

Intellectual capital and competitiveness improvement among micro-small-medium enterprises: a resource orchestration view

Improvements
of MSMEs

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Abstract

Purpose – The study aims to test the framework that proposes the role of resources (intellectual capital) in mobilizing entrepreneurial orientation that influences the competitiveness improvement of micro-small-medium enterprises (MSMEs) under the lens of resource orchestration theory.

Design/methodology/approach – In this study, 347 respondents from the MSMEs participated through a structured questionnaire. For the data analysis purpose, the structural equation modeling technique was employed using SmartPLS software.

Findings – The results suggest human, structural, and relational capital are significant antecedents of entrepreneurial orientation, which leads to competitiveness improvement. The findings also indicate the mediation role of entrepreneurial orientation between intellectual capital and competitiveness improvement.

Practical implications – The current study presumably will supplement the promising research effort to progress the research orchestration theory and also could be a strategic guideline for the managers/owners of the MSMEs.

Originality/value – This study is possibly a novel attempt to divulge the association between intellectual capital (tripartite model) and competitiveness improvement of firms under the lens of resource orchestration theory.

Keywords Intellectual capital, Resource orchestration theory, Entrepreneurial orientation, Competitiveness improvement

Paper type Research paper

Introduction

The resource-based view theory fundamentally deals with the possession of valuable, rare, inimitable, and non-substitutable resources of the firms to attain competitive advantages

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(Barney *et al.*, 2021). Nonetheless, scholars have argued that merely possessing the resources neither supports achieving a competitive advantage nor gaining better market performance. Hence, emerging resource orchestration theory in recent times has been expanded to address the prior negligence of the processes by which entrepreneurs gather, combine, and utilize resources to realize a competitive advantage (Ghalwash and Ismail, 2022; Sirmon *et al.*, 2011). The notion of the resource orchestration view widens the perspective of classical resource-based theory (e.g. resource-based view theory) which purports the managing of firms' resources rather than possessing the resources (Deligianni *et al.*, 2019). Resource orchestration theory implies that it is the blend of resources (either or both tangible or intangible) and managerial action that eventually results in achieving a competitive advantage (Chen and Tian, 2022). The shift towards a knowledge-based economy across the globe has prompted the significance of intangible resources and has unfolded several fresh areas of research in the last few years (Demartini and Beretta, 2020). Intangible resources such as intellectual capital (IC) have therefore, reaped considerable interest in the scholarship in recent times and become an exciting field of research (Faraji *et al.*, 2022). According to scholars, IC plays a vital role in the transformation of a knowledge-based economy. IC explicates the intangible resources held by a firm encompassing different capitals, e.g. human capital, structural capital, and relational capital (Ahmed *et al.*, 2019). Scholars have recently advocated focusing on micro-small-medium enterprises (MSMEs) while studying IC, as MSMEs need to compete through intangible resources to achieve and sustain performance in the dynamic environment (Jardon and Martos, 2012). However, researchers have cautioned that the direct effects of the IC dimensions on firm performance so far remained equivocal (Khalique *et al.*, 2020). At this juncture, it is important to revisit the conceptualization of the IC-performance relationship and critically re-examine it with a fresh view.

The metamorphosis of scholars, e.g. Wu (2008) on measuring performance has exhilarated this study to ponder on 'competitiveness improvement' as a subjective measure of performance rather than the traditional objective measurement. Apparently, there is a dearth of research that explicitly investigate the relationship between IC and competitiveness improvement. However, in such inclusive IC-performance (afterward, IC-competitiveness improvement relationship), scholars have called to include mediation to develop a more prolific and comprehensive view of this relationship (Wu, 2008).

Miao *et al.* (2017) asserted that the resource (intangible/tangible)-performance relationship remains incomplete and warrants further investigation from a diverse perspective. In this context, scholars argued for the resource orchestration view, which suggests resources will possibly impact the performance, if the firms organize, bundle, and use the resources in an effective manner (Sirmon and Hitt, 2003). The central proposition of resource orchestration is to mobilize and structure the resources in an efficacious way (Sirmon and Hitt, 2003). However, there is a lack of clear understanding of how the firms orchestrate the resources such as IC, to facilitate better performance in a specific context (Sirmon *et al.*, 2011). Hence, researchers have purported and substantiated that entrepreneurial orientation (EO) could be a possible way to mobilize resources effectively to achieve performance as EO has been defined as the process by which resource are mobilized (Miao *et al.*, 2017). Scholars have noted that EO plays an vital role in the resource orchestration process (Wales *et al.*, 2013). To fill this gap and advance the theoretical perplexity, this study considers EO to play a mediating role between IC and competitiveness improvement.

In this research, a total of 347 MSMEs responded to a structured questionnaire. The structural equation modeling technique was applied to analyze the data, with SmartPLS software. The current research expands erstwhile IC research by incorporating a resource orchestration view in the resource-based view theory to develop the framework as a theoretical contribution which maintains that how the resources are configured and mobilized. Most importantly, the relationship between EO and competitiveness improvement will also be validated possibly for the first time to the best of the knowledge. The current study is expected to augment potential

research efforts to advance the research orchestration theory, as well as serve as a strategic guideline for MSMEs' managers/owners.

The rest of the sections of this study will be as follows: the next section will describe the literature review followed by hypothesizes development. The research methodology and findings are depicted. Finally, discussion, implication, and potential avenues of research stemming from this study are presented.

Review of the literature and development of hypotheses

Resource orchestration theory

Resource orchestration theory (ROT) contemplates the effective orchestration of a firm's resources to achieve competitive advantage. ROT evolved from the resource-based view (RBV) to understand how entrepreneurs and managers manage tangible or intangible or both resources to position the firm ahead of the competitors (Liu *et al.*, 2022). Literature on ROT argues that RBV theory demonstrates possession of resources by firms which may not portray a clear picture, whereas ROT compliments by deliberating how the resources are orchestrated to gain competitive advantage (Baltas *et al.*, 2022). ROT critically implies how owners or managers of a firm acquire resources, integrate those resources, and exploit the resources to create competitive advantages for the firms (Sirmon *et al.*, 2011). Scholars have also affirmed that emergent entrepreneurs need to orchestrate their resources (tangible/intangible) to operate the nascent business and achieve superior performance (Baert *et al.*, 2016). In this line, researchers have attempted to employ ROT to understand how resources are utilized to achieve competitive advantages. For instance, by utilizing the ROT, Rehman *et al.* (2021) demonstrated that IC significantly improves innovative performance, management control systems (MCS), and business strategy. MCS and business strategies have a substantial impact on innovation performance, which is further strengthened by innovative capabilities. In addition, ROT has been viewed to interpret how sustainable supply chain development helps firms achieve lean, green, and profitable business in the context of Thai manufacturers (Wong *et al.*, 2018). In a study, Akram *et al.* (2023) have also contemplated natural resource orchestration theory (ROT) to study the effect of the environment management control system (MCS) package and green intellectual capital (IC) on environmental performance through the mediating role of top management support (TMS) and the interaction role of green business strategies. Similarly, the ROT has been employed to explain the allocation and utilization of resources (i.e. vaccine, number of beds) that created resilience in the US healthcare centers during the COVID-19 pandemic (Baltas *et al.*, 2022). Further, scholars have noted that in the resource orchestration process, entrepreneurial orientation (EO) acts as an instrumental, role because it offers the mobilizing vision to use firm resources (Wales *et al.*, 2013). In a recent exemplary research Miao *et al.* (2017) have examined and explained the mediating role of EO between intangible resources (e.g. human and social capital) and performance under the lens of ROT. Drawing on the ROT in the light of RBV, this study believes that intellectual capital (resource) influences entrepreneurial orientation (orchestration) which results in competitiveness improvement of firms (performance). The present research addresses competitiveness improvement as an outcome of leveraging intellectual capital (which includes human, structural, and relational components) and entrepreneurial orientation. This framework sets it apart from the research undertaken by Rehman *et al.* (2022) in the Pakistani manufacturing business, which investigated other variables.

