


Exploring the impact of corporate entrepreneurship on organizational performance in the ICT companies of Jordan: The moderating role of gender-diverse leadership



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ABSTRACT

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This study focuses on addressing challenges faced by Jordanian Information and Communication Technology (ICT) organizations, aiming to explore solutions for sector sustainability amid troubling economic conditions. Specifically, it investigates the impacts of Corporate Entrepreneurship (CE) and Top Management Team Gender Diversity (TMTGD) on the performance of these organizations. Furthermore, it also examines the moderating role of TMTGD within this context. To achieve these objectives, the study collects data from 300 employees considered part of the top management teams within Jordan's ICT sector. Utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM), the study estimated both measurement and structural models to thoroughly examine the data and proposed relationships. The findings indicate that CE and TMTGD have positive and statistically significant effects on organizational performance. However, the study also uncovers a nuanced pattern of interaction between these variables. Explicitly, it suggests that the presence of gender diversity within top management teams may attenuate the otherwise positive impact of CE on organizational performance. Hence, this research suggests that ICT companies should actively cultivate a corporate entrepreneurship culture to elevate their organizational performance. Furthermore, policymakers and leaders are encouraged to initiate training and educational programs addressing gender dynamics and biases with the goal of fostering a more inclusive and equitable workplace.

Contribution/ Originality: The contribution of this research is in the roles of corporate entrepreneurship and top management teams' gender diversity in influencing the performance of Jordanian ICT sector.

1. INTRODUCTION

Modern organizations, whether local or global, face many internal and external challenges stemming from uncontrollable factors. These challenges encompass a wide spectrum, including global warming, refugee issues, and the recent disruptive force of the COVID-19 pandemic (Ahammad, Glaister, & Gomes, 2020). Furthermore, the rapid evolution of technology and intense competition add to the complexity of the contemporary organizational landscape (Ayub, Razzaq, Aslam, & Iftekhar, 2013). In this background, recent literature has highlighted the internal struggles encountered by organizations, specifically concerning their performance and operational efficiency. These internal challenges, such as shifting lifestyles, a pivot towards online work environments, and

evolving employee interests, have been emphasized as critical factors influencing organizational dynamics (Yamane & Kaneko, 2021).

As Teece, Pisano, and Shuen (1997) articulated, these formidable challenges profoundly influence an organization's performance, impacting its ability to attain economic, operational, and strategic goals. Consequently, organizations across sectors have embarked on quests to identify methods crucial for their survival in this demanding landscape (Sampath & Krishnamoorthy, 2017). Notably, the Information and Communication Technology (ICT) sector is a major player in this shifting terrain. It operates in a domain characterized by intense competition and substantial demand (Albhirat, Zulkifli, Salleh, & Zaki, 2023a). Moreover, numerous other sectors rely on ICT products and solutions to bolster their competitive edge and overall performance (Apulu, Latham, & Moreton, 2011; Yunis, Tarhini, & Kassar, 2018). When ICT organizations offered creative solutions, such as remote work facilitation and improved communication channels, they further highlighted the crucial role they played during the COVID-19 pandemic (Dannenberg, Fuchs, Riedler, & Wiedemann, 2020). Consequently, this led to growth in other sectors, exemplified by the surge in global e-commerce sales, which are projected to reach 22% by 2024 (UNCTAD, 2021). This growth was made possible through adaptive mobile applications and digital channels offered by ICT organizations.

However, these achievements also pressure ICT companies to devise efficient solutions within tight timeframes and deliver high-quality products that reflect their performance (Albhirat, Zulkifli, Salleh, & Zaki, 2023b). The need to maintain high performance levels without experiencing operational delays that might affect their competitive positioning makes this imperative more pressing (Igun, 2014). Nevertheless, global and Middle Eastern telecommunication organizations have witnessed a consistent decline in performance, with the majority of ICT organizations rated between "poor" and "fair" in 2022 (Atradius, 2022). Scholars have looked into factors that can enhance organizational performance to address these challenges. While extensive literature exists on factors influencing organizational performance (Albhirat et al., 2023b; Salameh et al., 2011) the dynamic nature of organizations like ICT firms necessitates more active and influential approaches.

According to various studies, corporate Entrepreneurship (CE) (Chen, Wang, Nevo, Benitez-Amado, and Kou (2015) and Kuhn, Olson, and Raz (2016) emerge as tools of significant importance in promoting organizational performance. CE is closely associated with innovation and change, guiding organizations to navigate sudden events and challenges that could impact their strategic direction and structure (McFadzean, O'Loughlin, & Shaw, 2005). It involves efficiently using available resources to seize opportunities at the corporate level (Zehir, Muceldili, & Zehir, 2012). However, CE remains relatively underexplored as a means to enhance organizational performance, particularly in developing countries like those in the Middle East (Aljuwaiber, 2021).

According to the current literature (Kuratko & Audretsch, 2009; Morris, Allen, Schindehutte, & Avila, 2006), a variety of factors determine whether CE is successful in enhancing organizational performance. One such factor is gender diversity among top management teams (TMTGD), a topic that has garnered substantial attention from scholars (Abdissa, Ayalew, Illés, & Dunay, 2021). Previous research has explored the effect of gender diversity on company performance and the role of female workers in enhancing workplace communities (Ruiz-Jiménez, Fuentes-Fuentes, & Ruiz-Arroyo, 2016). However, due to the underrepresentation of women in top management positions in developing countries (Triana, Richard, & Su, 2019), there remains a dearth of studies on the effect of TMTGD on the relationship between CE and organizational performance.

Hence, this study aims to answer three key research questions: (1) Does CE enhance the performance of ICT organizations? (2) Does TMTGD influence organizational performance? (3) How does the TMTGD moderate the association between CE and organizational performance? This research postulates that CE positively affects ICT organizations' performance and that gender diversity within Top Management Teams (TMTs) moderates this relationship. Empirical analyses are conducted using survey data from 300 top managers in ICT organizations, employing partial least squares (PLS) estimation. This research contributes significantly to both academia and

practice. Firstly, it addresses a literature gap by examining the impact of corporate entrepreneurship on organizational performance within the ICT sector (Al Taweel & Al-Hawary, 2021). Secondly, it explores the influence of gender diversity in TMTs on the CE-performance relationship in the context of a developing country, Jordan. The research provides insights into the importance of corporate entrepreneurship and TMTs for bolstering and adopting CE-OP strategies. Lastly, it offers fresh perspectives on the significance of incorporating CE into strategic goals, particularly for ICT organizations grappling with the challenges of the modern era (Williams, Manley, Aaron, & Daniel, 2018).

