers with different outputs with less computation (Hajiagha et al., 2021; Jafari-Sadeghi et al., 2021). For instance, a unique method of interpretive structural modelling-matrix-based multiplication applied to a classification (ISM-MICMAC) can concurrently analyse the research items from different viewpoints, that is, level, cause and effect interactions, as well as driving and dependence power (Jafari-Sadeghi et al., 2021). Likewise, new uncertain approaches such as HTFS can promote MCDM by considering the hesitation and fuzziness of the inherently vague nature of human judgement and environment (Hajiagha et al., 2021; Zhao et al., 2014). However, an integration of HTFS and ISM-MICMAC has not yet been established. Ergo, this paper sheds qualitative and quantitative light on investigating the factors that lead to future workplace reimagination. This paper precisely answered the following five research questions.

Research Question 1. Employing the SLR approach, what is the initial categorised list of the propelling factors towards reimagining the future of the workplace?

Research Question 2. Which identified factors are the most available ones for Iran's international entrepreneurial small and medium enterprises (SMEs) based on experts' views?

Research Question 3. How will each selected factor be assigned to a cluster according to its driving and dependence powers, determined by experts' opinions, under high, middle and low levels of uncertainty and vagueness?

Research Question 4. What is the priority of each selected factor based on experts' declarations under the three scenarios above?

Research Question 5. How the selected factors interact is compatible with experts' viewpoints under triple scenarios?

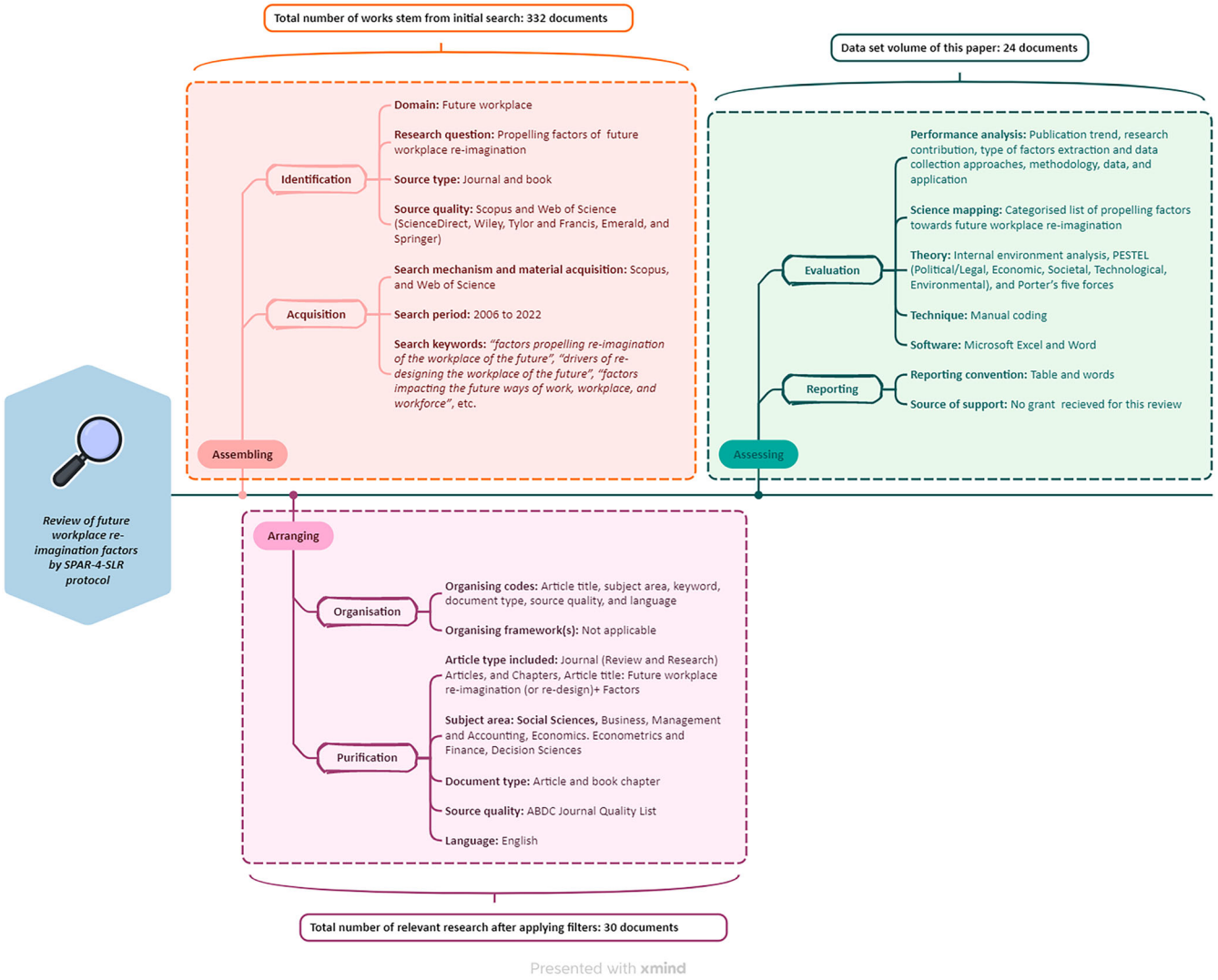


FIGURE 1 Systematic literature review (SLR) framework. SPAR-4-SLR, Scientific Procedures and Rationales for SLRs

To this end, a novel combination of SLR and hesitant triangular fuzzy Delphi (HTF-D) is initially applied to identify and select the most available factors for international entrepreneurial SMEs in Iran. Then, a novel HTFS–ISM-MICMAC method is developed for the first time to evaluate the finalised factors simultaneously based on the hesitation and fuzziness of experts' views. In this vein, a multiscenario analysis provides more reliable findings according to the pessimistic, probable and optimistic views. Consequently, the integrated framework provides practical strategies to facilitate redesigning the future workplace in emerging economies like Iran or encourage governmental support.

The rest of this article is organised as follows. The literature background is systematically reviewed in the next section to extract a categorised list of the factors changing the future workplace. Section 3 explains two research methodology streams, HTF-D and HTF–ISM-MICMAC, and data collection. Next, Section 4 illustrates the results of the triple scenarios, level-based causal relationship networks and power maps. Then, Section 5 discusses the theoretical, practical and managerial implications. Eventually, Section 6 ends with final remarks, research limitations and future recommendations.

LITERATURE BACKGROUND: FACTORS CHANGING THE WORKPLACE OF THE FUTURE

Reimagining the future workplace coincides with the evolution started by the mechanical staff in the 1800s. Since then, the blue-collar employees in the 1900s ended with the knowledge and gig staff in the 21st century (Khanna & New, 2008). Indeed, *demographic changes in the workforce* have mainly been discussed as a significant incentive (Cheng et al., 2022). Parallelly, new disruptive technologies have exacerbated this notion (Selimović

et al., 2021). For instance, the concerns of automation owing to the gradual employment of artificial intelligence and robotics have frequently been studied in this field (Leonard & Tyers, 2021). Concurrently, *globalisation* and accessible broad communication with stakeholders have highlighted this pattern (Schulte et al., 2020). Likewise, *flexibility* has often been acknowledged as a leading factor against a dramatic change in work, workplace and workforce (Bal & Izak, 2021). Above all, the unprecedented impacts of the *COVID-19 pandemic* on the nature of work have recently been a novel irritant in this area (Antonacopoulou & Georgiadou, 2021). Overall, (i) the intricate interactions among these factors that impact the nature of work, workplace and workforce, (ii) their accelerated and revolutionary modifications and (iii) their consequences are all called the "future of work, workplace, and workforce" (Cheng et al., 2022). Identifying and investigating such factors from different perspectives (rank, interactions, driving and dependence power) is a scholarly demand.

This study contributes to an in-depth systematic review of the contemporary literature in a proper context for more evidence. As illustrated in Figure 1, a triple-stage (assembling, arranging and assessing) protocol of Scientific Procedures and Rationales for SLRs was applied (Paul et al., 2021). Eight indicators were emphasised: research required input and scope, source type, quality, language, search mechanism, period and keyword.

Accordingly, the propelling factors towards (research question) future workplace reimagination (research scope) were addressed. Plus, English journals and books (type and language of source), review and research articles and book chapters (document type) that exist in Scopus and Web of Science were mentioned, particularly those belonging to five famed and valid databases: ScienceDirect, Wiley, Tylor and Francis, Emerald and Springer. Scopus and Web of Science appropriately provide worthwhile information for investigating articles, like year, country and type of article (Paul et al., 2021). Moreover, journals with an admissible grade according to the Australian Business Deans Council (ABDC) (source quality) were scrutinised. The prioritising indicators and techniques vary in institutions. This leads to various data. Hence, ABDC's confirmed reliability and popularity motivated us to employ it here (Paul et al., 2021). Above all, we consider three key features to ensure an impartial journal selection process. First, we emphasise the article's accessibility. Second, we concentrate on reputable journals and research pertaining to business, economics and psychology. To achieve this goal, we should avoid utilising the Journal Citation Reports, which include almost all disciplines, such as engineering journals, that are not in line with our objectives. Finally, although the UK's Chartered Association of Business Schools' Journal Guide (ABS) is a viable option, we favour ABDC due to its minor ranking differences and alignment with our selection criteria. This can be confirmed by previous research prioritising ABDC compared with ABS (Zhang, 2021).

Hence, articles and book chapters with titles, abstracts and keywords pertinent to this research realm were sought, and 332 works were initially found (material acquisition). The distinguished sources were published from 2006 to 2022 (search period) with attached keywords (search keywords) such as "factors propelling reimagination of the workplace of the future," "drivers of re-designing the workplace of the future" and "factors impacting the future ways of work, workplace, and workforce." To ensure the most accurate results, the search used was formulated as "TITLE-ABS-KEY ((("workplace of the future" OR "Future Workplace" OR "the future ways of work" OR "future workforce") AND ("re-imagination" OR "re-designing" OR "Factors")) AND (DOCTYPE (ar) AND NOT DOCTYPE (bk) AND NOT DOCTYPE (cp) AND NOT DOCTYPE (ed)) AND (LANG (English)) AND (PUBYEAR AFT 2006 AND PUBYEAR BEF 2022)."

Second, 170 items, including articles, conference papers and book chapters, were found to be duplicated, and they were eliminated. Next, the filters above criteria were applied to 162 works. Thus, 132 irrelevant research were ignored. After fully reading 30 relevant works, six papers were recognised as unrelated. This data source formation section eventually compiled 24 more relevant studies (journal reviews, research articles and book chapters). Consequently, the concise information of these lines of research, like contribution, type of factors extraction and data collection approaches, methodology, data and application, is demonstrated in Table 1.

With this in mind, former scholars mainly contributed to analysing the impacts of propelling factors on the workplace, way of work and workforce, which inevitably led to redesigning the future of the workplace. An SLR was often applied to extract such factors (Table 1). SLR is a rigorous qualitative approach to impartially tracing the evidence, examining its quality and synthesising it (Hajiali, 2020; Mallett et al., 2012). Indeed, SLR attempts to minimise prejudice and warrant future replicability (Mallett et al., 2012). However, the qualitative and quantitative mixed methods, for example, SLR and fuzzy Delphi, will result in a more reliable item selection process (Hajiagha et al., 2021; Jafari-Sadeghi et al., 2021). Besides, searching databases, interviews, questionnaires, surveys and ethnographic observations were mainly employed to collect data (Table 1). Qualitative methodologies, for example, case studies, interpretive analyses, SLRs, thematic analyses and the Delphi technique, were most often used to evaluate these items (Table 1). Nevertheless, such limited scholars who employed the quantitative methodologies commonly worked with statistical analysis (Brougham & Haar, 2018; Schermuly et al., 2021) and structural equation modelling (Selimović et al., 2021) embedded with the crisp data type. At the same time, the ever-changing environment uses uncertain approaches such as fuzzy sets

TABLE 1 Literature overview: Reimagining the workplace of the future.