Intellectual capital

The literature on IC is at evolving stage (Vidyarthi and Tiwari, 2019) and studies on IC are still disintegrated and inconclusive (Martín-de Castro *et al.*, 2019). According to scholars, IC insinuates the knowledge (resource) of firms in creating value for competitive advantage. It is

evident from the earlier literature that there is a wide-ranging agreement on IC categorization, which is based on the tripartite model comprising human capital, structural capital, and relational capital (Cuganesan, 2005). *Human capital* is deemed to be one of the rudimentary constituents of IC and the most essential firm resource since it refers to employees' skills, abilities, knowledge, and expertise (Bontis *et al.*, 2018). It is a kind of distinct resource which accelerates performance by delivering competitive differentiation in firms (Khalique *et al.*, 2020). *Structural capital* refers to the structure and has been ruminated as a vital resource (intellectual capital) and skeleton of firms (Demartini and Beretta, 2020) and exemplifies the infrastructure, regularities, and policies of firms. *Relational capital*, as an external structural resource of the firm, embraces advancing, sustaining, and nurturing superior rapport with stakeholders that create a positive impact on business (Cuganesan, 2005). Relational capital is the know-how entrenched in the recognition, advancement, and continuation of external relationships (Khalique *et al.*, 2015). Recently, scholars have contended human, structural, and relational capital as a major catalyst and vital resource for productivity parameters such as competitiveness improvement (Vidyarthi and Tiwari, 2019).

Intellectual capital and competitiveness improvement

In a seminal work, Wu (2008) argued and validated that competitiveness improvement as the subjective measurement of performance. Researchers in the field of business and marketing have recently paid significant attention to competitiveness improvement of firms (Jahanshahi and Bhattacharjee, 2020). Competitiveness Improvement has been defined as the capability of the firms to provide their product or services more competently and effectively than the competitors. Scholars have found that social capital enhances the competitiveness improvement of the SMEs (Wu, 2008). While studying the newly established SMEs in Afghanistan, Afshar Jahanshahi *et al.* (2020) found significant positive relationship between creativity and competitiveness improvement. Among the SMEs, IC has been considered a catalyst for competitiveness improvement in the current trailblazing business environment (Khalique *et al.*, 2020). Previous study reveals that IC substantially enhances innovation performance and interorganizational learning, while interorganizational learning directly contributes to innovation performance in the Pakistani automotive industry. Furthermore, interorganizational learning acts as an intermediary between IC and innovation performance, and Industrial IoT technology strengthens this relationship (Rehman *et al.*, 2023). Scholars have argued that knowledge, skills, and expertise which demonstrate the human capital enhance the competitiveness of firms (Wu, 2008). In this line, resource orchestration theory denotes that owners' skills and capabilities are important for orchestrating resources effectively (Sirmon *et al.*, 2011). However, in the previous literature, human capital has been found to significantly improve organizational efficiency and profitability (Kweh *et al.*, 2022). Structural capital as a firm's resources enables the stream of knowledge needed to enhance operational efficiency and thus improve the competitiveness among the firms (Bontis *et al.*, 2018). Enhancing the structural capacity, and administrative process with real-time information is important to improve the competitiveness in the market (Jardon and Martos, 2012). Structural capital has been found to have a positive impact on the performance of product innovation but a negative effect on the profitability and growth of the firms. While in Pakistan, the structural capital of SMEs was revealed to be insignificant for performance. In another study, structural capital revealed to improve business efficiency but has no substantial effect on corporate profits (Kweh *et al.*, 2022). However, this study believes that structural capital will translate the well-organized structure of the firm, process, and system into the competitiveness improvement of the MSMEs. In addition, when MSMEs maintain a strong and good relationship with the customer, supplier, and strategic alliances, it allows gaining a competitive advantage in the market (Rahman *et al.*, 2019). In the context of Italy for

example, [Bontis et al. \(2018\)](#) examined social cooperatives and revealed the instrumental role of relational capital on firms' performance. Other study demonstrated that relational capital improves both business efficiency and profitability, however excessive investment in relational capital might result in declining returns ([Kweh et al., 2022](#)). In a meta-analysis, [Bansal et al. \(2023\)](#) demonstrates that effective IC management in SMEs can increase business performance over a variety of metrics, although the outcomes may be asymmetrical.

It is suggestive that firms can gain a competitive advantage and defeat the competitors in the marketplace which may lead to competitiveness improvement achievement. Thus, drawing on the resource orchestration theory and in light of the above discussion, we believe that:

Hypothesis (H1). Human capital has a significant positive association with competitiveness improvement.

Hypothesis (H2). Structural capital has a significant positive impact on competitiveness improvement.

Hypothesis (H3). Relational capital has a significant positive link with competitiveness improvement.