The rest of this study is organized as follows: The next section covers the theoretical review and the development of hypotheses. Afterward, the study looks into the materials and methods used in the research. The subsequent sections focus on the findings, engaging in discussions, and drawing conclusions from the study.

2. LITERATURE REVIEW

To establish a connection between CE and organizational performance, focusing on how top management gender diversity moderates this relationship, our approach involves a sequence of four essential steps. Initially, this research lays the groundwork by introducing the Resource-Based View (RBV) and Upper Echelon Theory (UET) as valuable theoretical frameworks that underpin our framework. After that, this study comes up with hypotheses about three main relationship: CE and organizational performance, TMTGD and performance, and the last involving the effect of TMTGD on the hypothesized association between CE and organizational performance.

2.1. Theoretical Foundation

2.1.1. Resource-Based View Theory

The RBV, initially introduced by Barney (1991), has since served as a foundational framework employed by scholars to elucidate the intricate connections among a company's opportunities, strategic decision-making by its management, and the anticipated outcomes related to performance enhancement and competitive advantage (Collis, 1994; Peteraf, 1993). RBV, in essence, can be defined as a theory that outlines how firms behave when they possess particular characteristics and attributes (Barney, 1991).

According to Barney (1991) seminal work, for an organization to attain performance improvement and secure a competitive advantage, it must possess specific heterogeneous resources characterized by the following attributes: (i) Value, (ii) Non-substitutability, (iii) Inimitability, and (iv) Rarity.

In light of these foundational principles, it becomes apparent why scholars frequently employ RBV as a framework when examining the relationship between CE and organizational performance. CE is, by its very nature, a heterogeneous and valuable attribute that is instrumental in exploring new opportunities. It exhibits rarity, especially when one considers the dimensions of CE, such as innovativeness, and it is inherently challenging to imitate or replicate. Furthermore, CE represents a unique and irreplaceable asset, underscoring its genuine significance in driving resource transformation to gain a competitive edge (Brous, Janssen, & Herder, 2019).

In this context, RBV offers a robust theoretical foundation for understanding how CE can leverage these distinctive resource characteristics to foster organizational performance and ultimately achieve a sustainable competitive advantage (Ireland, Hitt, & Sirmon, 2003).

2.1.2. Upper Echelon Theory

The UET, initially proposed by Hambrick and Mason (1984), is rooted in the concept of bounded rationality, which suggests that in complex and uncertain situations, complete and objective knowledge is often unattainable, and what we have instead are interpretations of the available information (March, 1963; Mischel, 1977). In essence, when we seek to comprehend the performance and behavior of organizations, it becomes imperative to consider the demographics, biases, psychographics, and interrelationships among their top management teams.

UET posits that the psychological characteristics of CEOs and TMTs are inherently elusive, giving rise to what is known as the "black box problem" (Lawrence, 1997). Because of this UET often guesses and figures out how these traits will affect businesses by looking at TMT demographic traits like gender diversity and how people interact and act with each other. A substantial body of research has corroborated this perspective, illustrating that TMT demographic attributes influence organizational performance and strategic outcomes (Boeker, 1997; Eisenhardt & Bourgeois III, 1988).

While many scholars have explored the impact of demographics as a whole, it is noteworthy that not all demographic attributes exert an identical influence on organizational outcomes. Some attributes may yield positive effects, while others might yield negative ones. Surprisingly, those who have looked at individual demographic attributes have frequently overlooked gender diversity, an important demographic characteristic (Triana et al., 2019). This oversight may be attributed to the persistently low representation of women in top management teams (Kroska & Cason, 2019), despite the recognized significance of gender diversity as a demographic dimension (Valek & Picherit-Duthler, 2021). Consequently, only a limited number of studies have explored its impact on organizational performance and other critical outcomes, such as corporate entrepreneurship.

Therefore, this research endeavor stands poised to contribute significantly to the UET by addressing this research gap concerning the relationships between gender diversity and various organizational outcomes, including but not limited to corporate entrepreneurship.

2.2. Hypothesis Development

2.2.1. Corporate Entrepreneurship and Organizational Performance

Drawing from RBV theory, the relationship between CE and Organizational Performance (OP) has garnered scholarly attention. However, a thorough review of the existing literature reveals a lack of consensus regarding the effect of CE on OP (Wijetunge & Pushpakumari, 2014; Williams et al., 2018). Some studies have reported null to negative effects on the CE-OP relationship (Boohene, 2018; Lomberg, Urbig, Stöckmann, Marino, & Dickson, 2017), while an extensive body of literature supports the idea of a positive effect of CE on OP (Shahsavarani, 2017; Tantawy et al., 2021; Ziyae & Sadeghi, 2020).

In the context of the ICT sector, limited studies have explored the CE-OP relationship. For instance, research conducted in Lebanon by Yunis, El-Kassar, and Tarhini (2017) a neighboring country of Jordan, amid challenging economic conditions, examined the effect of ICT on OP. This study positioned CE as a mediator facilitating ICT adaptation and found a statistically significant positive effect of CE on OP. However, it focused primarily on organizations that had already adopted ICT and did not specifically investigate the core enablers of such technology, namely ICT organizations.

Another study conducted in Germany centered its research on ICT organizations to explore the significance of CE (Jardim-Goncalves, Romero, & Grilo, 2017). While the research highlighted the importance of CE in driving organizational change, it predominantly relied on qualitative instruments and called for the incorporation of quantitative instruments for broader generalization. Additionally, this study did not directly assess the impact of CE on OP.