Scholar(s)	Year	Contribution	Type of factors extraction approach	Type of data collection approach	Type of methodology		Type of data	Application
					Qualitative	Quantitative		
Kompier	2006	Analyse the impacts of main changes in the future of work and employees' health and well-being	LR	SD	IA		—	—
Khanna and New	2008	Analyse the future of the work programme	LR	SD survey	CS		—	Capital One Financial Corporation
Rantanen	2011	Discuss the factors that impact the future of work						
Graham et al.	2012	Discuss the factors that impact the future of the workplace						
Armaou and Antoniou	2016	Investigate the factors that change the world of work						
Bellace	2018	Discuss the factors that form the future workplace	LR	SD	IA		—	Asia
Brougham and Haar	2018	Investigate the employees' perceptions towards the future workplace	LR	SD surveys	TA	SA	Crisp	New Zealand's service sector
Ludike	2018	Analyse how digital disruption is impacting the future of the workplace	LR	SD	IA		—	—
Chatrakul Na Ayudhya et al.	2019	Explore the impacts of global economic dilemma on the future of work–life balance	LR	SD I	IA TA		—	Greece
Howard	2019	Describe the implications of artificial intelligence in the future workplace	LR	SD	IA		—	—
Beno	2020	Examine the factors that impact the future of the workplace	LR	SD	IA		—	—
Johnson et al.	2020	Discuss the factors that impact the workplace and employees' mental health and well-being	LR	SD	IA		—	Australia
Schulte et al.	2020	Identify and discuss the scenarios and hazards for the future of the work	SLR	SD	TA		—	—
Antonacopoulou and Georgiadou	2021	Discuss the future of work and the workplace, considering the COVID-19 outbreak	LR	SD	IA		—	—
Bal and Izak	2021	Analyse the role of different types of flexibility in redesigning the future workplace	SLR	SD	BA		—	—
Bentley et al.	2021	Examine the megatrends and forces towards the future of work with the contribution of human factors and ergonomics	LR	SD	IA		—	—
Hou et al.	2021	Investigate how the external environmental factors (COVID-19 outbreak) modify the future workplace	LR	SD I	TA		—	Consultant firms
Leonard and Tyers	2021	Assess the impacts of advanced technologies on the future of work	LR	SD I EO	IA		—	InfraTech's central London headquarters
O'Rourke	2021	Discuss the impacts of the COVID-19 outbreak on the future workplace	LR	SD	IA		—	—

(Continues)

TABLE 1 (Continued)

Scholar(s)	Year	Contribution	Type of factors extraction approach	Type of data collection approach	Type of methodology		Type of data	Application
					Qualitative	Quantitative		
Schermuly et al.	2021	Investigate the future workplace coaching	LR	SD I	DT	SA	Crisp	German-speaking countries
Selimović et al.	2021	Examine the role of employees' involvement and well-being in digital workplace transformation	LR	SD Q		SA SEM	Crisp	Financial institutions in Bosnia and Herzegovina
Cheng et al.	2022	Analyse the contemporary literature on future work approaches and their linkage with workplace safety	SLR	SD	SLR		—	—
Kulik	2022	Examine the opportunities created by the COVID-19 outbreak towards a safe and healthy workplace design	LR	SD	IA		—	—
Schell and Bischof	2022	Empirically investigate the transformation from a traditional organisation to a holacratic one and the need for new organisational design	CS	SD I EO	GT		—	Swiss holacratic organisations
Current study	2022	Investigate internal and external propelling factors towards the future workplace reimagination	LR	SD Q		HTF-D, ISM-MICMAC	HTFS	Iran's SMEs

Abbreviations: BA, bibliometric analysis; CS, case study; DT, Delphi technique; EO, ethnographic observation; GT, grounded theory; HTF-D, hesitant triangular fuzzy Delphi; HTFS, hesitant triangular fuzzy set; I, interviews; IA, interpretive analysis; ISM-MICMAC, interpretive structural modelling-matrix-based multiplication applied to a classification; LR, literature review; Q, questionnaire; SA, statistical analysis; SD, searching databases; SEM, structural equation modelling; SLR, systematic LR; SME, small and medium enterprise; TA, thematic analysis (coding technique).

(FSs) and hesitant FSs (HFSs) (Hajiagha et al., 2021). Furthermore, MCDM is a unique choice to underpin a comprehensive decision (Hajiagha et al., 2021; Jafari-Sadeghi et al., 2021). These research applications were also mainly approved by studying consultants and financial firms in developed countries such as the United Kingdom, the United States, Germany and Australia (Table 1). In comparison, the SMEs of emerging economies like Iran suffer from even substandard workplaces (Tan et al., 2016). On the other hand, the performed SLR and a fleeting review of the grey literature (reports) provided the authors with 34 factors propelling the reimagination of the future workplace. In addition to that, 21 drivers were achieved by merging similar ones. These factors were divided into two main streams (internal and external), five and six categories, respectively. To this end, the theories of *internal environment analysis*, *Political/Legal*, *Economic*, *Societal*, *Technological and Environmental* and *Porter's five forces* were applied. Consequently, a categorised list of these influential factors and their brief description is illustrated in Table 2.

To bridge the aforementioned research gaps, this paper investigates the factors influencing the reimagination of the future workplace, considering Iran's international entrepreneurial SMEs. An original integration of HTFS and the fuzzy Delphi technique is innovatively developed to scrutinise these factors and achieve the most significant ones. A novel version of HTFS and ISM-MICMAC is applied initially to examine such factors from different perspectives (rank, interactions and power map). Eventually, a multiscenario analysis provides the authors with more reliable results based on a hesitant fuzzy condition. The results provide an integrated framework for reshaping and/or redesigning the future workplace of international entrepreneurial SMEs in emerging economies like Iran, whether facilitated by business owners or supported by regulatory enterprises.

METHODOLOGY

The research methodology is mapped in Figure 2. This paper employs a qualitative and quantitative mixed method as follows. First, systematic SLR and HTF-D have been used to identify, scrutinise and select the most significant factors leading to the future workplace reimagination of international entrepreneurial SMEs in Iran. Subsequently, an integration of HTFS and ISM-MICMAC has been innovatively designed and applied to investigate the finalised factors from different perspectives (i.e., rank, interactions, driving and dependence power). A multiscenario analysis embedded with different views (pessimistic, most probable and optimistic) has also been employed to proceed with data analysis.

TABLE 2 List of the propelling factors towards reimagining the future of the workplace.

Main stream	Category	Code	Factor	Description	Literature support
Internal	Management and structure	IMS_1	Organisational culture	Reflects a radical change in management mode. Switching to joint leadership and obligation stimulates innovation, collaboration between a diverse workforce and employees' participation in implementing decisions	Cheng et al. (2022); World Economic Forum (2020); Selimović et al. (2021)
		IMS_2	Communication and cooperation	Poor communication in the workplace is a challenge in today's work. Besides, the increasing popularity of employee empowerment via teamwork and collective performance highlights the need for a comfortable, communicative workplace	Khanna and New (2008); Kompier (2006); Selimović et al. (2021)
		IMS_3	Transparency	Reflects a requirement of visibility and transparency in exchanging information and knowledge towards a trust engagement and collaboration	Cheng et al. (2022); Selimović et al. (2021)
		IMS_4	Training and monitoring	Controlling and training employees over working time is a big challenge, requiring modern procedures with a well-designed workplace	Armaou and Antoniou (2011); Bentley et al. (2021); Schulte et al. (2020)
	Research and development	IRD_1	Benchmarking	Reflects the possibility of scanning the famous workplace and workspace usage, learning and designing an appropriate one	Kaur and Solomon (2022); Love et al. (2019); van der Voordt and Jensen (2018)
	Financial	IF_1	Liquidity	Ascending incomes and fund accessibility will foster organisations to invest in changing the future workplace	Cheng et al. (2022); Ludike (2018)
	Operational	IO_1	Creativity	Creativity and innovation are integral to employee intention, experience and growth. An inspiring workplace inspires creativity and innovation across employees	Cheng et al. (2022); Selimović et al. (2021)
		IO_2	Alignment	Adaptability to the changing nature of work results in reimagining the future workplace	Cheng et al. (2022); Howard (2019); Selimović et al. (2021)
		IO_3	Performance	Redesigning the workplace to be compatible with new trends is vital to enhancing productivity and efficiency	Cheng et al. (2022); Khanna and New (2008); Ludike (2018); Selimović et al. (2021)
		IO_4	Flexibility	It is a critical need of modern work, the workplace and the workforce. Through an agile workplace, flexibility will somewhat be attained to extend resiliency and connect employees and other stakeholders to fulfil the varying needs in an ever-changing market	Bal and Izak (2021); Beno (2020); Cheng et al. (2022); Khanna and New (2008); Selimović et al. (2021)
	Human resource	IHR_1	Employee's profile	The modification of the worker's profile (knowledge, experience and capabilities) reflects the modification. Holding such knowledge workers requires a creative, comfortable and transparent workplace	Cheng et al. (2022); Khanna and New (2008); Ludike (2018); Schermuly et al. (2021); Selimović et al. (2021)
		IHR_2	Employees' needs	Refers to the physical (e.g., health, ergonomics, security and well-being) and psychological (e.g., self-sufficiency, qualifications and freedom) needs	Cheng et al. (2022); Johnson et al. (2020); Selimović et al. (2021)
External	Market	EM_1	Competition	Changing the future of the workplace is an essential action to move forward with domestic and foreign competitors	Cheng et al. (2022); Graham et al. (2012); Kompier (2006)
	Political/legal	EP/L_1	Legislative amendments	Refers to revising the extant laws related to the workplace and workforce. For example, developing modern labour law	Bellace (2018); CSIRO (2018); Ludike (2018); Mattila-Wiro et al. (2020)

(Continues)

TABLE 2 (Continued)

Main stream	Category	Code	Factor	Description	Literature support
				will revolutionise the workplace. Besides, occupational health and safety legislation has resulted in redesigning future work towards injury reduction. Moreover, government environmental regulations have impacted the workplace redesign towards an eco-friendliness atmosphere	
	Economic	EEC_1	Economic condition	The economic downturn is a significant threat; however, it is an opportunity for several firms to reimagine the future workplace in line with the increasing remote work upsurge	Chatrakul Na Ayudhya et al. (2019); Cheng et al. (2022); Schulte et al. (2020)
	Societal	ES_1	Demographic changes	Refers to "a more diverse workforce, an ageing workforce (older workers work longer), freelancers, low birth rate, early retirement, increased conflicts, migration, growing digital literacy (knowledge growth) among the whole society, etc."	Beno (2020); Bentley et al. (2021); Cheng et al. (2022); Khanna and New (2008); Kompier (2006); Ludike (2018); Rantanen (2011); Schermuly et al. (2021); Schulte et al. (2020); Selimović et al. (2021)
		ES_2	Hazard, risk and stress	Refers to "the physical and psychosocial risks such as musculoskeletal risks, increased mental/physical injuries, work intensification, irregular work hours, telework with less support, a growing rate of worker turnover, increased job insecurity, workplace violence, poor work-life balance, social isolation, low job satisfaction, role conflict, etc."	Armaou and Antoniou (2011); Chatrakul Na Ayudhya et al. (2019); Cheng et al. (2022); CSIRO (2018); World Economic Forum (2020); Graham et al. (2012); ILO (2017, 2019); Johnson et al. (2020); Kompier (2006); Mattila-Wiro et al. (2020); NORA (2020); Rantanen (2011)
	Technological	ET_1	The advent of modern digital technology	Refers to the total utilisation of information and communication technologies, artificial intelligence, smart machines, etc. The nature of work, workplace and workforce have changed, mainly due to automation	Armaou and Antoniou (2011); Bellace (2018); Beno (2020); Bentley et al. (2021); Brougham and Haar (2018); Cheng et al. (2022); Graham et al. (2012); Howard (2019); Johnson et al. (2020); Khanna and New (2008); Kompier (2006); Li (1997); Ludike (2018); Rantanen (2011); Schermuly et al. (2021); Schulte et al. (2020); Selimović et al. (2021)
	Environmental	EEN_1	Globalisation	Reflects global trade liberalisation. Globalisation harms maintaining a skilled workforce by streamlining migration. Nevertheless, it boosts the number of competitors, high-level income and broad relationship networks	Bellace (2018); Beno (2020); Bentley et al. (2021); Cheng et al. (2022); CSIRO (2018); ILO (2017); Kompier (2006); Mattila-Wiro et al. (2020); Rantanen (2011); Schermuly et al. (2021); Schulte et al. (2020)
		EEN_2	Climate change	This tragedy led to widespread concern about the sustainable development paradigm globally. This theme has underpinned the reimagination of an eco-friendliness workplace	ILO (2017, 2019); Mattila-Wiro et al. (2020); Schulte et al. (2020)
		EEN_3	COVID-19 pandemic	Reimagining the future workplace is essential to struggle with the current and post-negative effects of this health crisis on the workforce and workplace	Antonacopoulou and Georgiadou (2021); Hou et al. (2021); Kulik (2022); Schermuly et al. (2021); Selimović et al. (2021)