Intellectual capital and entrepreneurial orientation

EO is a firm's strategic posture and apprehends definite entrepreneurial facets of decision-making styles, approaches, and practices ([Wiklund and Shepherd, 2005](#)). To clarify the concept of EO, [Lumpkin and Dess \(1996, p. 136\)](#) in their scholarly research clearly stated that "an EO refers to the processes, practices, and decision making activities that lead to a new entry". EO is a multidimensional construct and has three dimensions: innovativeness, proactiveness, and risk-taking. Innovativeness refers to the firm's effort to experiment new product or services to meet the need in the market ([Lumpkin and Dess, 1996](#)). Scholars have noted that firm's intangible resources such as intellectual capital determines the innovation and pave the way for new product or service to be introduced to the market ([Rehman et al., 2022](#)). According to the resource-based theory, knowledge is the most significant asset that a firm can possess under the domain of human capital. However, [Calabrò et al. \(2021\)](#) argued that managing the human capital enable firms to be more innovative to experiment the new product or services. Researchers have also argued firms' innovativeness is largely depended on the structural capital. In a study, [Ramírez-Solis et al. \(2022\)](#) have asserted that innovativeness of firm, as an element of EO, is remarkably influenced by the role of network that is constituted in the relational capital of the firms. Proactiveness refers to taking actions up the front of the anticipated competition of imminent market demand ([Lumpkin and Dess, 2001](#)). However, it is arguably fact that knowledge, structural capacity, and role of network enables firms to anticipate and act pre-emptively to achieve the competitive advantages. Risk-taking is the tendency to initiate any step with uncertainty and having the possibility of failure. Most of the research in the entrepreneurship field vividly pondered on the EO-performance relationship which was found to be strongly significant. Researchers have asserted that the origin of EO remains inexplicit and should advance the study to less explored areas dealing with the firm's intangible resources ([Rodrigo-Alarcón et al., 2018](#)). Therefore, entrepreneurship scholars have endeavored to consider intangible resources one of which is, the IC to explain the entrepreneurial orientation of the firms ([Liu and Lee, 2015](#)). From the theoretical purview, resource orchestration theory suggests, resources are needed to mobilize, structure, and use effectively ([Sirmon and Hitt, 2003](#)). EO encompasses the execution of strategies to pursue prospective opportunities in the market and serves as a means by which managers articulate their vision and mobilize resources. Literature suggest that RBV theory skips to consider the owner's/manager's role, while ROT theory contemplate

the significance of managerial role to mobilize the firm's resources to get an edge over competitors (Rehman *et al.*, 2022). Thus, EO corresponds to the firms' mobilizing visions as outlined in the resource orchestration literature (Chirico *et al.*, 2011). EO has been regarded as process of resource mobilization. Wiklund and Shepherd (2005) documented that EO aids firm to mobilize resources towards innovativeness and eventually which leads to competitiveness. Along the same lines, risk taking, which is as an element of EO, enables firms to mobilize its resources towards competitiveness and being proactive (as an element of EO) allows firm to mobilize resources anticipating any future changes in the market (Lumpkin and Dess, 1996). In this regard, scholars have purported and substantiated that entrepreneurial orientation (EO) could be the possible way to activate the resources efficiently in other word, mobilize the resources and the IC and EO relationship can thus be explained by resource orchestration theory (Miao *et al.*, 2017). Considering the resource orchestration theory in align with the RBV theory, prior arguments, and rationale, we embark on the following hypotheses:

- Hypothesis (H4). Human capital has a significant positive association with entrepreneurial orientation.*
- Hypothesis (H5). Structural capital has a significant positive link with entrepreneurial orientation.*
- Hypothesis (H6). Relational capital has a significant positive impact on entrepreneurial orientation.*

Entrepreneurial orientation and competitiveness improvement

The EO-performance relationship has been the most well-researched topic in the EO context, and the relationship received compelling traction among researchers. From the theoretical perspective, this relationship has been explained by a diverse range of theories, resource orchestration theory is one, among others. The theory has been used to explain that entrepreneurial orientation orchestrates the available resources of small businesses to achieve performance (Wales *et al.*, 2013). Likewise, Baert *et al.* (2016) also expounded that resources orchestration theory implies the amalgamation of resources, capabilities, and actions of managers/entrepreneurs which ultimately results in enhanced firm performance. However, resonating with other researchers, for example, Wu (2008), this study has considered competitiveness improvement as an alternative construct to embody the performance of firms in subjective terms. An earlier study also endorsed the imperative role of EO to improve the competitiveness of SMEs (Caseiro and Coelho, 2018). The ability to engage in such an approach helps the MSMEs to achieve competitiveness improvement. Hence this study presumes that EO will have a positive effect on competitiveness improvement.

- Hypothesis (H7). Entrepreneurial orientation has a significant positive relationship with competitiveness improvement among MSMEs.*

The mediating role of EO

The relationship between IC and firm performance though tested many times but still remains incomplete (Demartini and Beretta, 2020). Although few studies have been found that use mediation analysis to obtain an overall and clear view of the IC-performance link. In the relationship between IC and Competitive Advantage, Business Intelligence and Brand Image are found to mediate integrating insights from resource based view (RBV) theory and Dynamic Capability View (Mohammad Shafiee, 2022). According to the RBV theory, having valuable, rare, inimitable, and non-substitutable (VRIN) is essential but yet insufficient to

yield competitive advantage or competitiveness improvement (Barney, 1991). Besides acquiring resources, it is necessitated to comprehend how entrepreneurs might orchestrate resources to reap the benefit (Yu and Wang, 2021). The RBV and ROT evidenced that intellectual capital as intangible resources serve as underlying resource base, upon which entrepreneurs crafts firms' leverage (Miao *et al.*, 2017). Scholars have argued that while building the resource infrastructure, firms use intellectual capital (e.g., human capital, structural capital, relational capital) as fundamental determinants to set the business processes and practices. EO as process and practice, facilitate using the resources to improve the competitiveness of the firms. In addition, Wiklund and Shepherd (2005) have convincingly maintained that EO can be a facilitator and means of performance measurement of the firms which are influenced by the intangible and knowledge based resources. It has also been asserted in the literature that firms become competitive not because of what they have rather what they do with the resources (Sirmon *et al.*, 2011) and EO represents "what they do" by utilizing its resources (Wiklund and Shepherd, 2005). Hence, a firm retaining ample of resources will have a superior capacity to configuration an entrepreneurial orientation (Miao *et al.*, 2017). Coherent with resource orchestration theory (Sirmon and Hitt, 2003; Wales *et al.*, 2013), we consider an indirect effect of IC on competitiveness improvement, that is, the mediating role of EO between IC and competitiveness improvement. Wales *et al.* (2013) affirmed that EO might orchestrate the resources to attain a competitive advantage. Resource orchestration scholarship also ratifies IC (e.g. human capital) as the initial resource benefaction of the ventures to shape the strategic orientation of the firms (Miao *et al.*, 2017). Therefore, we extend 'resource orchestration' arguments by positing that the EO facilitates MSMEs' initial resources to translate into competitiveness improvement. Specifically, we propose that:

Hypotheses (H8, H9, H10). EO mediates the association between the dimensions of intellectual capital (human capital, structural capital, relational capital) and competitiveness improvement.

Following the above discussions and drawing on the Resource Orchestration Theory, the paper presents the research framework (Figure 1) and analyses the effect of intellectual capital dimensions (including human capital, structural capital, and relational capital) on the competitiveness improvement of MSMEs and entrepreneurial orientation. It tests the mediating role of entrepreneurial orientation on the relationship between the dimensions of intellectual capital and competitiveness improvement.