Furthermore, in Spain, a trio of scholars looked into the effects of acquired knowledge on CE within ICT Small and Medium Enterprises (SMEs) (Bojica & Fuentes, 2012). Even though the authors only looked at ICT SMEs and not bigger ones, their study showed that ICT organizations are a good way to show how CE affects business results because they are always changing, competing, and complicated. This is in line with what other researchers have said. Recent literature also reported a positive association of CE with performance (Fauzi, Raharja, & Tahir, 2019; Kim & Park, 2022). While adopting and utilizing ICT can also enhance performance, the synergistic effect is heightened with the incorporation of CE (Possamai, Hoeltgebaum, Andreassi, & Amal, 2017). CE entails fostering an entrepreneurial culture within the organization, resulting in heightened adaptability to market changes and

improved value creation (Fis & Cetindamar, 2019). It cultivates innovation, risk-taking, and proactiveness, pivotal elements influencing organizational performance (García-Sánchez, García-Morales, & Martín-Rojas, 2018). Moreover, internal factors such as organizational culture, managerial support, and internal innovation culture shape the influence of CE (Yunis et al., 2017). These factors are instrumental in nurturing intrapreneurs, contributing to increased organizational innovation and performance. Thus, CE emerges as a critical catalyst for organizational performance in the ICT sector, enabling organizations to effectively leverage technological innovations for enhanced outcomes.

Given the scarcity of studies investigating the impact of CE on OP within the ICT sector and guided by these observations, it is proposed that:

Hypothesis 1: Corporate entrepreneurship significantly and positively influences organizational performance.

2.2.2. Top Management Teams' Gender Diversity and Organizational Performance

The influence of TMTGD has been a central focus of scholarly investigations (Welbourne, Cycyota, & Ferrante, 2007). Researchers have aimed to support the idea that gender diversity within management teams can yield benefits for organizations (Jurkus, Park, & Woodard, 2011). Among the pioneering studies, Hambrick and Mason (1984) looked into the impact of TMTGD on OP, revealing a positive correlation. This line of inquiry expanded with Thomas and Ely (1996) work, which reinforced the notion of a positive association between TMTGD and organizational outcomes. Greene, Hart, Gatewood, Brush, and Carter (2003) advocated for the inclusion of female managers, highlighting their potential to influence decision-making processes with positive implications for company performance. Krishnan and Park (2005) further demonstrated that an increased representation of women within TMTs corresponded to enhanced company performance.

Moreover, Torchia, Calabrò, and Huse (2011) posited that having more women on the executive board could offer diverse customer perspectives, foster competitiveness, and ultimately enhance company performance. Similarly, Dezsö and Ross (2012) argued that gender diversity among TMTs enriches the pool of perspectives and that female executives can contribute innovative solutions, thus boosting performance (Ruiz-Jiménez et al., 2016). Recent studies by Luanglath, Ali, and Mohannak (2019) and Dai, Byun, and Ding (2019) examined the direct and indirect effects of gender diversity on innovation performance, whereas Triana et al. (2019), investigating the influence of gender diversity among senior management in dynamic environments like high-tech firms have consistently found positive effects on performance.

In contrast, some scholars have raised concerns. Tsui, Egan, and O'Reilly III (1992) argued that excessive diversity within management teams could impede decision-making processes, leading to missed opportunities and decreased performance. Similarly, Homberg and Bui (2013) concluded that gender diversity might lead to conflicts within the management team and result in employee dissatisfaction. However, Heyden, Fourné, Koene, Werkman, and Ansari (2017) challenged these conclusions, emphasizing the importance of considering top management teams' ability to make strategic decisions with the backing of the organization's Chief Executive Officer (CEO).

In general, gender diversity has a positive impact on performance. Recent studies indicate that having gender diversity in managerial roles and on the board of directors fosters inclusive innovation, positively influencing the overall performance of a company (Ferrary & Déo, 2023; Fuentes-Fuentes, Quintana-García, Marchante-Lara, & Benavides-Chicón, 2023). Gender diversity, not only in top management but also at middle management and staff levels, contributes significantly to a firm's competitive edge and performance (Pandey & Risal, 2023). Moreover, studies have highlighted the positive correlation between gender and ethnic diversity and performance, although age diversity may lead to conflicts within the organization (Wu, Richard, Triana, & Zhang, 2022). The presence of both men and women in top management teams and on the board significantly influences innovation, with high levels of gender diversity correlating with improved firm performance (Joo, Lee, Kong, & Jolly, 2023). Additionally,

gender diversity at top management levels, especially when paired with a high level of gender diversity at lower levels, results in enhanced organizational performance.

A comprehensive examination of the literature reveals two primary challenges in studies exploring the association between TMTGD and OP. First, there is a lack of agreement, with some studies finding a positive association (Reguera-Alvarado, De Fuentes, & Laffarga, 2017; Simionescu, Gherghina, Tawil, & Sheikha, 2021) while others report no significant relationship (Hedija & Nĕmec, 2021; Homberg & Bui, 2019), and still some also suggest a negative relationship (Nguyen, Nguyen, Nguyen, & Truong, 2021; Tahir, Ullah, Ahmad, Syed, & Qadir, 2021). Second, most of the work on this topic has been conducted in developed countries (Kinateder, Choudhury, Zaman, Scagnelli, & Sohel, 2021), leaving a literature gap that this research seeks to address. Hence, based on this premise, it is proposed that:

Hypothesis 2: Top management teams' gender diversity has a significant and positive impact on organizational performance.

2.2.3. Moderating Effect of Top Management Teams' Gender Diversity

The UET posits that the background characteristics of TMT members, including their gender, play a role in shaping strategic decisions. It is suggested that improving the quality of decisions made by TMT members can enhance an organization's productivity (Hambrick & Mason, 1984).

In a study by Richard, Barnett, Dwyer, and Chadwick (2004), they explored how racial and gender diversity within management teams can impact an organization's financial performance. They examined the role of entrepreneurial orientation, which includes factors like innovativeness, risk-taking, and proactiveness, as a moderator in this relationship. Their findings revealed that innovativeness and proactiveness positively moderated the relationship, while risk-taking had a negative impact on it. Similarly, Ayub et al. (2013), explored gender effects on entrepreneurial orientation among individuals in Pakistan and identified gender-based differences in orientation. Steyn and De Bruin (2018), observed differences in entrepreneurial orientation based on gender diversity in South African organizations.