Indeed, seven main options were available to deal with uncertainty, including FS (Zadeh, 1965), HFS (Torra, 2010), intuitionistic FS (Atanassov, 1986), Pythagorean FS (Yager, 2013), Fermatean FS (Senapati & Yager, 2020), picture FS (PFS) (Cuong, 2013) and spherical FS (Ashraf et al., 2019). Despite some recent papers, we attempted to avoid overdoing a consideration of vagueness by selecting the most appropriate procedure for this research. In so doing, each aforementioned uncertainty approach was comprehensively analysed in Table 3.

Accordingly, when experts cannot evaluate the importance of some alternatives by binary (or 0 [no], 1 [yes]) logic, they must use one of the aforementioned uncertainty approaches depending entirely on the

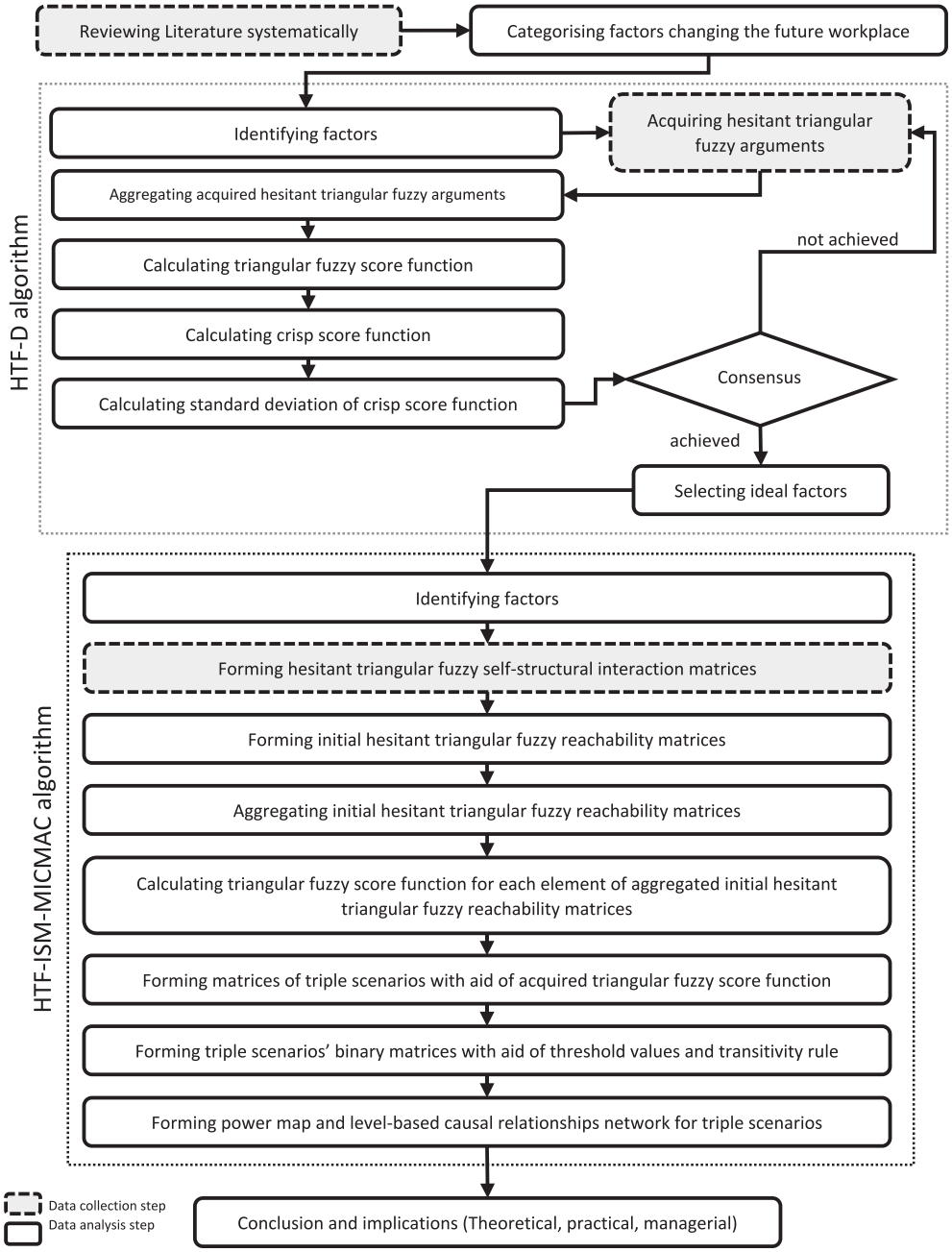


FIGURE 2 Research framework. HTF-D, hesitant triangular fuzzy Delphi; ISM-MICMAC, interpretive structural modelling-matrix-based multiplication applied to a classification

problem and alternative characteristics and experts' views (Zadeh, 1965). For instance, if the experts assess that the neutral membership degree of alternatives is meaningless (or is equal to zero) due to, for example, alternatives essentiality, orthopair FSs (intuitionistic FS, Pythagorean FS and Fermatean FS) could be substituted with PFS and PFS (Ashraf et al., 2019; Cuong, 2013). Orthopair FSs can consider membership and nonmembership degrees (Senapati & Yager, 2020). With this in mind, if the membership degree and nonmembership degree summation is equal to one, the FS theory and HFS are reliable. They must be used instead of orthopair FSs to avoid time-consuming and complex questionnaires and computations (Senapati & Yager, 2020). Nonetheless, if experts have a set of possible values for membership degrees (or cannot assess the importance of an alternative through only one membership value), using HFS is necessary (Torra, 2010). All aforementioned presumes were true in this research, by which applying an HFS was qualified to cope adequately with uncertainty and vagueness. Below is a brief overview of data collection, HTFS preliminaries, HTF-D and HTF–ISM-MICMAC techniques.

Data collection

This survey sample covers experts from international entrepreneurial SMEs in Iran. Snowball sampling was

TABLE 3 Comprehensive analysis of seven available uncertainty approaches.

Available uncertainty approaches	Developer	Year	Indices					Definition	Condition	Logical application		
			$\tilde{P}_A(x)$	$P_A(x)$	$H_A(x)$	$I_A(x)$	$N_A(x)$					
Fuzzy set	Zadeh	1965	✓					A is an FS on a universe set X in the form of $A=\{x,\tilde{P}_A(x)\|x\in X\}$	$0\le P_A(x)\le 1$	When experts cannot binary (0, 1) assess an alternative	Instead, they can evaluate it via only membership value	That is, $\tilde{P}_A(x)$ at any point has one possible (fuzzy) value in [0, 1]
HFS	Torra	2010			✓			An HFS on a universe set X is a function that, when exerted on each x in X, returns a subset of values in $[0,1]$. A is an HFS on a universe set X in the form of $A=\{<x,H_{A(x)}>\|x\in X\}$	$0\le H_A(x)\le 1$			However, they hesitate between several possible membership values. That is, $P_A(x)$ at any point has a set of some (crisp) values in [0, 1]
IFS	Atanassov	1986		✓			✓	A is an IFS (or PyFS or FFS) on a universe set X in the form of $A=\{x,P_A(x),N_A(x)\|x\in X\}$ *Note that A will be an *FS* when $N_A(x)=1-P_A(x)$	$0\le P_A(x)+N_A(x)\le 1$		Instead, they need both membership and nonmembership values to examine it. That is, $P_A(x)$ and $N_A(x)$ at any point have one possible (crisp) value in [0, 1]	
PyFS	Yager	2013							$0\le P^2{}_A(x)+N^2{}_A(x)\le 1$			
FFS	Senapati and Yager	2020							$0\le P^3{}_A(x)+N^3{}_A(x)\le 1$			
PFS	Cuong	2013		✓		✓	✓	A is a PFS (or SFS) on a universe set X in the form of $A=\{x,P_A(x),I_A(x),N_A(x)\|x\in X\}$ *Note that A will be an *IFS* (*or PyFS or FFS*) when $I_A(x)=0$	$0\le P_A(x)+I_A(x)+N_A(x)\le 1$		Instead, they evaluate it via three values: membership, neutral and nonmembership. That is, $P_A(x)$, $I_A(x)$ and $N_A(x)$ at any point have one possible (crisp) value in [0, 1]	
SFS	Ashraf et al.	2019							$0\le P^2{}_A(x)+I^2{}_A(x)+N^2{}_A(x)\le 1$			

Abbreviations: FFS, Fermatean fuzzy set; $I_A(x)$, neutral membership degree; IFS, intuitionistic fuzzy set; $H_A(x)$, set of possible membership degrees; HFS, hesitant fuzzy set; $N_A(x)$, nonmembership degree in [0, 1]; $P_A(x)$, membership degree; $\tilde{P}_A(x)$, fuzzy membership degree; PFS, picture fuzzy set; PyFS, Pythagorean fuzzy set; SFS, spherical fuzzy set.

applied here in detail. That is, chain-referral sampling is cost-effective and quickly finds reliable sources. Contrary to statistical research, which employs particular approaches (e.g., Krejcie and Morgan table or Cochran formula) to determine the sample size, there is no unique procedure to determine the number of participants in studies with the MCDM technique (Hashemi et al., 2021). Jafari-Sadeghi et al. (2023) summarised recent studies that discussed the sample size of MCDM research. Two factors have been prioritised in this literature to establish this indicator, including the results' robustness and consistency. Recent scholars unanimously declared that involving 3 to 15 respondents will generate robust results (Hashemi et al., 2021; Jafari-Sadeghi et al., 2023). Considering this yield [3, 15], snowball sampling was a determinant in selecting 15 experts. Experts could construct the chain referral with 15 individuals with the rare traits we were looking for. On the other hand, some others expressed that involving more than 10 participants may lead to low consistency when all of them are proficient (Jafari-Sadeghi et al., 2023; Tarei et al., 2018). As a clue, they divided more than 10 respondents into different low-sized panels involving two to six experts, allowing for consistent results (Jafari-Sadeghi et al., 2023). We divided 15 experts into three specific panels, including five respondents in each panel, to observe all the points raised.