Research methodology

Data collection procedure and sample

Data has been collected from MSMEs (micro-small-medium enterprises) in Oman using the random sampling method to test the research objectives. The Ministry of Commerce, Oman has categorized MSMEs in terms of 1–5 employees (as micro-sized), 6 to 25 employees (as small-sized), and 26 to 99 employees (as medium-sized enterprises). MSMEs play the most important role in Oman and acceleration of entrepreneurship has now been considered in Oman as one of the major platforms for a sustainable future. Evidence shows that Oman has appreciated the contribution of entrepreneurship to employment opportunities, alleviation of poverty, and diversification of the economy (Magd and McCoy, 2014). Therefore, it is very crucial to recognize the catalysts to develop further the MSMEs in Oman through research to generate feasible and concrete recommendations. Consequently, studying the IC about MSMEs' competitiveness improvement will be a unique attempt in Oman, and lies the novelty of this research. This study is quantitative, and a self-administrated questionnaire was employed for data collection purposes. The respondents are MSMEs owners and data has

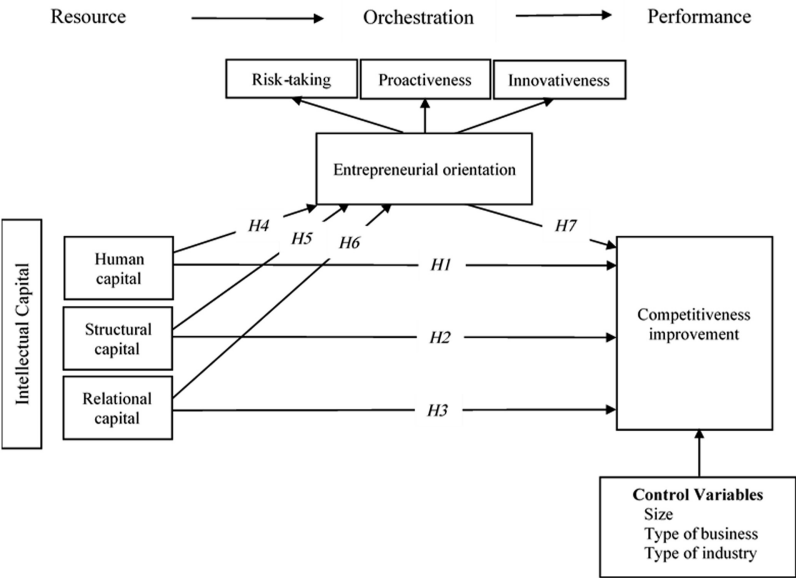


Figure 1.
Research framework

Source(s): Authors own creation

been collected through the drop-off and pick-up method. Following the cultural context, some people in Oman speak Arabic and some speak English. Thereby, to reduce bias and ambiguity, we translated the initial questionnaires from English to Arabic. Next step, we interviewed five entrepreneurs using the debriefing technique. Subsequently, we distributed the final version of the questionnaires among 1000 MSMEs and 347 useable data returned for analysis purposes. The data has been collected within three months. The detailed demographic profile has been outlined in [Appendix A](#).

Item measurement

Each item was measured based on the Five-Point Likert Scale from 1 = strongly disagree to 5 = strongly agree. Details of the measurement items are provided in [Appendix B](#). We measured intellectual capital with three variables including human capital, structural capital, and relational capital. Human capital is measured with five-item adapted from [Subramaniam and Youndt \(2005\)](#), relational capital with 4-item and structural capital with seven-item adapted from [Hsu and Fang \(2009\)](#). Competitiveness improvement has been measured with three-item adapted from [Wu \(2008\)](#). To measure entrepreneurial orientation, we have formed it as a second-order reflective variable with three dimensions namely risk-taking (three-item), proactiveness (three-item), and innovativeness (three-item) adapted from the work of [Covin and Slevin \(1989\)](#). In the literature, there is still a different view associated with entrepreneurial orientation as a formative or reflective construct. In the current research, the objective is to examine entrepreneurial orientation as a firm-level strategic approach to the influence of firm performance thus, reflective is more appropriate, as indicated by [Lumpkin and Dess \(1996\)](#). The size of MSMEs, type of business, and type of industry have been tested as control variables to understand their potential impact on competitiveness improvement.

Results

We collected data from a single source that requires to confirm the common method bias (Podsakoff and Organ, 1986). In this regard, we used two statistical remedies to measure the presence of common method bias following previous studies (Taghizadeh *et al.*, 2020). First, the Harman single-factor test was used by merging all the items into a factor analysis (principal component) (Podsakoff and Organ, 1986). The results indicating 39.19% of the variance is accumulated by the first factor and this result is below the recommended cut-off value of 50%. Second, we conducted a correlation analysis including all the variables to find out if the variables are highly correlated (recommended value is more than 0.90) or if they are not as suggested by Bagozzi *et al.* (1991). Our results revealed a value of less than 0.90 and the highest significant correlated value is $r = 0.726$. Therefore, following the results of the Harman single-factor and Correlation analysis, we confirm that this study is free from common method bias.

For the final data analysis, we used the structural equation modeling (SEM) technique with SmartPLS software developed by Ringle and Wende (2005). In structural equation modeling (SEM), there are two primary methods for estimating the relationships among variables of the studies which are a CB-SEM (covariance-based) and PLS-SEM (variance-based) approach. The most well-known software tools to perform CB-SEM are Linear Structural Relations (LISREL), AMOS and EQS, while PLS is the most well-known software tool for the variance-based approach. To perform CB-SEM or PLS-SEM, it depends on the objectives of the study. CB-SEM goal is theory testing and theory confirmation, while PLS-SEM goal is theory development and explanation of variances (prediction of constructs). PLS-SEM estimates the relationships among latent variables with several indicators, and to predict key target constructs or identify key driver constructs (Henseler and Sarstedt, 2013). The fundamental objective of Partial Least Squares Structural Equation Modeling (PLS-SEM) is to predict essential target constructs or identify critical driving constructs. Given that the current study aims to discover new correlations between variables and predict key target constructs, we used SmartPLS software to achieve our research goals. This study involves examining the measurement model for validity and reliability, as well as evaluating the structural model to investigate the links between the variables, which led to the final results.

Based on the above discussion, the objectives of the current study are to explore the new relationship among variables and explore predictors of endogenous variables. Therefore, we used PLS-SEM to assess the measurement model (validity and reliability) and the structural model. Following the Hair *et al.* (2017) guidelines, the measurement model has been assessed by convergent validity (assessing factor loadings, composite reliability (CR), and average variance extracted (AVE)) and discriminant validity (using Fornell and Larcker (1981) method) to establish the construct validity and reliability of the items. The structural model has been evaluated by the assessment of standard beta, t-value, f^2 value (a measure of the effect sizes), the R^2 value (coefficient of determination), and the value of Q^2 (a measure of the predictive relevance) by using bootstrapping method (5000 resamples) to test the hypotheses of the study.