Literature also highlights the importance of gender diversity in the influence of CE on performance (Hemmer, Cho, & Lee, 2022; Tang, Nadkarni, Wei, & Zhang, 2021). Having both men and women on TMTs and boards of directors significantly affects innovation and firm performance. TMTGD is particularly beneficial for innovation performance, mainly highlighting the significance of cultural norms (Wu et al., 2022). The interaction effect of TMT-BOD gender diversity on innovation is most pronounced when both are high, resulting in enhanced firm performance, particularly in dynamic environments. Gender diversity also plays a vital role in a firm's sustainable performance. Notably, the presence of female representation on boards and female CEOs has a significant positive impact on firms' sustainable performance, while CEO duality does not moderate this relationship (Zhu, Husnain, Ullah, Khan, & Ali, 2022). In summary, it can be implied that TMTGD could potentially moderate the impact of CE on performance. Notably, no prior study has explored the interacting effects of CE and TMTGD, creating a research gap that this study seeks to address.

Building on what has been learned so far and taking into account that the relationship between CE-OP is not always the same (Dong, Xu, Luo, Nicol, & Liu, 2020) and that there are gaps in the research about CE and TMTGD and between OP and TMTGD, the goal of this study is to find out how TMTGD affects the relationship between the CE and OP. Based on this premise, it is proposed that:

Hypothesis 3: Top management teams' gender diversity moderates the relationship between corporate entrepreneurship and organizational performance.

3. RESEARCH METHODOLOGY

3.1. Conceptual Framework

Figure 1 presents a conceptual framework, drawing from the RBV and UET perspectives that serves as the theoretical basis for comprehending and investigating the multitude of factors that impact the OP. This framework encompasses an outcome variable, namely OP, assessed through various distinct performance indicators. The framework also incorporates one major independent variable, denoted as CE. It also considers the potential moderating role of TMTGD in influencing the relationship between CE and OP in Jordan's ICT sector. Figure 1, depicted below, visually represents the conceptual relations explored in this study. The direct arrows extending from CE and TMTGD to OP signify the hypothesized direct relationships. Simultaneously, the arrow stemming from TMTGD to the direct CE-OP relationship denotes the moderating influence of TMTGD in influencing the impact of CE on companies' OP.

This framework deviates from the prevailing trend in the field. Unlike prior literature that primarily focused on exploring the direct link between CE and OP, it often overlooked factors that might enhance this association (Fauzi et al., 2019; Fis & Cetindamar, 2019). While certain studies have pointed out the moderating influence of digital readiness in enhancing the connection between CE and OP (Al Ketbi & Alshurideh, 2022), there is still a gap in understanding the potential contribution of gender diversity within this context. Therefore, this study makes a substantial contribution by including gender diversity in the framework. This study also contributes mainly by investigating the potential moderating effect of TMTGD on the association between CE and OP in the Jordanian ICT sector. This addresses a significant gap in current research and offers a nuanced understanding of the factors enhancing corporate entrepreneurial culture in Jordan.

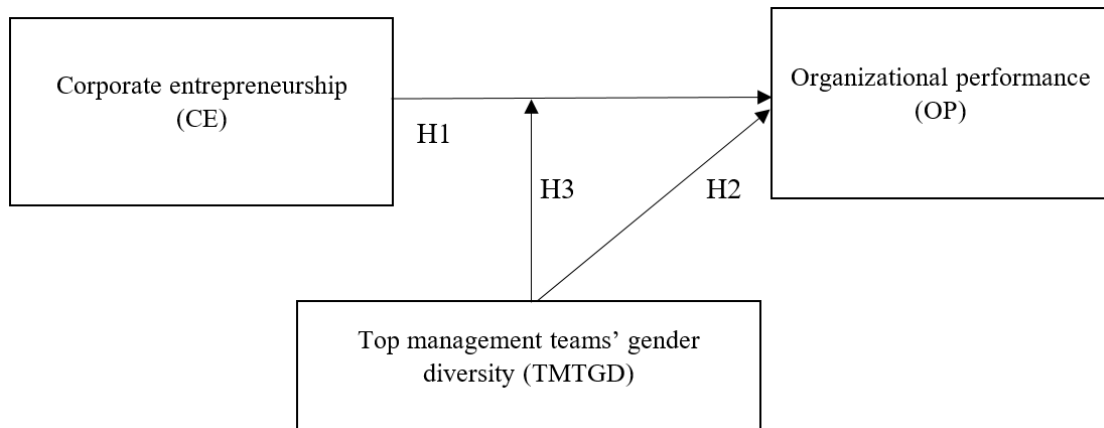


Figure 1. Conceptual framework.

3.2. Instrument

Through adoption and adaptation strategies, the measurement items drew from existing literature. Given the focus of this study on assessing the impact of CE on OP in Jordan's ICT sector, a detailed list of all measurement items is provided in the Appendix 1.

The CE is measured using ten items adapted from prior research (Hughes & Morgan, 2007). Similarly, this study adapted sixteen items from Kaplan and Norton (1992) to measure the OP of the ICT companies in Jordan. In this regard, respondents were asked to rate their firms on a five-point Likert scale regarding performance. Furthermore, this research employed Blau's heterogeneity index as a measure to assess TMTGD. Blau's index is a commonly used index for evaluating demographic diversity, and it has been applied in prior studies to measure gender diversity within organizational contexts (Triana et al., 2019).

3.3. Data and Sample

This study utilized a cross-sectional survey approach to investigate how corporate entrepreneurship influences the performance of ICT companies in Jordan. To gather data, a questionnaire was devised with simple, straightforward questions drawn from previous research and customized for this study. A comprehensive breakdown of each item related to the variables can be found in the [Appendix 1](#). Respondents were asked to rate their agreement with these items on a five-point Likert Scale, ranging from 1 for "strongly disagree" to 5 for "strongly agree." The study's participants were selected from Jordan's ICT companies.

The selection of the sample was determined using a nonprobability method. Specifically, this study used convenience sampling to collect responses from willing participants. Additionally, the study determined the sample size based on the criterion outlined by [Krejcie and Morgan \(1970\)](#), suggesting a minimum sample size of 291. Accordingly, this research opted for a sample size of 300 to analyze the data. The respondents were conveniently selected, and their questionnaire responses were promptly documented. This sample size was deemed sufficient to ensure that the findings were representative of the entire target population.

3.4. Statistical Methods

In order to investigate the proposed research relationships, the authors employed the partial least squares structural equation model (PLS-SEM) due to the fact that it is a non-parametric, multivariate technique used for estimating path models with latent variables ([Avkiran & Ringle, 2018](#); [Hair, Hult, Ringle, Sarstedt, & Thiele, 2017](#)). Additionally, PLS-SEM is employed when the research has an exploratory and predictive nature ([Ngah, Thurasamy, & Han, 2023](#)). Employing the PLS-SEM as an analysis tool requires a two-step process: measurement model and structural model. The measurement model could be established once the convergent and discriminant validity have been met ([Chin, 1998](#); [Ngah et al., 2021](#)).