Ergo, the structured questionnaires were emailed to three expert panels a few days before attending each online session. To better sense, the panels' profile is illustrated in Table 3. These experts (i) were at least 30 years old, (ii) had at least 3 years of managerial experience, (iii) had been the central decision-makers of international SMEs for at least 4 years (service-oriented organisations), (iv) were familiar with human resource management concepts and the future of the workplace (i.e., attending relevant courses) and (v) had a university qualification degree of at least a bachelor in engineering or management. Furthermore, one academic professional (assistant or associate professor) attended these sessions for each panel (research team members) to facilitate the data-gathering procedure. These experts from academia were entrepreneurship, decision-making and strategic management professionals (Table 4).

Since then, three distinct online sessions were initially organised for three panels to participate in completing the first structured questionnaire pertinent to HTF-D. These sessions were performed via Microsoft Teams, each lasting about 2 h (half an hour for a briefing by experts from academia and 90 min for the survey). The second part was assigned to compiling the inputs of HTF–ISM-MICMAC. In doing so, three distinct online sessions were again arranged for three panels to complete the second structured questionnaire associated with HTF–ISM-MICMAC. These meetings were conducted through the same meeting platform, each lasting around 3 h (1 h for briefing and 2 h for participation and completing the questionnaires).

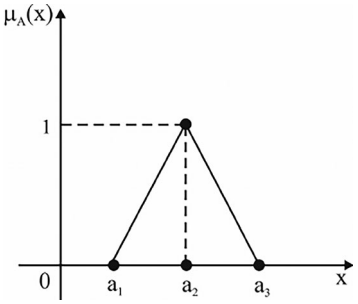
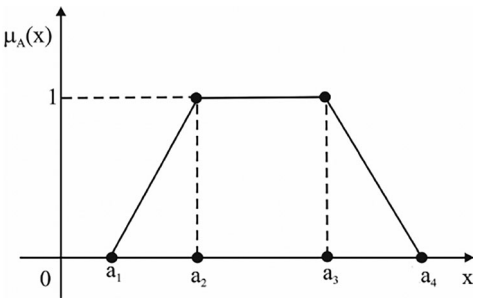
HTFS preliminaries

The HFS was defined by Torra (2010). Considering a set of crisp possible values for membership, HFS is a robust technique to face the group decision-makers' hesitation. Interestingly, membership function (MF) is essential to avoid crisp value in assessing alternatives

TABLE 4 Experts' profile.

Expert ID	Panel	Gender	Age	Type (I = industry; A = academia)	Role	Experience
E_1	A	M	40s	I	HRM manager	12
E_2		M	50s	I	CEO	20
E_3		F	40s	I	CEO	10
E_4		F	40s	I	Member of the board of directors	10
E_5		M	50s	A	Associate professor	22
E_6	B	M	50s	A	Assistant professor	20
E_7		M	50s	I	CEO	30
E_8		F	50s	I	HRM manager	28
E_9		M	50s	I	Member of the board of directors	28
E_{10}		M	40s	I	CEO	15
E_{11}	C	M	40s	I	CEO	15
E_{12}		M	40s	I	HRM manager	12
E_{13}		F	40s	I	HRM manager	18
E_{14}		M	40s	I	Member of the board of directors	18
E_{15}		M	50s	A	Assistant professor	21

TABLE 5 Comparison of triangular and trapezoidal membership functions.

Comparison indices	Membership functions	
	Triangular	**Trapezoidal**
Function	$\mu_{\tilde{A}}(x)=\begin{cases}0 & x<\alpha_1\\ \frac{x-\alpha_1}{\alpha_2-\alpha_1} & \alpha_1\le x\le\alpha_2\\ \frac{\alpha_3-x}{\alpha_3-\alpha_2} & \alpha_2\le x\le\alpha_3\\ 0 & x>\alpha_3\end{cases}$	$\mu_{\tilde{A}}(x)=\begin{cases}0 & x<\alpha_1\\ \frac{x-\alpha_1}{\alpha_2-\alpha_1} & \alpha_1\le x\le\alpha_2\\ 1 & \alpha_2\le x\le\alpha_3\\ \frac{\alpha_4-x}{\alpha_4-\alpha_3} & \alpha_3\le x\le\alpha_4\\ 0 & x>\alpha_4\end{cases}$
Shape		
Advantage	Simple to implement, fast for computation and space simplicity (low memory size and operation time) and it is superior to any other membership function in several recent cases	Simple to implement, causing system response as good as triangular membership function
Disadvantage	Fixed shape	Space complexity (high memory size and operation time) and fixed shape
Where to use	Symmetric membership function, the peak point is known	Asymmetric membership function, the support points are known

(Arslan & Kaya, 2001). Generally, there are various MFs with distinct curves. The three most popular curves are triangular, trapezoidal and Gaussian (Rutkowska, 2016; Sadollah, 2018). There is no unique procedure for selecting the MFs (Sadollah, 2018). Nonetheless, some criteria were recommended by recent scholars to do so, including being in the yield of 0 and 1, problem size and type, data distribution, complexity (computational time and memory used) and experts' experience (Sadollah, 2018).

With this in mind, Gaussian MF is useful owing to the curve's smoothness and nonzero point (Hameed, 2011; Sadollah, 2018). However, it was mainly used when some priorities on the MF shapes stem from histograms on specimens. Triangular and trapezoidal MFs were also recommended for employment in simple problems without the abovementioned considerations (e.g., this research; Hameed, 2011; Sadollah, 2018). Several scholars compared system responses resulting from triangular and trapezoidal MFs (Sadollah, 2018). They alleged that triangular MF prevails (Zhao & Bose, 2002). A comprehensive comparison of either MF, illustrated in Table 5, helped us appropriately select a triangular one in this research methodology.

Using triangular MF was inevitable in this research problem, where a symmetric MF could be shaped and the peak point was identifiable. However, the support points were not diagnosed. Moreover, the usefulness of this curve was confirmed by experts and author experience as well as previous research (Hajiagha et al., 2021). Above all, it is simple to use, fast for calculation and requires a low memory size (Princy & Dhenakaran, 2016). Interestingly, triangular MF illustrates fuzzy numbers instead of fuzzy intervals (Sadollah, 2018).

Hence, the triangular fuzzy numbers (TFNs) are more appropriate for struggling with the fuzziness of experts' judgement. Hence, HTFS, as explained below, is a more persuasive theory than HFS when combined with MCDM (Zhao et al., 2014). Let X be a constant set; an HTFS on X is a function that, when exerted to each x in X, returns a subset of fuzzy values in $[0,1]$. Mathematically, Zhao et al. (2014) expressed the HTFS as $E=\left\{<x,\tilde{h}_{E(x)}>/x\in X\right\}$, where $\tilde{h}_{E(x)}=\tilde{\gamma}=\left(\gamma^l,\gamma^m,\gamma^u\right)$ denotes the fuzzy possible membership degrees of the element $x\in X$ to the set E, through TFNs $\tilde{\gamma}$ in $[0,1]$. Ease of use, $\tilde{h}_{E(x)}=\tilde{h}$ is assumed as HTF element (HTFE), and H includes the set of all HTFEs $\left(\tilde{h}_1,\tilde{h}_2,\ldots,\tilde{h}_n\right)$.

Assuming two HTFEs $\tilde{h}_1=\left(\gamma_1{}^l,\gamma_1{}^m,\gamma_1{}^u\right)$ and $\tilde{h}_2=\left(\gamma_2{}^l,\gamma_2{}^m,\gamma_2{}^u\right)$ and $\alpha>0$, the basic operations on HTFEs are as follows.

$$\begin{cases} \tilde{h}_1^{\alpha} = \cup_{\tilde{\gamma}_1 \epsilon \tilde{h}_1} \{\tilde{\gamma}_1^{\alpha}\} = \left\{\gamma_1^{l\alpha}, \gamma_1^{m\alpha} \gamma_1^{u\alpha}\right\}; \\ \alpha\tilde{h}_1 = \cup_{\tilde{\gamma}_1 \epsilon \tilde{h}_1} \{1-(1-\tilde{\gamma}_1)^{\alpha}\} \\ \quad = \left\{1-\left(1-\gamma_1^{l}\right)^{\alpha}, 1-\left(1-\gamma_1^{m}\right)^{\alpha} 1-\left(1-\gamma_1^{u}\right)^{\alpha}\right\}; \\ \tilde{h}_1 \otimes \tilde{h}_2 = \cup_{\tilde{\gamma}_1 \epsilon \tilde{h}_1, \tilde{\gamma}_2 \epsilon \tilde{h}_2} \{\tilde{\gamma}_1 \tilde{\gamma}_2\} \\ \quad = \{\gamma_1^{l}\gamma_2^{l}, \gamma_1^{m}\gamma_2^{m}\gamma_1^{u}\gamma_2^{u}\}; \\ \tilde{h}_1 \oplus \tilde{h}_2 = \cup_{\tilde{\gamma}_1 \epsilon \tilde{h}_1, \tilde{\gamma}_2 \epsilon \tilde{h}_2} \{\tilde{\gamma}_1 + \tilde{\gamma}_2 - \tilde{\gamma}_1 \tilde{\gamma}_2\} \\ \quad = \{\gamma_1^{l} + \gamma_2^{l} - \gamma_1^{l}\gamma_2^{l}, \gamma_1^{m} + \gamma_2^{m} - \gamma_1^{m}\gamma_2^{m}\gamma_1^{u} + \gamma_2^{u} - \gamma_1^{u}\gamma_2^{u}\}. \end{cases} \tag{1}$$

With HTFE $\tilde{h}$ in mind, $S\left(\tilde{h}\right) = \frac{1}{\#\tilde{h}} \sum_{\tilde{\gamma} \epsilon \tilde{h}} \tilde{\gamma}$ denotes the triangular fuzzy score function (TFSF) of $\tilde{h}$, which roots in the arithmetic average and is employed in comparing different HTFEs. Such that $\#\tilde{h}$ represents the number of TFNs in $\tilde{h}$. Moreover, some aggregation operators have been defined to aggregate HTFEs. The HTF Einstein hybrid average (HTFEHA) operator (Zhao et al., 2014) has been appropriately employed in group decision-making problems, where the evaluations of the alternative A_i under the attribute C_j for p experts were indicated by the HTFS $\tilde{H}\left(\tilde{h}_{ij_p},\ i=1,2,\ldots,m; j=1,2,\ldots,n; P=1,2,\ldots,K\right)$ and built the group decision matrix $\tilde{D} = \left(\tilde{d}_{ij}\right)_{m\times n}$. Because HTFEHA not only weighs the ordered position of each argument but also considers their importance, HTFEHA was calculated using Einstein sum operations as Equation (2) (Zhao et al., 2014).

$$\begin{aligned} &HTFEHA_{w,\omega}\left(\tilde{h}_1, \tilde{h}_2, \ldots, \tilde{h}_n\right) \\ &= \oplus_{j=1}^{n}\left(w_j \tilde{\dot{h}}_{\sigma(j)}\right) \\ &= \cup_{\tilde{\dot{\gamma}}_{\sigma(1)} \epsilon \tilde{\dot{h}}_{\sigma(1)}, \tilde{\dot{\gamma}}_{\sigma(2)} \epsilon \tilde{\dot{h}}_{\sigma(2)}, \ldots, \tilde{\dot{\gamma}}_{\sigma(n)} \epsilon \tilde{\dot{h}}_{\sigma(n)}} \\ &\quad \times \left\{ \frac{\prod_{j=1}^{n}\left(1+\tilde{\dot{\gamma}}_{\sigma(j)}\right)^{w_j} - \prod_{j=1}^{n}\left(1-\tilde{\dot{\gamma}}_{\sigma(j)}\right)^{w_j}}{\prod_{j=1}^{n}\left(1+\tilde{\dot{\gamma}}_{\sigma(j)}\right)^{w_j} + \prod_{j=1}^{n}\left(1-\tilde{\dot{\gamma}}_{\sigma(j)}\right)^{w_j}} \right\}, \end{aligned} \tag{2}$$

where $w_j = (w_1, w_2, \ldots, w_n)$ is the pertinent weighting vector, such that $w_j \in [0,1]$, $\sum_{j=1}^{n} w_j = 1$, and $\tilde{\dot{h}}_{\sigma(j)}$ is the jth most significant element of the HTFS $\tilde{H}\left(\tilde{\dot{h}}_{\sigma(j)} = (n\omega_j)\ \tilde{h}_j, j=1,2,\ldots,n\right)$. Furthermore, $\omega_j = (\omega_1, \omega_2, \ldots, \omega_n)$ denotes the weighting vector of HTF arguments $\tilde{h}_j (j=1,2,\ldots,n)$ in which $\omega_j \in [0,1]$, $\sum_{j=1}^{n} \omega_j = 1$, and n represents the balancing coefficient.