In SmartPLS, we first analyzed the measurement model and then we evaluated the structural model as follows:

Measurement model

The measurement model has been assessed by convergent validity and discriminant validity to establish the construct validity and reliability of the items. The results show that all the items loading is above 0.60 except one item which has been dropped (STC5) due to the low loading. The value of CR for the variables is above 0.70 and AVE for the variables is above 0.50, as per the thumb rule suggested by Hair *et al.* (2017). Table 1 shows the details.

Variable-first order	Item	Factor loading	Cronbach's alpha	CR	AVE
Human capital	HC1	0.873	0.921	0.941	0.760
	HC2	0.848			
	HC3	0.926			
	HC4	0.864			
	HC5	0.847			
Structural capital	STC1	0.655	0.842	0.883	0.560
	STC2	0.806			
	STC3	0.734			
	STC4	0.826			
	STC6	0.789			
	STC7	0.661			
	RC1	0.811			
Relational capital	RC2	0.857	0.845	0.896	0.684
	RC3	0.865			
	RC4	0.772			
	INNO1	0.852			
Innovativeness	INNO2	0.866	0.840	0.904	0.758
	INNO3	0.892			
	PRO1	0.813			
Proactiveness	PRO2	0.819	0.762	0.863	0.678
	PRO3	0.838			
	RT1	0.830	0.841	0.904	0.760
Risk-taking	RT2	0.898			
	RT3	0.885			
Competitiveness improvement	COI1	0.822	0.806	0.886	0.721
	COI2	0.874			
	COI3	0.850			
Variable-second order	Item	Factor loading		CR	AVE
Entrepreneurial orientation	Innovativeness	0.896	0.913	0.927	0.808
	Proactiveness	0.916			
	Risk-taking	0.885			

Table 1.
Results of convergent
validity

Note(s): CR = composite reliability, AVE = average variance extracted
Source(s): Authors' own creation

Discriminant validity can be assessed by comparing the correlations between variables and the square root of the average variance extracted (AVE) for that particular variable (Fornell and Larcker, 1981). The results of our analysis revealed that the square root of the AVE was higher than the correlation values in the row and the column. This result indicates a satisfactory level of discriminant validity in our study. Table 2 shows the results of discriminant validity.

Structural model

Following the guidelines of Hair *et al.* (2017), we measured the structural model to test the hypotheses of the study. Assessment of standard beta, t-value, f^2 value (a measure of the effect sizes), the R^2 value (coefficient of determination), and the value of Q^2 (a measure of the predictive relevance) by using bootstrapping method (5000 resamples) has been reported.

The R^2 value of entrepreneurial orientation is 0.515 (51.5%) and competitiveness improvement is 0.629 (62.9%). We also examined the changes in the R^2 value to determine the effect size f^2 . Following the Cohen (1988) guideline, the effect size of 0.02, 0.15, and 0.35 respectively represent small, medium, and large effects. Table 3 shows the results of f^2 in the current research model starting from 0.039 to 0.474.

We assessed the predictive relevance of the model using the blindfolding procedure. The suggested value is above 0 and our results show that the Q^2 values for entrepreneurial orientation ($Q^2 = 0.281$), and competitiveness improvement ($Q^2 = 0.426$) are more than 0 indicating that our study model has sufficient predictive relevance. The results are shown in [Table 3](#).

Direct effects- [H1](#), [H2](#), and [H3](#) predict the influence of human, structural, and relational capital on competitiveness improvement respectively. The results in [Table 3](#) show that the effects of human capital and structural capital on competitiveness improvement are not significant. But relational capital has a positive and significant effect on competitiveness improvement with $\beta = 0.278$ and $p < 0.01$. Thus, [H1](#) and [H2](#) were not supported but [H3](#) was supported.

[H4](#), [H5](#), and [H6](#) predict the influence of human, structural, and relational capital on entrepreneurial orientation respectively. The findings show that human capital with $\beta = 0.147$ and $p < 0.01$, structural capital with $\beta = 0.325$ and $p < 0.01$, and relational capital with $\beta = 0.408$ and $p < 0.01$ have a positive and significant effect on entrepreneurial orientation. Thus, [H4](#), [H5](#), and [H6](#) were supported.

[H7](#) predicts the influence of entrepreneurial orientation on competitiveness improvement. This relationship has been found to be positive and significant with $\beta = 0.612$ and $p < 0.01$ supporting [H7](#).

Mediating effects- [H8](#), [H9](#), and [H10](#) predict the mediating role of entrepreneurial orientation on the relationship of human, structural, and relational capital with competitiveness improvement. To test mediating relationships, the approach of [Baron and Kenny \(1986\)](#) used in earlier studies requires assessing each of the path relationships and determining the mediating role. Following; and [Preacher and Hayes \(2008\)](#) approach, in SEM, mediation occurs if the results of the indirect relationship between independent and dependent variables be significant. Thus, we conducted a *t*-test by non-parametric procedure bootstrapping to find the mediating effects. The results indicate that entrepreneurial orientation mediates the relationship between human capital and competitiveness improvement with *t*-value = 3.077, the relationship between structural capital and competitiveness improvement with *t*-value = 5.672. According to [Hair et al. \(2017, p. 250\)](#) there are three types of mediation:

- (1) “Complimentary mediation (partial mediation): the indirect effect and the direct effect both are significant and point in the same direction.
- (2) Competitive mediation: the indirect effect and the direct effect both are significant, and point is opposite direction.
- (3) Indirect-only mediation (fully mediation): the indirect effect is significant but not the direct effect.”