4. DATA ANALYSIS AND RESULTS

Before conducting extensive data analysis, this study evaluated the potential presence of common method bias in the dataset. Subsequently, Smart-PLS 4 was employed to fulfill the research objectives, facilitating a two-stage analytical process. In the first stage, the measurement model was developed to evaluate the reliability and validity of the latent constructs under investigation. Following this, in the second stage, the structural model was examined to examine the postulated associations between specific variables within the model.

4.1. Common Method Bias

First, this study used a full collinearity test to evaluate the issue of common method bias, [Kock \(2015\)](#) advised. Common method bias typically arises from the measurement methods employed in SEM-related research. Specifically, the measurement instruments may influence respondents' answers, leading to a degree of shared variation among indicators.

In addressing this concern, a random variable was generated and subsequently subjected to regression analysis with the latent variables within this research. [Table 1](#) shows that all full collinearity variance inflation factors (VIFs) are below the established threshold of 3.3 ([Kock, 2017](#)). This suggests that common method bias is not affecting the research model.

4.2. Measurement Model

Subsequently, the study employed a PLS algorithm technique to assess the factor loadings when analyzing the measurement model. The two principal constructs, CE and OP, were considered multi-item variables within reflective models. The primary objective was to measure variables with robust internal consistency. This was done to ensure construction reliability. The results, outlined in [Table 1](#), illustrate that all items display satisfactory outer

loadings, from 0.670 to 0.903. Notably, the outer loadings for all items surpass the critical threshold of 0.5, indicating the reliability of the items (Byrne, 2016).

Furthermore, a Composite Reliability test was performed to ensure items' internal consistency. As indicated in Table 1, the values of CR for CE and OP are computed as 0.903 and 0.979, respectively, exceeding the minimum threshold of 0.7, as recommended by Hair et al. (2017). Consequently, the results derived from the measurement model confirm that all constructs possess the required reliability for use in the subsequent analysis.

Convergent validity was also evaluated in examining the measurement model, referring to how consistently indicators measure their respective constructs. This evaluation involved comparing Average Variance Extracted (AVE) values to the specified cutoff level of 0.5 (Hair et al., 2017). The results, as presented in Table 1, indicate that the values of AVE for both latent constructs exceed the prescribed benchmark of 0.5. This confirms that convergent validity is established for all constructs. Precisely, the AVE values are 0.511 and 0.743, indicating a satisfactory level of convergent validity.

Furthermore, the study investigated the discriminant validity, which assesses how well items predict specific concepts or distinguish between them. It was evaluated by examining correlations among constructs that might share common measurements (Ramayah, Cheah, Chuah, Ting, & Memon, 2018). This analysis aimed to ensure that items did not inadvertently measure a different concept. The study employed the HTMT (Heterotrait-Monotrait Ratio of Correlations) approach to establish discriminant validity (Henseler, Ringle, & Sarstedt, 2015). Acceptable HTMT values vary based on research contexts, and this study adopted a moderate threshold of 0.85 (Henseler et al., 2015). The results, displayed in Table 2, reveal an HTMT value of 0.292, confirming discriminant validity.

Basically, the results show that the requirements for construct reliability and validity have been met. This means that the data can be used for further analysis to find the relationships that were thought to exist within the structural model.

Table 1. Measurement model results.

Variables	Items	Items' reliability	Internal consistency	Convergent validity	Full collinearity VIFs
		Outer loadings>0.5	CR >0.6	AVE > 0.5	VIF<5
CE	CE1	0.677	0.903	0.511	1.08
	CE2	0.670			
	CE3	0.804			
	CE4	0.693			
	CE5	0.671			
	CE6	0.703			
	CE7	0.685			
	CE8	0.771			
	CE9	0.670			
	CE10	0.743			
OP	OP1	0.881	0.979	0.743	1.08
	OP2	0.888			
	OP3	0.877			
	OP4	0.869			
	OP5	0.903			
	OP6	0.884			
	OP7	0.861			
	OP8	0.873			
	OP9	0.877			
	OP10	0.874			
	OP11	0.860			
	OP12	0.828			
	OP13	0.835			
	OP14	0.810			
	OP15	0.824			
	OP16	0.843			

Table 2. HTMT ratio.

Construct	CE	OP
CE		0.292
OP	0.292	

4.3. Structural Model

In the subsequent phase, this study proceeds to estimate the structural model to investigate the presumed associations related to its research objectives. In accordance with prior research (as described in Ramayah et al. (2018)), this research employs a bootstrapping procedure with 5000 samples. Through this procedure, various parameters are estimated to assess the significance of the relationships. The results, outlined in Table 3, demonstrate a significant and positive association between CE and OP ($\beta = 0.139$, $p < 0.05$). Additionally, there is a positive relationship observed between TMTGD and OP ($\beta = 0.184$, $p < 0.05$).

Furthermore, this study explores the proposed moderating relationship. Precisely, TMTGD is introduced as a moderator in the direct association between CE and OP. In this context, the moderating effect is generated in SmartPLS 4 as the product of CE and TMTGD, following the methodology outlined in Ramayah et al. (2018). The results, as presented in Table 3, reveal that TMTGD inversely moderates the effect of CE on OP ($\beta = -0.44$, $p < 0.05$). Consequently, this research states that TMTGD plays a significant moderating role in diminishing the association between CE and the performance of ICT companies.

Additionally, numerous scholars have raised concerns about the dependence on P-value approaches and have proposed the consideration of alternative parameters, such as effect size. Therefore, to consider effect size, the current research further provided f^2 (f-square) values. In this regard, the threshold values 0.35, 0.15, and 0.02, proposed by Cohen (1988), indicate large, medium, and small effect sizes, respectively. The f^2 values reported in Table 3 revealed that both direct relationships have sufficient but small effect sizes, supporting H1 ($f^2 = 0.022$), H2 ($f^2 = 0.036$), and H3 ($f^2 = 0.020$).

Table 3. Structural model results.