HTF-D

Delphi is an appropriate tool to arrive at experts' consensus gradually. Nevertheless, various extensions of Delphi, such as fuzzy Delphi (Hajiagha et al., 2021) and hesitant linguistic fuzzy Delphi (Jafarnejad et al., 2019), have been proposed to consider the vagueness of the socio-economic environment and experts' judgement. Albeit none of them considers both fuzziness and hesitation together. To compensate for this drawback, the novel version of HTF-D is innovatively developed through the following steps.

Step 1. This research identified the factors changing the future workplace by systematically reviewing the extant body of literature (Table 2).

Step 2. The HTF-D questionnaire was distributed among three expert panels in Iranian international entrepreneurial SMEs. These experts evaluated the availability of the extracted factors through a 5-point linguistic scale (*extremely available*, *highly available*, *nearly available*, *meagerly available*, *not available*). Each of these is pertinent to an HTFE {{(0.7, 0.8, 0.9), (0.8, 0.9, 1)}, {(0.6, 0.7, 0.8), (0.7, 0.8, 0.9)}, {(0.4, 0.5, 0.6), (0.5, 0.6, 0.7)}, {(0.2, 0.3, 0.4), (0.3, 0.4, 0.5)}, {(0.1, 0.2, 0.3)}}, respectively.

Step 3. The acquired linguistic terms were then converted into the corresponding HTFEs. Three acquired HTFEs for every factor were then aggregated using Equation (2).

Step 4. The fuzzy weight of jth factor $(j=1,2,,\ldots,n)$ was computed by employing the TFSF $S\left(\tilde{h}_j\right) = \left(\gamma^{l}, \gamma^{m}, \gamma^{u}\right)$. Afterwards, the crisp scores were computed via $S\left(h_j\right) = \frac{\gamma^{l}+\gamma^{m}+\gamma^{u}}{3}$. Moreover, the consensus of the opinions was evaluated in this stage by calculating the standard deviation of $S\left(h_j\right)$. The consensus is accomplished if the standard deviation is less than 1. Otherwise, another round of HTF-D is required by repeating steps 2–4.

Step 5. The most available factors in Iranian international entrepreneurial SMEs were selected in this step by determining a threshold value α. If $S\left(h_j\right) \geq \alpha$, then the factor is considered for further investigation; otherwise, it is removed.

HTF–ISM-MICMAC

ISM-MICMAC is a unique multilayer decision-making approach developed by Warfield (1974). It concurrently results in three prominent outputs, that is, (i) factors' level, (ii) causal relationship network and (iii) power map (Jafari-Sadeghi et al., 2021). In addition, a new

combination of HTFS and ISM-MICMAC was also developed through the following steps (Yadav & Singh, 2020).

Step 1. Employing the HTF-D method output, three experts' panels evaluated the relationship between factors *i* and *j* and its significant degree. Indeed, a 5-point Likert scale of linguistic terms (*extremely impressive* [*EI*], *highly influenced* [*HI*], *nearly influenced* [*NI*], *meagerly influenced* [*MI*], and *no relation* [*NR*]) were considered. Moreover, the following rules were applied to accomplish the HTF self-structural interaction matrix (HTFSSIM) for each panel.

[1]. *V* (or *A*) together with *EI*, *HI*, *NI*, and *MI*, if factor (*i*) leads to factor (*j*) (or vice versa),

[2]. *X* together with *EI*, *HI*, *NI*, and *MI*, if factor (*i*) and factor (j) both lead to each other, and

[3]. Together with *NR* if there is no relationship between factor (*i*) and factor (*j*).

Step 2. The following rules converted three HTFSSIMs into the initial HTF reachability matrix (IHTFRM).

[1]. If the element (*i*, *j*) in the HTFSSIM get "*V*" (or "*A*") together with *EI*, *HI*, *NI*, and *MI*, the element (*i*, *j*) in the IHTFRM will get *EI*, *HI*, *NI*, and *MI* (or "*NR*") and the element (*j*, *i*) will get "*NR*" (or *EI*, *HI*, *NI*, and *MI*).

[2]. If the element (*i*, *j*) in the HTFSSIM get "*X*" together with *EI*, *HI*, *NI*, and *MI*, both the element (*i*, *j*) and the element (*j*, *i*) in the IHTFRM will get *EI*, *HI*, *NI*, and *MI*.

[3]. If the element (*i*, *j*) in the HTFSSIM gets "*O*," both the element (*i*, *j*) and the element (*j*, *i*) in the IHTFRM will get "*NR*."

Then, the linguistic terms were similarly transformed into the corresponding HTFEs, and the aggregated IHTFRM was obtained using Equation (2). The TFSFs were also measured for each HTFE in that matrix. Suppose the aggregated IHTFRM $\tilde{D} = \left[\tilde{d}_{ij}\right]_{n\times n}$ where $\tilde{d}_{ij} = \left(\tilde{d}^{l}{}_{ij}, \tilde{d}^{m}{}_{ij}, \tilde{d}^{u}{}_{ij}\right)$, $i,j = 1,2,\ldots,n = \ldots$. Similar to Yaftiyan et al. (2023), we avoided defuzzification and continued the next steps also in fuzzy logic. To this end, each bound of TFNs in the $\tilde{D}$ matrix is considered as a unique scenario. Scenario "a" is a pessimistic scenario (or lower bound) with a high level of uncertainty and vagueness in which negative senses occur resulting from less foreseeability. Scenario "b" is a probable scenario (or middle bound) by mediating the range of uncertainty and vagueness. Anticipation could be performed but restricted by some lacks of conviction. Scenario "c" is an optimistic scenario (or upper bound) with a low level of uncertainty and vagueness. Accordingly, positive viewpoints exist due to more predictability. Accordingly, $\tilde{D}$ was divided into the pessimistic $\tilde{D}_l = \left[\tilde{d}^{l}{}_{ij}\right]_{n\times n}$, most probable $\tilde{D}_m = \left[\tilde{d}^{m}{}_{ij}\right]_{n\times n}$ and optimistic $\tilde{D}_u = \left[\tilde{d}^{u}{}_{ij}\right]_{n\times n}$ scenarios, respectively. Next, the binary relationship matrix for each scenario was computed via three threshold values t_l, t_m, t_u, which were determined by experts' and authors' unanimity. If the relationship between the factors (*i*) and (*j*) $y^{l,m,u}{}_{ij} \geq t_{l,m,u}$, then $y^{l,m,u}{}_{ij} = 1$. Otherwise, $y^{l,m,u}{}_{ij} = 0$. MATLAB software checked the transitivity rule for each scenario to build the final HTF reachability matrix (FHTFRM) for triple scenarios.

Step 3. The HTF driving and dependence power were measured by the summation of rows and columns of the FHTFRM, respectively. Three fuzzy power maps were illustrated for triple scenarios, including four classes of dependent (i.e., high dependence power and low driving), driver (i.e., high driving power and low dependence), linkage (i.e., high dependence and driving power) and autonomous (i.e., low dependence and driving power) factors.

Step 4. At first, three sets of reachability (or output), antecedent (or input) and common (intersection) factors (*i*) were distinguished for triple scenarios. The output set refers to the factors impacted by factor (*i*). The list of factors that impact factor (*i*) causes the input set. The common set for factor (*i*) reflects the list of both reachable and antecedent factors. If intersection and reachability sets are equal for factor (*i*), they are regarded as high-level factors and removed from the FHTFRM. This cycle will frequently be repeated until all factors are levelled.

RESULTS AND FINDINGS

Following the HTF-D algorithm, the literature about future workplace concerns was systematically reviewed. As a result, a categorised list of internal and external factors changing the future workplace was obtained in Table 2. Afterwards, three expert panels with a distinct profile similar to Table 3 were invited to evaluate the availability of such factors in Iranian international entrepreneurial SMEs via an online structured questionnaire. Later, the acquired linguistic data were converted to the HTF information, and then, they were aggregated by Equation (2) in which $w_j = (0.6, 0.27, 0.13)$ and $\omega_j = (0.3, 0.2, 0.5)$ for $j = (1,2,3)$. Subsequently, the TFSF was computed for each factor and transformed to the crisp value, as illustrated in Table 4. Because the standard deviation of the crisp scores (0.1998) is less than 1, a consensus was achieved in the first round, and the HTF-D algorithm ceased. Likewise, a threshold value $\alpha = 0.7$ was determined with experts' and authors' unanimity to select

the most available factors. Hence, eight ideal factors are underlined in bold in Table 6.

Considering six internal (IMS_1, IMS_2, IMS_3, IMS_4, IO_3 and IO_4) and two external (EM_1 and ET_1) factors as an input set, the HTF–ISM-MICMAC method was worked out by inviting the same expert panels to determine the relationship between the abovementioned factors along with its significant degree through the second online structured questionnaire. As a result, HTFSSIM and IHTFRM for each panel are formed in Table 7.

Such linguistic evaluations were then converted to HTF information. Next, the HTFEs of IHTFRM were aggregated by Equation (2), in which $w_j = (0.6, 0.27, 0.13)$ and $\omega_j = (0.3, 0.2, 0.5)$ for $j = (1, 2, 3)$. The TFSF for each factor was then computed. Consequently, the aggregated IHTFRM and its TFSF are illustrated in Table 8.

Afterwards, the model sensitivity was tested to four different sets of threshold values (t_l, t_m and t_u) as below. The first set indicates the average of the elements of $\tilde{D}_l$, $\tilde{D}_m$ and $\tilde{D}_u$, respectively. Three other sets were formed based on experts' views by adding a slight value to each average value of the first set.

$$\begin{cases} \text{Threshold value set (I)} : (t_l = 0.42, t_m = 0.57, t_u = 0.78), \\ \text{Threshold value set (II)} : (t_l = 0.55, t_m = 0.75, t_u = 0.95), \\ \text{Threshold value set (III)} : (t_l = 0.6, t_m = 0.70, t_u = 0.85), \\ \text{Threshold value set (VI)} : (t_l = 0.57, t_m = 0.70, t_u = 0.95). \end{cases}$$

Then, each set was applied, and four binary relation matrices were constructed for each scenario. However, the fourth threshold value set ($t_l = 0.57$, $t_m = 0.70$ and $t_u = 0.95$) was selected by experts' and authors' unanimity to form the initial binary matrices of the pessimistic, probable and optimistic scenarios. After applying the transitivity rule, FHTFRM for triple scenarios was attained. In addition, the reachability, antecedent and standard sets were distinguished for each agent, and they were levelled in triple scenarios, as given in Table 9.

Similarly, three power maps for triple scenarios, illustrated in Figure 3, were depicted according to the factors' dependence and driver powers.

By integrating the factors' levels and their interactions from Table 7, three level-based network relationship frameworks for three scenarios are designed in Figure 4.