	1	2	3	4	5	6	7
1 Competitiveness improvement	<i>0.849</i>						
2 Human capital	0.279	<i>0.872</i>					
3 Innovativeness	0.614	0.369	<i>0.870</i>				
4 Proactiveness	0.723	0.395	0.757	<i>0.823</i>			
5 Relational capital	0.645	0.248	0.546	0.558	<i>0.827</i>		
6 Risk-taking	0.726	0.230	0.655	0.724	0.610	<i>0.872</i>	
7 Structural capital	0.505	0.366	0.620	0.572	0.591	0.480	<i>0.748</i>

Note(s): Below the diagonal are the values of correlation between constructs; whereas the italic values of the diagonal are the square root of average variance extracted (AVE) of the constructs indicating the highest in any row or column

Source(s): Authors' own creation

Table 2.
Discriminant validity
of the constructs
(Fornell and Larcker
criterion)

Table 3.
Results of the
structural model

	Direct relationships	Beta	SE	t-value	p values	Decision	R ²	f ²	Q ²	VIF
H1	Human capital - > Competitiveness improvement	-0.001	0.043	0.025	0.980	Not supported	0.629	0.000	0.426	1.201
H2	Structural capital - > Competitiveness improvement	-0.038	0.049	0.777	0.437	Not supported		0.003		1.886
H3	Relational capital - > Competitiveness improvement	0.278	0.051	5.492**	0.000	Supported		0.109		1.883
H4	Human capital - > Entrepreneurial orientation	0.147	0.047	3.140**	0.002	Supported	0.515	0.039	0.281	1.156
H5	Structural capital - > Entrepreneurial orientation	0.325	0.058	5.589**	0.000	Supported		0.131		1.668
H6	Relational capital - > Entrepreneurial orientation	0.408	0.051	8.057**	0.000	Supported		0.223		1.540
H7	Entrepreneurial orientation - > Competitiveness improvement	0.612	0.049	12.576**	0.000	Supported		0.474		2.062
	<i>Indirect effect</i>									
H8	Human capital - > Entrepreneurial orientation - > Competitiveness improvement	0.112	0.036	3.077**	0.002	Supported				
H9	Structural capital - > Entrepreneurial orientation - > Competitiveness improvement	0.249	0.044	5.671**	0.000	Supported				
H10	Relational capital - > Entrepreneurial orientation - > Competitiveness improvement	0.314	0.043	7.294**	0.000	Supported				
	<i>Control Variables</i>									
	Size - > Competitiveness improvement	0.038	0.032	1.209	0.227	Insignificant		0.003		
	Type of business - > Competitiveness improvement	-0.003	0.033	0.081	0.935	Insignificant		0.000		
	Type of industry - > Competitiveness improvement	-0.009	0.034	0.253	0.800	Insignificant		0.000		
Note(s): **p < 0.01										
Source(s): Authors' own creation										

In our mediation analysis we found that direct effect of human capital and structural capital with competitiveness improvement are insignificant, but the indirect effects through EO appeared to be significant. Hence, according to Hair *et al.* (2017) the type of mediation is Indirect-only mediation (fully mediation). As discussed by Hair *et al.* (2017, p. 250) “this situation represents the best-case scenario as it suggest that mediators fully complies with the hypothesized theoretical framework”. Thus, H8, and H9 were supported.

Further, entrepreneurial orientation mediates the relationship between relational capital and competitiveness improvement with $t\text{-value} = 7.294$. This is complementary mediation (partial mediation) as the indirect effect and the direct effect both are significant and point in the same direction (Hair *et al.*, 2017) providing support for the hypothesized (H10) mediating relationship. However, complementary mediation also provides an indication that another mediator may have been omitted whose indirect path has the same direction as the direct effect. The results are shown in Table 3.

Control variables-three control variables of this study (size of MSMEs, type of business, and type of industry) have no significant effect on competitiveness improvement, meaning that competitiveness improvement is not sensitive to these control variables in the context of this study.

Multigroup analysis- While investigating the demographic profile of the respondent, the results of frequency analysis on respondents' work experience show that 58.2% of them are experienced and 41.8% of them are inexperienced (Appendix A). Therefore, we ran multigroup analysis on the working experience of entrepreneurs to determine if there is any difference between these two groups in terms of the well managed of resources. The effect of this demographic variation has been learned on organizational outcomes in the literature on upper echelons theory (Popli *et al.*, 2022).

In SmartPLS, multigroup analysis was performed to assess whether the impact of work experience on the model relationships differs between the experienced and inexperienced group. The findings reveal that all differences are insignificant except for one relationship. The relationship between human capital and competitiveness improvement is partially significant with $p < 0.048$. The differences in path coefficients (Table 4) reveals an interesting finding which suggests that the influence of human capital on competitiveness improvement is stronger in experienced groups compared to the inexperienced groups.

Discussion

Researchers contended that simply having resources is insufficient for gaining a competitive advantage or improving market performance. There is a lack of comprehensive understanding of how firms arrange resources, such as, intellectual capital to foster better

Relationships	Difference (experienced - inexperienced)	<i>p</i> value
<i>Entrepreneurial orientation - > Competitiveness improvement</i>	-0.006	0.530
<i>Human capital - > Competitiveness improvement</i>	0.140	0.048*
Human capital - > Entrepreneurial orientation	-0.012	0.551
Relational capital - > Competitiveness improvement	-0.014	0.549
Relational capital - > Entrepreneurial orientation	-0.124	0.894
Structural capital - > Competitiveness improvement	0.016	0.438
Structural capital - > Entrepreneurial orientation	0.091	0.216

Note(s): *The differences are significant in the relationships between the Experienced - Inexperienced group. $p < 0.05$

Source(s): Authors' own creation

Table 4.
Results of the
multigroup analysis

performance in a specific context. The resource orchestration view builds on previous resource-based theories (such as the resource-based view theory) by emphasizing resource management as opposed to ownership of resources (Deligianni *et al.*, 2019). In addition, researchers have cautioned that the direct consequences of the IC dimensions on firm performance have so far been unclear. In fact, there is a scarcity of studies that directly study the relationship between IC and competitiveness improvement. Scholars have argued for the inclusion of mediation in such inclusive IC-performance (subsequently, IC-competitiveness improvement relationships) in order to establish a more prolific and comprehensive picture of this relationship.

The current study draws on resource orchestration theory to examine the relationships between intellectual capital (IC), entrepreneurial orientation (EO), and competitiveness improvement among micro-small-medium enterprises (MSMEs). The findings suggest that intangible resources like human capital, structural capital, and relational capital alone cannot facilitate to achieve competitiveness improvement. Rather, if those resources are orchestrated (entrepreneurial orientation) well, it is possible to achieve better competitiveness improvement.

Typically, in most of the research, human capital and structural capital were demonstrated to play an instrumental role in performance, and growth of MSMEs. For instance, Dimov and Shepherd (2005) observed a positive association of human capital and structural capital with firm performance. In another context, human capital, structural capital, and relational capital found to have significant positive relationship with performance (Mahmood and Mubarik, 2020). In our study, insignificant relationships have been found between human capital and structural capital with competitiveness improvement perhaps due to the current state of understanding of human capital and structural capital concept among the MSME entrepreneurs. It is rational to presume that innovative training programs, higher cognitive processes, focused knowledge, well-designed process, a firm's structure, and policies are important to develop the human capital and structural capital to achieve competitiveness improvement. Nonetheless, these are not either fully functional or the entrepreneurs are yet unaware of the usage of those resources in an effective manner. Another reason for the insignificant relationship is perhaps due to the economic transitioning period of Oman from an oil-based economy to a knowledge-based economy. In fact, Oman is in the process of developing a knowledge-based economy that requires further skills, and experience which requires human capital and structural capital. Based on the result, this study claims that relational capital leads to competitiveness improvement. The results support our logic that when MSMEs maintain strong and good relationships with the customer, supplier, and strategic alliances. Consequently, it allows to gain competitiveness improvement, which act as a competitive advantage. Culturally, Oman is a collective society. In such a society, relational capital naturally plays an important role even in the case of achieving firms' better performance.