Hypothesis	Path	BETA	S. E	T-stat	P-value	LL	UL	f^2	Results
H1	CE -> OP	0.139	0.063	2.14	0.013	0.043	0.261	0.022	Supported
H2	TMTGD-> OP	0.184	0.105	1.76	0.039	0.036	0.389	0.036	Supported
H3	TMTGD*CE -> OP	-0.44	0.221	2.11	0.017	-0.911	-0.165	0.020	Supported

Note: CE = Corporate entrepreneurship, OP = Organizational performance, TMTGD = Top management teams' gender diversity.

5. DISCUSSION

Given the ongoing and enduring challenges confronting the ICT sector in Jordan, this research endeavor seeks to contribute valuable and pertinent insights that can be instrumental for both authorities and ICT sector leadership in improving organizational performance. The study, in particular, examines how CE and TMTGD impact organizational performance within the specific context of Jordan's ICT sector.

Additionally, this study investigates the potential moderating role of gender diversity within top management teams, as it may play a pivotal role in influencing the effect of CE on OP. These factors are deemed of paramount importance due to their capacity to augment the influence of corporate entrepreneurship on the overall performance of organizations operating within the ICT sector.

This study affirms that CE has a significantly favorable impact on the performance of ICT organizations in Jordan. CE, which involves promoting entrepreneurial activities within established organizations, offers several advantages that contribute to enhanced performance. Firstly, CE fosters innovation and creativity by encouraging employees to think creatively and explore new ideas, ensuring that organizations remain at the forefront of technological advancements. Secondly, it enhances organizational adaptability and agility, allowing ICT organizations to respond swiftly to market changes and technological shifts. Additionally, CE cultivates a culture of

entrepreneurship among employees, boosting motivation and productivity. Furthermore, it facilitates strategic renewal and diversification, which are critical in the rapidly evolving ICT sector. In conclusion, CE positively influences ICT organizations in Jordan by driving innovation, promoting adaptability, nurturing an entrepreneurial culture, and facilitating strategic growth, ultimately improving overall performance.

Numerous prior research studies have provided similar results, offering support for this research. For instance, a longitudinal study conducted by [Zahra and Covin \(1995\)](#) provided evidence of a positive relationship between CE and OP, particularly over the long term. [Lumpkin and Dess \(1996\)](#) further reinforced this perspective and highlighted the nuanced and context-dependent nature of this relationship. [Knight \(1997\)](#) emphasized the pivotal role of CE in enhancing OP and fostering competitive advantages, particularly when considering external factors. [Wiklund \(1999\)](#) echoed these sentiments and called for a comprehensive examination of both internal and external factors when evaluating the CE-OP relationship. In essence, several prior studies have lent support to the notion that CE exerts a positive influence on OP.

However, it is noteworthy that within the context of the ICT sector, there has been a limited exploration of the connection between CE and OP. Only a few research studies have explored this association. One study conducted in Lebanon, for instance, focused on ICT adoption and revealed a positive impact of CE on OP ([Yunis et al., 2017](#)). Similarly, [Jardim-Goncalves et al. \(2017\)](#) examined the significance of CE within ICT organizations and highlighted its role in instigating organizational transformations.

Moreover, literature inquiries, such as the study by [Bojica and Fuentes \(2012\)](#), have looked into the impact of knowledge acquisition on CE, particularly concentrating on ICT SMEs. Such research has consistently demonstrated the positive effects of CE on organizational outcomes, largely owing to the dynamic, competitive, and multifaceted nature of the ICT sector.

Furthermore, [Mahmood and Arslan \(2020\)](#) have highlighted the pivotal roles played by ICT and innovation as catalysts for nurturing corporate entrepreneurship. This, in turn, elevates organizational performance within the ICT sector. Their findings accentuate the indispensability of corporate entrepreneurship in fostering competitive advantages and enhancing performance metrics. Recent studies, including those by [Awwad and Abu-Karaki \(2021\)](#), have also highlighted the substantial and affirmative influence of CE on performance within Jordan's ICT sector. Their findings have emphasized the vital role of CE in fostering competitive advantages, augmenting financial performance, and nurturing innovation within this sector.

In light of the supporting evidence from prior literature, this research makes a significant contribution by offering a more profound comprehension of the positive impact of CE on OP within Jordan's ICT sector. This contribution is achieved through the integration of quantitative instruments and the consideration of both small and large ICT organizations. Overall, the existing body of literature highlights a consistent pattern wherein CE emerges as a potent driver for enhancing organizational performance within the dynamic landscape of Jordan's ICT sector. This impact extends to encompass various facets, including bolstered financial performance, the cultivation of competitive advantages, and the constructive role of corporate entrepreneurship in bridging IT capabilities with performance outcomes.

Conversely, this study also reveals a noteworthy and positively significant effect of TMTGD on the performance of ICT firms in Jordan. TMTGD has been a focal point of extensive research, consistently indicating its positive impact on organizational success. Gender diversity within top management teams ushers in various advantages that contribute significantly to enhanced performance and competitiveness.

The presence of TMTGD has several positive impacts on organizations in the ICT sector in Jordan. Firstly, it fosters a diverse array of viewpoints, enhances decision-making processes, and fosters innovative thinking for more effective problem-solving. This diversity also enhances the organization's ability to attract and retain top talent by creating a welcoming and equitable workplace, resulting in higher employee satisfaction and commitment. Additionally, TMTGD reflects the diversity of the ICT sector's customer base, allowing organizations to better

assess the needs of various market segments. This alignment leads to enhanced loyalty and customer satisfaction. Overall, embracing gender diversity in TMTs positively influences organizational performance, innovation, and competitiveness in the dynamic ICT sector.

The body of prior literature consistently lends support to the affirmative impact of TMTGD on performance. Early studies by Hambrick and Mason (1984) and Thomas and Ely (1996) demonstrated a favorable association between TMTGD and performance. The inclusion of females within management teams has been shown to positively influence decision-making processes, enhance performance, and introduce diverse perspectives (Greene et al., 2003; Krishnan & Park, 2005). Moreover, research conducted by Torchia et al. (2011) and Dezső and Ross (2012) highlighted the significance of gender diversity in incorporating varied customer perspectives, fostering innovation, and elevating organizational performance.

Recent literature further found a positive association of TMTGD with employee productivity, innovation performance, and overall organizational performance within dynamic and high-tech environments (Dai et al., 2019; Luanglath et al., 2019; Triana et al., 2019). These studies collectively emphasize the advantages of gender diversity within TMTs, encompassing enhanced decision-making, innovation, and overall performance.