According to Figure 4, the pessimistic, probable and optimistic views divide the abovementioned factors into three, five and four levels, respectively. The next part discusses the different implications of these integrated frameworks.

DISCUSSION AND IMPLICATIONS

The present study identified eight factors that contribute to shaping the future workplace of international entrepreneurial SMEs in emerging economies with volatile characteristics like Iran. They include six internal factors such as organisational culture (IMS_1), communication and cooperation (IMS_2), transparency (IMS_3), training and monitoring (IMS_4), performance (IO_3) and flexibility (IO_4), as well as two external factors, including competition (EM_1) and the advent of modern digital technology (ET_1). The novel HTFS and ISM-MICMAC approach was developed and implemented to identify the underlying mechanism for the contribution of future workplace reimagination via these functions and under real-world circumstances. As a result, the findings of this research led to the exploration of three scenarios that distinguish the nature of the factors and uniquely define how factors of future workplace design may interact under each of the specific business scenarios.

Scenario "a" refers to the business environment in which uncertainty is very unpredictable and experts cannot make accurate and confident predictions of the existing environmental uncertainties. Under this scenario, IMS_4 is identified as an driver factor, whereas all other factors play as autonomous factors (Figure 2a). Under the pessimistic lens condition, IMS_4 acts as a driver, while the other factors do not drive other factors or receive much influence from others. Accordingly, the level-based network relationship framework for pessimistic conditions (Figure 3a) reveals that the future workplace design first entails increasing knowledge and

TABLE 6 Hesitant triangular fuzzy Delphi results.

Code	TFSF	Crisp value	Code	TFSF	Crisp value	Code	TFSF	Crisp value
IMS_1	**(0.67, 0.75, 1.02)**	**0.81**	IO_2	(0.40, 0.53, 0.70)	0.54	EEC_1	(0.51, 0.64, 0.84)	0.66
IMS_2	**(0.69, 0.84, 1.08)**	**0.87**	**IO_3**	**(0.61, 0.75, 0.95)**	**0.77**	ES_1	(0.49, 0.62, 0.83)	0.65
IMS_3	**(0.68, 0.83, 1.08)**	**0.86**	**IO_4**	**(0.57, 0.72, 1.01)**	**0.76**	ES_2	(0.42, 0.59, 0.74)	0.57
IMS_4	**(0.62, 0.77, 1.02)**	**0.80**	IHR_1	(0.53, 0.66, 0.86)	0.69	**ET_1**	**(0.52, 0.67, 0.98)**	**0.72**
IRD_1	(0.18, 0.29, 0.42)	0.30	IHR_2	(0.24, 0.35, 0.50)	0.36	EEN_1	(0.32, 0.44, 0.60)	0.45
IF_1	(0.40, 0.53, 0.70)	0.54	**EM_1**	**(0.52, 0.72, 0.98)**	**0.74**	EEN_2	(0.11, 0.18, 0.26)	0.18
IO_1	(0.24, 0.35, 0.50)	0.36	EP/L_1	(0.25, 0.35, 0.48)	0.36	EEN_3	(0.48, 0.61, 0.80)	0.63

Abbreviation: TFSF, triangular fuzzy score function.

TABLE 7 Hesitant triangular fuzzy self-structural interaction matrix (HTFSSIM) and initial hesitant triangular fuzzy reachability matrix (IHTFRM).

	HTFSSIM								IHTFRM							
Impact of *i* on *j*	**IMS_1**	**IMS_2**	**IMS_3**	**IMS_4**	**IO_3**	**IO_4**	**EM_1**	**ET_1**	**IMS_1**	**IMS_2**	**IMS_3**	**IMS_4**	**IO_3**	**IO_4**	**EM_1**	**ET_1**
Panel 1																
IMS_1	X (EI)	V (HI)	V (HI)	A (EI)	O (NR)	A (NI)	V (MI)	X (EI)	EI	HI	HI	NR	NR	NR	MI	EI
IMS_2		X (EI)	X (HI)	X (EI)	V (NI)	V (MI)	A (HI)	A (NI)	NR	EI	HI	EI	NI	MI	NR	NR
IMS_3			X (EI)	A (HI)	V (NI)	O (NR)	A (MI)	O (NR)	NR	HI	EI	NR	NI	NR	NR	NR
IMS_4				X (EI)	X (HI)	V (EI)	O (NR)	X (EI)	EI	EI	HI	EI	HI	EI	NR	EI
IO_3					X (EI)	A (NI)	O (NR)	A (HI)	NR	NR	NR	HI	EI	NR	NR	NR
IO_4						X (EI)	O (NR)	X (EI)	NI	NR	NR	NR	NI	EI	NR	EI
EM_1							X (EI)	A (HI)	NR	HI	MI	NR	NR	NR	EI	NR
ET_1								X (EI)	EI	NI	NR	EI	HI	EI	HI	EI
Panel 2																
IMS_1	X (EI)	V (HI)	V (HI)	A (EI)	O (NR)	X (EI)	A (NI)	A (MI)	EI	HI	HI	NR	NR	EI	NR	NR
IMS_2		X (EI)	X (HI)	A (NI)	V (HI)	V (NI)	A (EI)	A (HI)	NR	EI	HI	NR	HI	NI	NR	NR
IMS_3			X (EI)	A (HI)	A (NI)	O (NR)	A (NI)	A (EI)	NR	HI	EI	NR	NR	NR	NR	NR
IMS_4				X (EI)	V (NI)	V (MI)	O (NR)	V (NI)	EI	NI	HI	EI	NI	MI	NR	NI
IO_3					X (EI)	V (NI)	X (EI)	A (HI)	NR	NR	NI	NR	EI	NI	EI	NR
IO_4						X (EI)	O (NR)	X (EI)	EI	NR	NR	NR	NR	EI	NR	EI
EM_1							X (EI)	X (EI)	NI	EI	NI	NR	EI	NR	EI	EI
ET_1								X (EI)	MI	HI	EI	NR	HI	EI	EI	EI
Panel 3																
IMS_1	X (EI)	V (MI)	X (HI)	X (NI)	O (NR)	A (MI)	O (NR)	O (NR)	EI	MI	HI	NI	NR	NR	NR	NR
IMS_2		X (EI)	A (MI)	O (NR)	X (NI)	A (HI)	A (NI)	A (HI)	NR	EI	NR	NR	NI	NR	NR	NR
IMS_3			X (EI)	O (NR)	V (HI)	O (NR)	X (NI)	A (HI)	HI	MI	EI	NR	HI	NR	NI	NR
IMS_4				X (EI)	X (HI)	O (NR)	O (NR)	O (NR)	NI	NR	NR	EI	HI	NR	NR	NR
IO_3					X (EI)	A (MI)	A (NI)	X (NI)	NR	NI	NR	HI	EI	NR	NR	NI
IO_4						X (EI)	A (EI)	A (HI)	MI	HI	NR	NR	MI	EI	NR	NR
EM_1							X (EI)	X (HI)	NR	NI	NI	NR	MI	EI	EI	HI
ET_1								X (EI)	NR	HI	HI	NR	NI	HI	HI	EI

Abbreviations: EI, extremely impressive; HI, highly influenced; MI, meagerly influenced; NI, nearly influenced; NR, No relation.

TABLE 8 Aggregated initial hesitant triangular fuzzy reachability matrix (IHTFRM) and its triangular fuzzy score function (TFSF).

	Aggregated IHTFRM				TFSF			
ilj	IMS_1	$1MS_2$	…	ET_1	IMS_1	$1MS_2$	…	ET_1
IMS_1	(0.64, 0.80, 1), (0.68, 0.85, 1.12), (0.69, 0.87, 1.11), (0.73, 0.90, 1.11)	(0.51, 0.66, 0.85), (0.53, 0.70, 0.91), (0.57, 0.73, 0.94), (0.60, 0.77, 0.97)	…	(0.46, 0.63, 0.86), (0.54, 0.75, 1.14)	(0.68, 0.85, 1.08)	(0.55, 0.72, 0.92)	…	(0.50, 0.69, 1)
$1MS_2$	(0.09, 0.20, 0.33)	(0.64, 0.80, 1), (0.66, 0.85, 1.12), (0.69, 0.87, 1.11), (0.73, 0.90, 1.11)	…	(0.09, 0.20, 0.33)	(0.09, 0.20, 0.33)	(0.68, 0.85, 1.09)	…	(0.09, 0.20, 0.33)
…	…	…	…	…	…	…	…	…
ET_1	(0.47, 0.64, 0.87), (0.48, 0.61, 0.80), (0.55, 0.75, 1.14), (0.57, 0.73, 1.09)	(0.42, 0.68, 0.92), (0.45, 0.72, 0.98), (0.61, 0.75, 0.94), (0.62, 0.78, 0.98)	…	(0.64, 0.80, 1), (0.68, 0.85, 1), (0.69, 0.87, 1.11), (0.73, 0.90, 1.11)	(0.52, 0.68, 0.97)	(0.53, 0.73, 0.95)	…	(0.68, 0.85, 1.06)

awareness via IMS_4 (Gagné et al., 2019). Indeed, training and monitoring (IMS_4) drive other factors, particularly organisational culture.

On the other hand, the benefits and integration capabilities gained from IMS_1 allow firms to increase clarity and transparency on what the future workplace would look like (IMS_3). Indeed, IMS_1 is the critical enabler of organisational transparency. Regarding the second level, the framework highlights that IO_4, EM_1 and ET_1 have a reciprocal relationship. Indeed, under the unpredictability of environmental uncertainties, the advent of modern digital technology, flexibility in organisations, and the level of competition interact to shape the future workplace (Kochan & Dyer, 2020). Also, the orthodox observation implies communication and cooperation (IMS_2) and performance (IO_3) do not drive other factors. Instead, they result from proper training management within international entrepreneurial SMEs.

Scenario "b" concerns the implications of redesigning the future workplace in a business environment where uncertainty is somewhat unpredictable and experts can cautiously predict the existing environmental uncertainties. According to this scenario, IMS_3, IMS_1, ET_1 and IO_3 are autonomous factors. Moreover, IMS_4, IO_4 and EM_1 are driver factors, whereas IMS_2 is the only dependent factor according to the power map diagram of the probable scenario (Figure 2b). The network relationship framework of probable condition (Figure 3b) constitutes five levels. Like pessimistic conditions, training and monitoring (IMS4) are the base factors that drive the other seven factors. Because IO_4 and ET_1 are positioned at the same placement level, it is legitimate to assume that these factors complement and synergically boost each other while enabling other factors towards reimaging future workplaces. Indeed, these factors (IO_4 and ET_1) are positioned at placement level 2 of the probable scenario. IO_4 and ET_1, in turn, empower organisational culture (IMS_1) and competition (EM_1) at the third level, which, together, pave the way towards transparency (Gierlich-Joas et al., 2020) at level 4 as well as communication, cooperation and performance at level 5.

Consequently, this scenario reveals that transparency (IMS_3) drives IMS_2, while this relationship between IMS_3 and IO_3 is not evident. Overall, scenario "b" implies that redesigning the future workplace entails a hierarchal process that incorporates the interaction among various internal and external factors under moderate business unpredictability (Mariappanadar & Hochwarter, 2022). Contrary to scenario "a," where workplace reimagination emerges with minimum interaction between factors, specific precedence relationships exist between the factors under scenario "b." IO_3 and IMS_2 are the most hard-to-capture factors in this scenario because they can only become operational after developing other factors.