Our study explored all the dimensions of IC to be significant with the firm's EO which also validates the previous studies (e.g. Talebi *et al.*, 2015). Relational capital appeared to have the strongest effect on EO in this study, followed by structural capital and then human capital. Surprisingly these results emerged as identical to the study by Al-Jinini *et al.* (2019) conducted in Jordan. The result suggests that improving relational capital for MSMEs is compactly linked with EO, as relational capital facilitates firms to get connected with key stakeholders and external parties. Resources such as the infrastructure, systems, policies, and procedures also enable the MSMEs to be more entrepreneurially orientated. We have also tested the relationship between EO and competitiveness improvement in this context of the study. The result appeared to be supportive of the previous studies where EO plays an instrumental role to achieve better performance or competitiveness

improvement (Caseiro and Coelho, 2018). According to the scholar, EO is the strategic orientation and means of firms through which entrepreneurs utilizes and mobilizes the resources to achieve competitive advantage (Miao *et al.*, 2017). The results of this study exemplify the central conception of the resource orchestration theory, where EO symbolizes the resource mobilization of firms as delineated in the resource orchestration literature. Though the direct relationship of human capital and structural capital with competitiveness improvement is insignificant but indirect relationship through entrepreneurial orientation is positive. The result of this study suggested that there is a full mediation in this relationship. The result suggests that if human capital (i.e., Knowledge) and structural capital (i.e., administrative structure) are and managed and mobilized effectively, any outcome such as, competitiveness improvement, is achievable. As a strategic orientation, EO plays vital role to facilitate the human and structural capital through innovativeness, proactiveness, and risk-taking in achieving the competitiveness improvement. The mediating relationship of EO between relational capital and competitiveness improvement also found to be partially mediated. The reason for such is due to the significant and positive relationship of both the indirect effect and the direct effect.

From multigroup analysis it has been revealed that the influence of human capital on competitiveness improvement is stronger among the experienced groups compare to inexperienced groups. Perhaps this is the reason that the direct effect between human capital and competitiveness improvement is insignificant. The experienced group refers here to the individuals who possess significant work or business experienced and inexperienced group refers the opposite. In terms of competitiveness improvement, experienced groups are more likely to have broader and deeper knowledge, skills, and abilities which can be translated to the competitiveness improvement. Little study has been found which attempted to explore whether the influence of human capital differs on competitiveness improvement based on experience and inexperience individual/group. However, Bienhaus and Haddud (2018) affirmed that longer professional experience of individual increases the business competitiveness across different industries in several countries located in Europe, Africa, Asia-Pacific, Middle East, and America. Hence, it is critical to take a context-specific attempt to comprehend the effect of human capital on competitiveness improvement, which we have revealed with regard to the experienced and inexperienced group of the respondents.

Implications

Theoretical

The current study presents several important theoretical contributions to research on entrepreneurship. Our study contributes to the theory of resource orchestration by responding to the call by Sirmon *et al.* (2011) to have further empirical research on resource orchestration. Holistically, in this study, we offer an assessment of the full “resource → orchestration → performance” relationship illustrated in the resource orchestration theory, which had anecdotal evidence previously. Though resources are needed to be orchestrated, it is not clear how the resources would be orchestrated (Sirmon *et al.*, 2011). Our study fills this theoretical gap by introducing EO in relationship with IC and competitiveness improvement. First, our study sheds light on this gap, where dimensions of IC as resources are found to be significant antecedents of EO. In fact, this can be considered one of the most vital theoretical contributions of the current study. It particularly addresses an unexplored area, or ‘gap’, in the existing body of study. This gap refers to how several dimensions of IC, when seen and used as critical resources within an organization, can have a substantial impact or act as antecedents to EO. IC, which includes human, structural, and relational capital, has long been

regarded as a static asset. However, the research suggests that these aspects of IC are dynamic and important in determining an organization's entrepreneurial strategies and behaviors. Second, the result offered convincing rectification to the claim that the materialization of EO necessitates required resources in firms (Miao *et al.*, 2017). The realization or actualization of EO in a business is not a procedural event. It demands a well-organized set of resources. In this context, resources refer to a wide range of assets such as human capital, structural capital, and relational capital. These resources serve as enablers of entrepreneurial endeavors. In the field of IC, this study also adds further knowledge, as results validate the relationships of human capital, structural capital, and relational capital with EO. Third, this study also uses competitiveness improvement as a proxy variable for business performance which would also extend the understanding of business performance. The result of the study suggests that EO leads to competitiveness improvement. Having resources alone is insufficient; managing and coordinating them effectively is essential. This entails coordinating resources with the business's entrepreneurial plan, assigning them to various entrepreneurial endeavors effectively, and continuously modifying the resource base to meet shifting goals and environmental conditions. Fourth, our study outcomes endorse the role of EO as a channel for orchestrating resources. The mediating role of EO between resources and competitiveness improvement has emerged as the most noteworthy finding in the ROT domain, which also adds further knowledge to the EO literature. Perhaps this is one of the most interesting findings that add to the existing literature related to strategic entrepreneurship.

Managerial

This study presents valuable managerial implications for SMEs, and other stakeholders, which will assist practitioners to take up long-term strategic planning. This study could be a strategic guideline for the managers/owners of the MSMEs to attain competitiveness improvement. Evidently, human capital, structural capital, and relational capital play an imperative role in orchestrating managerial action, which is entrepreneurial orientation. Entrepreneurs must develop their skills, knowledge, and experience to materialize their entrepreneurial orientation. Therefore, owners/managers must get the required educational knowledge, must enroll in on-job or on-site training programs, or even through online entrepreneurs should widen their skills and knowledge. Owners/managers of the firms must focus on improving an engrained organizational structure and process as part of developing the structural capital which would contribute to functioning the entrepreneurial orientation. MSMEs mostly struggle with deploying the right resources to fit the market requirement. This study signals that MSMEs should invest further in developing technology, R&D, and the potential market as organizational resources, which would assist in achieving competitiveness improvement. The prudent decision of the MSMEs about improving the social network as part of structural capital and capitalizing the entrepreneurial orientation would enhance competitiveness improvement. Maintaining long-term relationship with customers is a pragmatic strategy for MSMEs. Due to the surge of social media communications, MSMEs should make proper use of it by introducing the online platform to communicate with customers straight away. MSMEs may open the communication channel to receive customer feedback and open the scope of value co-creation with the customers. Alongside, firms should also create a productive association with the suppliers, which would help to develop the supply chain as part of instituting the relational capital. A prolific relational capital would prompt proactiveness and a calculative risk-taking tendency among the MSMEs. As part of relational capital, MSMEs should develop, strengthen, and deepen strategic alliances with large companies, government agencies, and even competitors to enhance the competitiveness.