Rodríguez-Fernández, Gaspar-González, and Sánchez-Teba (2020) not only confirm the positive association between gender diversity and organizational performance but also emphasize the potential for such diversity to positively influence financial metrics. Boone and Hendriks (2009) corroborate the outcome of this study by demonstrating a positive association between TMT compositional diversity and organizational performance. Clearly, gender diversity within TMTs emerges as a catalyst for optimizing organizational effectiveness. Nevertheless, recent research by Turi, Khastoori, Sorooshian, and Campbell (2022) unveiled nuanced dynamics, revealing a curvilinear association between competitive advantage and gender diversity. While moderate gender diversity enhances the competitive edge, excessive diversity can potentially lead to reduced organizational performance. Their study also highlights the importance of gender equality and equity in achieving organizational success.

Furthermore, Turban, Wu, and Zhang (2019) found that gender diversity within TMTs positively influences organizational performance, attributing this to heightened productivity reflected in augmented market value and revenue. This reinforces the notion that gender diversity within TMTs engenders constructive performance outcomes. Generally, prior studies collectively endorse the positive effect of TMT gender diversity on organizational performance within Jordan's ICT sector. The empowering influence of gender diversity encompasses multifaceted benefits, including bolstered competitive edge, amplified profitability, and enriched value creation. Nevertheless, it is essential to acknowledge that the optimal threshold for gender diversity may vary, contingent upon contextual nuances and industry norms surrounding gender diversity.

Additionally, this research indicates that when there is a high level of gender diversity within TMTs, the influence of CE on the performance of ICT organizations in Jordan tends to be diminished. The negative moderating role of TMT GD in the CE-OP association may be attributed to several factors. One potential explanation is that gender diversity can introduce challenges related to communication and coordination within the TMT. This may result in a lack of cohesion and alignment when implementing entrepreneurial initiatives. Moreover, societal norms and biases concerning gender roles and stereotypes may influence how gender-diverse teams are perceived and how they interact, affecting decision-making processes and impeding the effective implementation of CE practices.

The ICT sector in Jordan, like many other industries, may still grapple with gender imbalances in top management positions. These gender imbalances in Jordan's ICT sector, especially in top management roles, can negatively impact the moderating role of TMTGD. To address this issue, it is crucial to create inclusive environments that empower women and promote gender diversity. The underrepresentation of women can lead to stereotypes, biases, and limited participation in corporate entrepreneurship initiatives, hindering innovation and

entrepreneurial activities that drive performance. Additionally, communication and decision-making differences between male and female managers may pose collaboration challenges in CE projects, potentially leading to conflicts and implementation issues. Female managers in predominantly male teams might face resistance, impacting their ability to gain support for their entrepreneurial ideas. Understanding these dynamics is essential for optimizing CE and gender diversity to enhance organizational performance in Jordan's ICT sector, with further research needed to look into contextual factors and mechanisms.

The existing body of literature also supports the negative moderating impact of TMT GD on the CE-OP relationship. For instance, prior research has suggested that excessive diversity within management teams can lead to slower decision-making processes, missed opportunities, and decreased performance (Tsui et al., 1992). Moreover, studies have highlighted potential conflicts and employee dissatisfaction associated with gender diversity, especially in the context of CE, which demands a mindset embracing change, experimentation, and creative risk-taking (Homberg & Bui, 2013). Some studies have indicated that female executives may exhibit lower risk-taking and innovation tendencies compared to their male counterparts (Muhammad & Ameer, 2021; Saeed & Ziaulhaq, 2019).

Moreover, previous research has demonstrated that higher levels of TMT GD can impede the positive effects of corporate entrepreneurship (Lomberg et al., 2017), and recent studies have even revealed adverse impacts of gender diversity on performance (Nguyen et al., 2021; Tahir et al., 2021). Likewise, a recent study found that while moderate gender diversity can enhance competitiveness, greater levels of gender diversity may negatively impact organizational performance (Turi et al., 2022). These findings imply that gender diversity within the TMTs may introduce complexities in effectively implementing and leveraging CE practices, potentially resulting in reduced performance outcomes. Thus, it is evident that the influence of TMTGD on the CE-OP relationship is intricate and subject to contextual factors, industry dynamics, and specific organizational characteristics within Jordan's ICT sector.

As a collective result, the research findings advocate for promoting a corporate entrepreneurship culture within Jordan's ICT landscape. Such an approach is regarded as a viable means to invigorate and enrich organizational performance in this sector. Similarly, this study emphasizes the significance of establishing a work environment that promotes inclusivity, encourages cooperation, and implements initiatives to achieve gender equality. By addressing these aspects, organizations can enhance their performance while recognizing and effectively managing the distinct challenges in Jordan's ICT sector.

6. CONCLUSION AND RECOMMENDATIONS

This study explores the impact of CE on the performance of the ICT sector in Jordan. Additionally, it examines how the composition of TMTs, specifically regarding gender diversity, can influence organizational outcomes. Furthermore, this research examines the potential moderating role of TMTGD in the association between CE and the performance of ICT organizations.

Using a PLS-SEM method, this research initially conducted a measurement model, assessing the reliability and validity of the factors under consideration. Subsequently, a structural model is employed to inspect the anticipated relationships within the model. The outcomes revealed that CE exerts a positive impact on the performance of ICT companies. Furthermore, gender diversity within TMTs is also revealed to significantly and directly influence organizational performance. Interestingly, this study also uncovers that a higher degree of gender diversity within TMTs mitigates the influence of CE on the performance of ICT organizations.

Overall, this study strongly supports the idea of fostering a culture of entrepreneurship within Jordan's ICT sector. This approach is seen as a practical strategy for revitalizing and enhancing organizational performance in this dynamic industry. The research also highlights the critical importance of creating a workplace culture that promotes inclusivity, fosters collaboration, and actively pursues initiatives to achieve gender equality. By

proactively addressing these critical dimensions, organizations operating within the ICT sector can take significant steps toward improving their performance. Acknowledging and effectively managing the unique challenges that characterize the ICT landscape in Jordan is crucial. By doing so, organizations can position themselves for sustainable growth and success while contributing to the overall advancement of the sector.