Scenario "c" concerned an opportunistic business environment with predictable uncertainty, and experts could confidently and accurately predict the existing environmental uncertainties. According to Figure 2c, there is only one autonomous factor (IMS_4) in this scenario. However, EM_1 and IO_3 are drivers, and IMS_1, IMS_2, IMS_3, IO_4 and ET_1 have been identified as dependent factors. This leads to a four-level network relationship framework (Figure 3c). Accordingly, unlike the other two scenarios in which IMS_4 was the base factor, in the opportunistic scenario, the competition (EM_1) acts as the most driving factor, simultaneously empowering the other seven factors that shape the nature of the future workplace. It postulates that when the level of uncertainty is very high, the competitive environment is determinantal and triggers international entrepreneurial SMEs to change the structure of their business and workplace (Hasanah et al., 2021; Prasanna et al., 2019). In the second level, the findings highlight that although there is no connection between IMS_4 and IO_3, they simultaneously trigger factors at upper levels. An interesting finding of this research is that the performance of firms plays a driver that influences the base level of competition. Under this scenario, there is a mutual relationship between IMS_1, IMS_2, IO_4 and ET_1 at the third level, which all drive transparency at the workplace. Indeed, the opportunistic scenario considers

TABLE 9 Hesitant triangular fuzzy–interpretive structural modelling results.

ilj	IMS_1	IMS_2	IMS_3	IMS_4	IO_3	IO_4	EM_1	ET_1	Reachability set	Antecedent set	Common set	Level	Dependence	Driver
Pessimistic scenario														
IMS_1	1	0	1	0	0	0	0	0	IMS_1	IMS_1, IMS_4	IMS_1	2	2	2
IMS_2	0	1	0	0	0	0	0	0	IMS_2	IMS_2	IMS_2	1	1	1
IMS_3	0	0	1	0	0	0	0	0	IMS_3	IMS_1, IMS_3, IMS_4,	IMS_3	1	3	1
IMS_4	1	0	1*	1	1	1*	1*	1	IMS_4	IMS_4	IMS_4	3	1	7
IO_3	0	0	0	0	1	0	0	0	IO_3	IMS_4, IO_3	IO_3	1	2	1
IO_4	0	0	0	0	0	1	1*	1	IO_4, EM_1, ET_1	IMS_4, IO_4, EM_1, ET_1	IO_4, EM_1, ET_1	1	4	3
EM_1	0	0	0	0	0	1*	1	1	IO_4, EM_1, ET_1	IMS_4, IO_4, EM_1, ET_1	IO_4, EM_1, ET_1	1	4	3
ET_1	0	0	0	0	0	1	1	1	IO_4, EM_1, ET_1	IMS_4, IO_4, EM_1, ET_1	IO_4, EM_1, ET_1	1	4	3
Probable scenario														
IMS_1	1	1	1	0	0	0	0	0	IMS_1	IMS_1, IMS_4, IO_4, ET_1	IMS_1	3	4	3
IMS_2	0	1	0	0	0	0	0	0	IMS_2	IMS_1, IMS_2, IMS_3, IMS_4, IO_4, EM_1, ET_1	IMS_2	1	7	1
IMS_3	0	1	1	0	0	0	0	0	IMS_3	IMS_1, IMS_3, IMS_4, IO_4, EM_1, ET_1	IMS_3	2	6	2
IMS_4	1	1	1*	1	1	1*	1*	1	IMS_4	IMS_4	IMS_4	5	1	8
IO_3	0	0	0	0	1	0	0	0	IO_3	IMS_4, IO_3, IO_4, EM_1, ET_1	IO_3	1	5	1
IO_4	1	1*	1*	0	1*	1	1*	1	IO_4, EM_1, ET_1	IMS_4, IO_4, EM_1, ET_1	IO_4, EM_1, ET_1	4	4	7
EM_1	0	1*	1*	0	1	1*	1	1	IO_4, EM_1, ET_1	IMS_4, IO_4, EM_1, ET_1	IO_4, EM_1, ET_1	3	4	6
ET_1	1*	1	1	0	1	1	1	1	IO_4, EM_1, ET_1	IMS_4, IO_4, EM_1, ET_1	IO_4, EM_1, ET_1	4	4	7
Optimistic scenario														
IMS_1	1	1*	1*	0	0	1	0	1	IMS_1, IMS_2, IO_4, ET_1	IMS_1, IMS_2, IMS_4, IO_3, IO_4, EM_1, ET_1	IMS_1, IMS_2, IO_4, ET_1	2	7	5
IMS_2	1*	1	1*	1	0	1*	0	1*	IMS_1, IMS_2, IMS_4, IO_4, ET_1	IMS_1, IMS_2, IMS_4, IO_3, IO_4, EM_1, ET_1	IMS_1, IMS_2, IMS_4, IO_4, ET_1	2	7	6
IMS_3	0	0	1	0	0	0	0	0	IMS_3	IMS_1, IMS_2, IMS_3, IMS_4, IO_3, IO_4, EM_1, ET_1	IMS_3	1	8	1
IMS_4	1	1	1*	1	0	1	0	1	IMS_4	IMS_4, EM_1	IMS_4	3	5	6
IO_3	1*	1*	1*	0	1	1*	1	1*	IO_3, EM_1	IO_3, EM_1	IO_3, EM_1	3	2	7
IO_4	1	1*	1*	1*	0	1	0	1	IMS_1, IMS_2, IO_4, ET_1	IMS_1, IMS_2, IMS_4, IO_3, IO_4, EM_1, ET_1	IMS_1, IMS_2, IO_4, ET_1	2	7	6
EM_1	1*	1	1*	1*	1	1	1	1	EM_1	EM_1	EM_1	4	2	8
ET_1	1	1	1	1*	0	1	0	1	IMS_1, IMS_2, IMS_4, IO_4, ET_1	IMS_1, IMS_2, IMS_4, IO_3, IO_4, EM_1, ET_1	IMS_1, IMS_2, IMS_4, IO_4, ET_1	2	7	6

Note: 1* indicates the influence between the factors after a transitivity rule check.

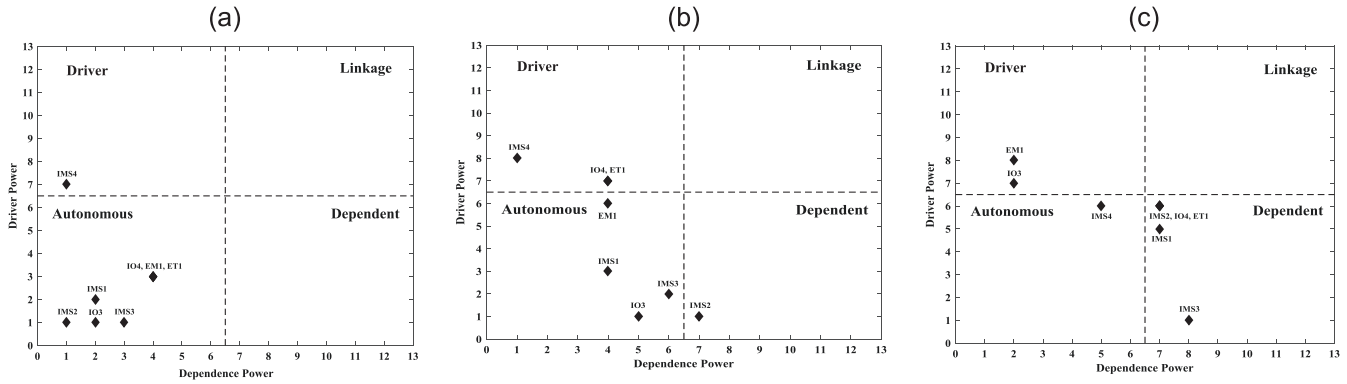


FIGURE 3 Power map of (a) pessimistic, (b) probable and (c) optimistic scenarios

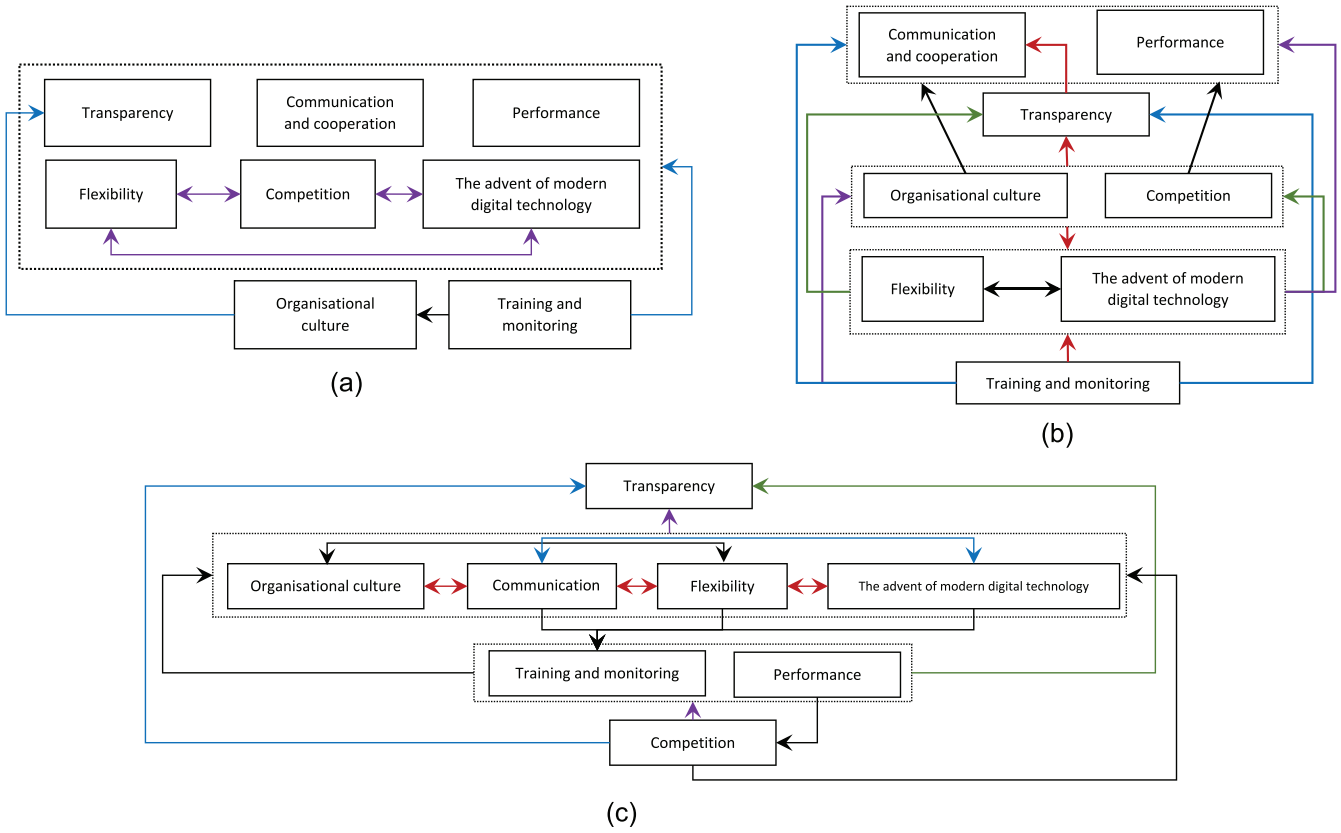


FIGURE 4 Level-based network relationship framework of (a) pessimistic, (b) probable and (c) optimistic scenarios

IMS_3 highly dependent on other factors, which all drive firms to redesign their workplace according to the latest internal and external changes.