Policy level

This study also contributes as a timely recommendation for the policy makers particularly those in the gulf countries. Most of the Gulf countries are shifting their economic dependence from the oil sector which has instigated the nation to foster entrepreneurial development in the countries. Within the gulf countries, UAE is far ahead in establishing an entrepreneurial ecosystem and promoting entrepreneurship in the country. SME development authorities in Oman or agencies in other countries with similar directions and strategies may consider the result of this research and devise industry-specific guidelines to cultivate the intellectual capital among the MSMEs and the entrepreneurs to facilitate the entrepreneurial orientation to achieve competitiveness improvement. Different types of training programs, workshops, and simulations for entrepreneurs can be arranged by the government and dedicated semi-government agencies for entrepreneurship development. Such initiatives would make them aware of the intellectual capital and how these capitals can be orchestrated leading to competitiveness improvement. Particularly, ministries related to commerce and industries can arrange intellectual capital grants to the MSMEs across industries to facilitate in development of human capital, structural capital, and relational capital. Policymakers may also craft tailored strategies to flourish intellectual capital and develop an entrepreneurial-oriented eco-system not only in Oman, or gulf countries but also it may be applicable to other countries which are on a similar platform.

Limitations and future research

Our study should also be viewed with some limitations. The perception of the owners or managers of this research may vary across different settings. Hence, scholars are encouraged to test this framework in other settings in terms of geographic location (e.g., gulf countries) or size of the firms (e.g., large firms). Our sample was limited to MSMEs with a relatively small sample. Future studies may enlarge the sample size and compare the size of the ventures, for example, comparison among micro-small, and medium. Our result is only limited to Oman, hence, which has different settings from most of the countries in terms of cultural and institutional eco-system. Therefore, our findings should be judiciously interpreted in the context of other non-gulf countries. Disregarding other intellectual capitals such as social capital might be considered a limitation. However, we have provided credible justification for using the tripartite model based on a recent meta-analysis on intellectual capital. Despite this, future studies may consider all other intellectual capital to study EO and competitiveness improvement. In the future, scholars may consider entrepreneurs' diverse range of competencies which could explicate human capital. Our measures of intellectual capital, entrepreneurial orientation, and competitiveness are subjective and perceptual. Future studies may use appropriate proxy indicators to validate our results.

Conclusion

Despite researchers' substantial contributions, the scholarship of IC is hitherto in its embryonic phase in the field of entrepreneurship. It is an irrefutable reality that intangible resources have become the most crucial and useful resource for any size of the firm in the surge of a knowledge-based economy across the globe. Particularly, MSMEs are now realizing the importance and enticing role of intangible resources such as intellectual capital. This study has also found the significance of intellectual capital in the domain of entrepreneurial orientation and business performance. It is therefore of expectation of the researchers that this study would significantly contribute to the current stream of knowledge in the field of entrepreneurship and intellectual capital.

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(The Appendix follows overleaf)

Appendix 1		Percentage
Age	Below 20	0.9
	21–30	28.1
	31–40	49.4
	41–50	12
	Above 50	9.6
Gender	Male	80.1
	Female	19.9
Education	Primary or till Primary	6.7
	Secondary or Diploma	48
Type of business	Bachelor	40.1
	Master's or above	5.3
	Manufacturing	20.5
	Service	44.4
Number of employees	Retailing/Trading	26.6
	Others	8.5
	1 to 5	48.8
	6 to 25	34.5
Annual sales	26–99	16.7
	less than RO100,000	58.8
	RO100,000 to RO500,000	29.5
Industry	RO500,000 to RO3mn	11.7
	Food	12.3
	Beauty and Cosmetics	31.3
	Clothing	7
	Construction	19.6
	Entertainment	9.9
	Services	14.9
	Other	5
Do you have previous work experience?	Yes	58.2
	No	41.8
Number of years running this business	3 years or less	31
	4–7 years	26.6
	8–12 years	19.9
	13–17 years	9.6
	18 years and more	12.9

Table A1.
Demographic Profile of
the Samples

Source(s): Authors' own creation

Item code	Items	Source
<i>Human Capital:</i> To what extent do you agree with the following statements?		
HC1	Our employees are highly skilled	Subramaniam and Youndt (2005)
HC2	Our employees are widely considered the best in our industry	
HC3	Our employees are creative and bright	
HC4	Our employees are experts in their particular jobs and functions	
HC5	Our employees develop new ideas and knowledge	
<i>Structural Capital:</i> To what extent do you agree with the following statements?		
STC1	Our firm emphasizes IT investment	Hsu and Fang (2009)
STC2	Our firm is willing to invest in business development	
STC3	Our firm has an easily accessible information system	
STC4	Our firm invests a high proportion of its money in R&D	
STC5	Our firm invests a high proportion of its money in patent maintenance	
STC6	Our firm emphasizes new market development investment	
STC7	Our firm has a high proportion of R&D Employees	
<i>Relational capital:</i> To what extent do you agree with the following statements?		
RC1	Our firm maintains long-term relationships with customers	Hsu and Fang (2009)
RC2	Our firm has many excellent suppliers	
RC3	The market that our firm is in has the potential to grow	
RC4	Our firm has strong strategic alliances	
<i>Entrepreneurial Orientation:</i> To what extent do you agree with the following statements?		
INO1	Our firm emphasizes innovation and research and development activities	Covin and Slevin (1989)
INO2	Our firm introduces new products and service at a high scale	
INO3	Our organization supports dramatic changes in product or services	
PRO1	Employees in our firm are encouraged to take initiatives and proactive moves	
PRO2	Our firm is usually the first to introduce new technologies and products	
PRO3	Our firm has a strong competitive posture toward competitors	
RT1	Our firm has a strong proclivity for high-risk projects with chance of high returns	
RT2	The environment faced by our firm requires boldness to achieve objectives	
RT3	Our firm usually adopts an aggressive, bold posture when faced with risk	
<i>Competitiveness Improvement:</i> To what extent do you agree with the following statements?		
COI1	We often defeat our competitors in the marketplace	Wu (2008)
COI2	Our firm can provide higher quality products and services to customers	
COI3	Forming a business alliance with business partners helps our firm to respond more promptly to market demands	

Table A2.
Measurement Items**Corresponding author**

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