6.1. Theoretical and Practical Implication

Based on the study's findings, several implications emerge for various stakeholders. From a theoretical standpoint, this research enriches the RBV and upper-echelon theory by highlighting the significant influence of CE and TMTGD on performance. The RBV highlights the importance of effectively managing capabilities and resources to explain performance disparities among firms. Resources encompass tangible and intangible assets, while capabilities represent the capacity of resources to perform specific activities or tasks. Organizations must strategically harness their resources to engage in corporate entrepreneurship, bundling them to create capabilities such as proactiveness, innovativeness, and risk-taking—key facets of corporate entrepreneurship.

Similarly, this study extends the upper-echelon literature by exploring the association between diversity attributes and performance in TMTs. While prior research focused on the association between conventional top management compositions and firm performance, often neglecting diverse backgrounds like gender diversity, this research emphasizes the direct and impactful role of gender diversity within TMTs in improving the performance of ICT companies.

Moreover, this study also offers several practical implications for various stakeholders. The finding that corporate entrepreneurship positively influences organizational performance provides a valuable pathway for enhancing growth and competitiveness in Jordan's ICT sector. Organizations are encouraged to nurture a culture of entrepreneurship, motivating employees to take initiative, proactively seek innovative solutions, and embrace entrepreneurial practices. This cultural shift can lead to improved overall performance, better adaptability to market dynamics, and the identification of fresh opportunities for growth and success.

Policymakers in Jordan should also acknowledge corporate entrepreneurship's pivotal role in driving the ICT sector's growth and competitiveness. Crafting policies and initiatives that foster an entrepreneurial ecosystem, including accessible funding, supportive regulations, and incentives for innovation, can stimulate sector development and attract increased investments. The study also highlights the influence of top management teams in nurturing and endorsing corporate entrepreneurship. Managers should prioritize creating an environment conducive to risk-taking, creativity, and rewarding entrepreneurial behaviors. Empowering employees, offering resources and support, promoting collaboration, and facilitating knowledge sharing can cultivate an entrepreneurial culture that bolsters organizational performance. Investors within the ICT sector should recognize the potential benefits of supporting organizations that prioritize corporate entrepreneurship. Such entities often exhibit agility, adaptability, and innovation, translating into enhanced financial performance and long-term sustainability. Investors should consider backing organizations with a strong entrepreneurial focus and a track record of effectively leveraging entrepreneurial practices.

Lastly, considering the adverse role of top management team gender diversity in the relationship between corporate entrepreneurship and organizational performance, organizations within the ICT sector should address gender diversity-related challenges. Leaders and managers should undergo training and education on gender dynamics and biases to foster a more inclusive and equitable workplace. Emphasis should be placed on promoting effective collaboration and communication within top management teams. Despite the negative moderating effect of gender diversity, it is essential to establish an atmosphere that values diverse perspectives, fostering cohesive teamwork toward common objectives. Organizations should strive to implement inclusive decision-making processes that consider diverse viewpoints, encourage open dialogue, solicit input from all team members, and ensure merit-based decision-making. Most importantly, prioritizing gender equality initiatives is essential to

rectifying gender imbalances within top management teams. This may involve promoting equal career opportunities, enacting diversity and inclusion policies, and establishing mentorship programs to support the professional development of women in leadership roles.

6.2. Limitations and Future Research Recommendations

While this study has provided valuable insights, it is important to acknowledge its limitations and offer recommendations for future research. Firstly, the focus on the ICT sector in Jordan restricts the generalizability of the findings to other industries. To enhance the applicability of the research, future studies should consider a broader range of sectors, such as manufacturing, to provide more comprehensive insights. Additionally, it is advisable for researchers to explore specific regions within Jordan that may exhibit unique vulnerabilities. Examining different regions would provide a deeper understanding of contextual factors influencing the effect of corporate entrepreneurship on organizational performance, facilitating targeted interventions for addressing the specific challenges faced by ICT organizations in different areas. Furthermore, as a single-case study, the generalizability of the findings to a global context is limited. Future research should strive to include a larger sample size encompassing multiple countries, enabling cross-country comparisons, and offering more comprehensive implications for the global ICT industry. By incorporating a diverse range of countries, researchers can identify common patterns, differences, and best practices for fostering a culture of corporate entrepreneurship to drive growth and enhance competitiveness in ICT organizations.

Furthermore, this study employs a quantitative research methodology, which yields valuable insights regarding the effect of various factors on performance in the ICT sector. However, it is recommended that future research complement these quantitative findings with qualitative methods to gain a deeper insight into the intricacies of the Jordanian ICT sector. By incorporating qualitative approaches, researchers can explore the constraints and specific requirements faced by ICT organizations, providing a more comprehensive perspective. Qualitative methods would allow researchers to look into the experiences and perspectives of staff and management, capturing their unique insights and obtaining a rich contextual understanding of the challenges and solutions. This qualitative lens can also shed light on decision-making processes, organizational dynamics, and the effectiveness of strategies employed by ICT management to enhance performance. Therefore, future studies are encouraged to adopt a mixed-methods approach to capture the human element and contextual factors that influence performance in the ICT sector. By doing so, researchers can provide critical implications that encompass a different perspective and offer more holistic insights into the ongoing dynamics within the ICT industry.

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Appendix 1. Measuring items.

Variable	Items/Statements
Organizational performance Source: Adapted from Shukri and Ramli (2015)	<ul style="list-style-type: none"> “Customer satisfaction” “Customer complaints” “Customers retained” “Market share” “New customers” “Time to introduce new products to the market” “Delivery cycle time” “Time to settle a customer claim” “Defect-free units as a percentage of completed units” “Hours of in-house training per employee” “Number of new product launches” “Suggestions per employee” “Employee turnover” “Firm profitability” “Firm total revenue” “Firm ROI”
Corporate entrepreneurship Source: Adapted from Hughes and Morgan (2007)	<ul style="list-style-type: none"> “The term ‘risk take’ is considered a positive attribute for people in our business” “ People in our business are encouraged to take calculated risks with new ideas” “Our business emphasizes both exploration and experimentation for opportunities” “We actively introduce improvements and innovations in our business” “Our business is creative in its methods of operation” “Our business seeks out new ways to do things” “We always try to take the initiative in every situation (e.g., against competitors, in projects and when working with others).” “We excel at identifying opportunities” “We initiate actions to which other organizations respond” “Our business is intensely competitive”

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