The findings of this research contribute to the literature in different ways. To begin with, we argue that reimagining the future workplace does not take place in isolation (Ilori & Ajagunna, 2020). International entrepreneurial SMEs decide to re-structure their workplace for several reasons, such as variations in their organisational culture and performance or due to the advent of new technologies. Hence, our research complements this literature by unearthing six internal and two external factors (antecedents) of future workplace reimagination. Indeed, we filtered these factors out of the most pertinent 12 internal and 9 external factors derived from the literature. Further, the findings of this research offer three different scenarios of "pessimistic," "probable" and "optimistic," which are defined based on the level of uncertainty in the business environment. For instance, bear a real global disruption (like the recent COVID-19 outbreak) in mind. Interestingly, the acquired decision frameworks of scenario "a" could be useful to apply in

the advent of global disruption and the first months of outbreaking, in which an unprecedented high level of vagueness and unpredictability is undeniable. Besides, the scenario "b" scheme would be more functional in the last months of the outbreak era, when predictability would be a little enhanced. Conversely, the conceptual framework of scenario "c" could be appropriate to employ in a post-global disruption era, when a lower level of uncertainty and high foreseeability are pleasant. These scenarios consider alternative conditions based on the international entrepreneurs' vision of future circumstances.

An essential contribution of this research is to explore the nature of the factors under each scenario. For instance, when the environmental uncertainty is high and international entrepreneurs envision turbulent conditions (scenario "a"), most of the factors have been considered autonomous, highlighting that they neither drive others nor influence other factors (Yoo & Kim, 2019). This means that, in a pessimistic scenario, the internal and external factors have minimal interaction with each other to shape the future workplace. However, as the perceived uncertainty in the business environment decreases (scenarios "b" and "c"), we found that factors tend to play either dependent or independent factors, which not only have mutual relationships but also play with each other to form the future workplace. Consequently, this research proposes unique frameworks for future workplace reimagination under three scenarios.

In addition to theoretical contributions, this study's findings provide practitioners' insights. For instance, our multiscenario analysis assists central decision-makers of international SMEs (international entrepreneurs) in redesigning and shaping the workplace based on their evaluation of the future business environment. We stress that practitioners need to explore volatility trends in the business environment and envision the future workplace based on the most relevant scenario. Moreover, they can mitigate the risk of failure by considering all three alternative scenarios in their assessment. On the other hand, our findings highlight the importance of training and monitoring in restructuring the future workplace. This is particularly evident under high uncertainty circumstances (particularly under scenarios "a" and "b"). It resonates that international entrepreneurial SMEs must prepare their employees before making any changes by providing the most relevant training and monitoring whether employees are ready to make or accept changes in their workplace.

CONCLUSION

This paper strives to address the scholarly demand for comprehensive identification and investigation of the factors that highlight the sense of the "workplace of the future" in entrepreneurial SMEs. As such, it uses a mixed method to explore the most pertinent internal and external factors towards reimagining the future workplace of entrepreneurial SMEs with a high international orientation. In this regard, a novel integration of HTFS and ISM-MICMAC has been employed to explore the causal level-based relationship network and the finalised factors' power map for three scenarios of pessimistic, probable and optimistic conditions.

Despite the comprehensive efforts undertaken in the present study to ensure the reliability and inclusivity of the findings, certain limitations (i.e., scope and focus, context, methodology and procedure) were encountered that future research should aim to address. By delving into such limitations, we can pave the way for more robust and comprehensive studies that further our understanding of the critical issue of future workplaces. First, the narrow focus on identifying and investigating key factors contributing to the reimagination of future workplaces represents a significant limitation. While these factors are undoubtedly crucial, other aspects, such as policies, challenges, barriers, drawbacks, enablers and capabilities, remain underexplored. Future research should broaden its scope to include these elements, thus offering a more holistic view of future workplaces. Developing a strategic map that outlines the strengths, weaknesses, opportunities and threats (SWOT analysis) associated with future workplaces could provide a balanced perspective and facilitate strategic planning.

Second, the contextual limitations of the study cannot be overlooked. This research was confined to international entrepreneurial SMEs from Iran, an emerging economy with a dynamic business environment (Khavarinezhad & Jafari-Sadeghi, 2022). While this context is valuable, the findings may not be generalisable to SMEs in other regions or economic settings. To enhance the applicability of the results, future studies should explore domestic SMEs, larger organisations such as multinational enterprises and SMEs in various developed and developing countries. This broader examination would offer a more diverse perspective, capturing the nuances of different economic and geographical contexts. Methodologically, the study faced constraints related to sample size and composition. The input was gathered from 15 international SME entrepreneurs, aligning with the MCDM methods' recommended range (Jafari-Sadeghi et al., 2021). However, the homogeneity of the sample, being limited to Iranian entrepreneurs, raises concerns about the generalisability of the results. Future research should strive to include a more diverse group of international entrepreneurs from various countries and economic backgrounds, encompassing emerging, underdeveloped and developed economies. This diversity would provide a more comprehensive understanding of the factors influencing the future workplace.

Another methodological limitation lies in the cross-sectional approach employed in this research. While this

approach provides a snapshot of the current situation, it fails to account for changes over time. Adopting a longitudinal study design in future research could offer deeper insights by tracking the impacts of various factors over an extended period. This approach would reduce experts' hesitation and yield more precise data through real-time observations, thus enhancing the reliability of the findings. The study's industry-specific focus also presents a limitation. Concentrating exclusively on service-oriented SMEs, the research may overlook factors pertinent to other industries, such as manufacturing, oil and gas and automotive. Future studies should investigate these factors across different industries and compare the results with service-oriented companies' results. Such comparative analyses would help identify industry-specific dynamics and broaden the applicability of the findings. Furthermore, though novel, the study's methodological approach, which developed classical fuzzy Delphi and ISM-MICMAC methods with hesitant linguistic terms, neglected other potential uncertainty approaches. To benchmark and validate the results, future scholars should consider applying alternative uncertainty approaches, such as intuitionistic fuzzy, Pythagorean fuzzy and Fermatean fuzzy. This would enhance the robustness of the conceptual models and ensure a more comprehensive analysis.

Lastly, the data collection and analysis methods employed in the study present procedural limitations. Using an SLR to extract an initial list of factors, while systematic, may limit the richness of the data. Future research could benefit from incorporating additional data collection methods such as real observation, in-depth interviews and case studies. These methods would provide more nuanced and context-specific insights. Additionally, exploring other methodologies like decision-making trial and evaluation laboratory (DEMATEL) and fuzzy cognitive mapping (FCM) could yield similar outcomes and offer alternative perspectives. If numerical data regarding the extracted factors become available, statistical-based models could be used to analyse the impact of each factor and design an evidence-based causal model. In conclusion, future research can build upon the current study's findings by addressing these limitations, offering a more comprehensive and nuanced understanding of the factors shaping the future workplace. This, in turn, would inform the development of more effective strategies and policies for reimagining workplaces across diverse contexts and industries.

AUTHOR CONTRIBUTIONS

Hannan Amoozad Mahdiraji: Writing—review & editing; writing—original draft; visualization; validation; supervision; software; resources; project administration; methodology; investigation; formal analysis; data curation; conceptualization. **Fatemeh Yaftiyan:** Writing—review & editing; writing—original draft; visualization; validation; supervision; software; resources; project administration; methodology; investigation; formal analysis; data curation; conceptualization. **Vahid Jafari-Sadeghi:** Writing—review & editing; writing—original draft; visualization; validation; supervision; software; resources; project administration; methodology; investigation; formal analysis; data curation; conceptualization. **Demetris Vrontis:** Project administration.

CONFLICT OF INTEREST STATEMENT

The authors confirm that they have no conflicts of interest concerning the conduct of this research.

DATA AVAILABILITY STATEMENT

The data availability statement is crucial to convey that while the primary datasets supporting the study's conclusions are not publicly archived due to confidentiality, the authors are fully committed to academic transparency and cooperation principles. Accordingly, the authors agree to provide the relevant data supporting this research's findings upon reasonable request by other researchers.

ORCID

Hannan Amoozad Mahdiraji https://orcid.org/0000-0002-8382-6603

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AUTHOR BIOGRAPHIES

Hannan Amoozad Mahdiraji (PhD) is an associate professor in Business Analytics at Birmingham Business School, University of Birmingham. Previously, he was a Strategy and Business Analytics lecturer and the programme leader of MSc IB at the School of Business, University of Leicester. Before, he was a senior lecturer in Business and Management at De Montfort University, lecturer in Operations and Supply Chain Management at the School of Strategy and Leadership at Coventry University and assistant professor in Management Science at the Faculty of Management, University of Tehran. He graduated with his PhD in Management Science 2012 from the University of Tehran. His primary interest areas include multiple-criteria decision-making (MCDM) methods, game theory (GT) and supply chain management (SCM). Since 2011, he has published 87 research papers in respected international journals, including the *British Journal of Management*, *Risk Analysis: An International Journal*, *Journal of Operational Research Society*, *Technological Forecasting and Social Change*, *Journal of Business Research*, *Computers and Industrial Engineering*, *Expert Systems with Applications*, *Cleaner Production* and *Operations Research Letters*. He has also participated in and presented articles at prestigious international conferences such as the Academy of Management and International Business.

Fatemeh Yaftiyan is a PhD candidate in Operations Research at the Faculty of Management, University of Tehran, Iran. Her main research interests focus on uncertain decision-making, game theory applications in supply chains and optimisation. She has published research articles in credible journals such as the *Journal of Cleaner Production*, *Computers and Industrial Engineering* and *Quality and Reliability Management*.

Vahid J. Sadeghi (PhD, SFHEA) is a senior lecturer in International Business and the director of the PhD programme at Aston Business School. Before joining Aston University, Vahid was a senior lecturer in International Entrepreneurship at the Newcastle Business School, Northumbria University, and a lecturer in Business Strategy at the School of Strategy and Leadership at Coventry University. He is a member of the executive board of the Academy of International Business UK & Ireland Chapter (AIB-UKI) and is an active researcher in international entrepreneurship, particularly in the area of SME internationalisation. Vahid is the chair of the 50th AIB UK & Ireland Chapter Conference (2024) and a member of the organisation committee of The Institute for Small Business and Entrepreneurship (ISBE) 2023 conference, hosted by Aston Business School. He has published papers in leading international journals such as the *British Journal of Management*, *Risk Analysis*, *International Business Review*, *Journal of Business Research*, *Technological Forecasting and Social Change* and *Journal of International Entrepreneurship*. Dr. Sadeghi is an associate editor at the *EuroMed Journal of Business* and a member of the editorial board of *The International Journal of Entrepreneurship and Innovation*, *International Journal of Entrepreneurship and Small Business*, *International Journal of Business and Globalisation* and *British Food Journal*. He has served as the lead guest editor for special issues at the *International Journal of Entrepreneurial Behavior & Research*, *Journal of Enterprise Information Management*, *Journal of Theoretical and Applied Electronic Commerce Research* and *British Food Journal*. Vahid has edited various books in *Springer*, *Routledge* and *Emerald* and performed as track chair and presenter for several international conferences.

Demetris Vrontis is the vice rector for Faculty and Research at the University of Nicosia and a visiting professor and research fellow at various top-tier universities across the globe. Previously, he has served as head of the Marketing Department (2004–2005), associate dean (2005–2006) and dean (2006–2012) of the School of Business and executive dean/vice president (2012–2020) for Distance Learning at the University of Nicosia. Professor Vrontis studied in the United Kingdom and obtained a BSc (Hons) in Business, a PGCE (Higher Education), an MBA (with Distinction) and a PhD in Strategic Marketing Management. He is a fellow member and certified chartered marketer of the Chartered Institute of Marketing (UK) and a chartered business and chartered marketing consultant certified by the Chartered Association of Business Administrators. He has widely published over 200 refereed journal articles and 70 chapters and cases in books/edited books and presented papers to over 80 conferences on a global basis. Professor Vrontis is also the author of 45 books in the areas of business management, marketing, human resource management, innovation and

entrepreneurship. Professor Vrontis is the founding editor and editor in chief of the *EuroMed Journal of Business*, the associate editor in chief of the *International Marketing Review* and the associate editor of the *Journal of Business Research*. He is also the president of the EuroMed Research Business Institute (http://emrbi.org).

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