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THE ROLE OF ENTREPRENEURIAL ORIENTATION AND SOCIAL CAPITAL TOWARD TECHNOLOGY INNOVATION AMONG SMES IN KURDISTAN

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ABSTRACT

The emergence of the fourth industrial revolution has made fundamental changes to technology, industries, and societal patterns and processes. SMEs are familiarizing themselves with new technological innovations to adapt to the current shifts. SMEs significantly contribute to economic progress by creating jobs, generating revenue, reducing poverty, and launching new ventures, especially in developing economies. However, the contribution of the SMEs in Kurdistan is limited due to the weak capacity to produce technological innovations and the inability to execute manufacturing processes effectively. So, the study aims to investigate the impact of Entrepreneurial Orientation (EC) and Social Capital (SO) on the Technological Innovation (TI) of Kurdistan SMEs in the Kurdistan region of Iraq. This study used the resource-based theory as the underlying theory for its presumptions, and its model was constructed using self-administered questionnaires. Three hundred forty-four business owners participated in this study, yielding a response rate of 68%. The results of the current study showed that social capital and entrepreneurial orientation both significantly and positively affect technological innovation. The study will contribute to technology innovation adoption among small industrial companies in Kurdistan and reduce potential setbacks for technology adoption, highlighting externally generated knowledge of entrepreneurial orientation and social capital.

Keywords: SME, Technological innovation, entrepreneurial orientation, social capital

INTRODUCTION:

Technology innovation has fostered human development in the last few decades. Frontier technologies and digitization are speeding up technological innovation. Technological innovation is a process that starts with an idea, culminates in the creation of new goods, processes, and new services, and concludes with the access of new products, processes, and new services into the market (Siyamtinah, 2016). The progression of technology innovation (TI) demonstrates an organization's potential due to its competitive edge over rivals through new product development, technology, and other advancements. This has caught the attention of scholars (Hervas-Oliver et al., 2021; Yang, 2013). Small and medium-sized businesses (SMEs) play a crucial role in economic and social activities that contribute to the development and lower unemployment rates, making them the breeding ground for technological innovation (Abdullah, 2016; Al-Jinini, 2019; Dutta, 2017).

In Kurdistan, SMEs are thought to be one of the major drivers of the nation's economy (Yacob &Wong, 2019). SMEs are important because they currently supply over a thousand jobs to 54.2% of the workforce in Kurdistan. The SME sector provided 34.3% of the country's overall GDP in 2019, including 13.7% in exports, 54.2% of all employment in the 2018 SME Annual Report, 2018/2019. In Kurdistan, 93.5% of all enterprises are SMEs. According to research, businesses may grow and compete in overseas markets by using technology and innovative tactics (Chong et al., 2019). According to CIPE (2020) projections, industrial SMEs makeup around 90% of active businesses in Kurdistan and will generate 11,234 new jobs in 2020, or about 3.05% of the state's GDP. The region's limited capacity to develop innovations and ineffective ability to carry out manufacturing processes efficiently may cause its limited contribution to the region (CIPE, 2020). The lack of technical resources may be one of the main reasons for the low level of technical innovation (TI) in industrial SMEs in Iraq's Kurdistan region. As a result, it is critical to assess how SMEs perform regarding technological innovation (Brunswicker and Vanhaverbeke, 2015).

The Resource-Based View (RBV) hypothesis states that the resources and capabilities of organizations are related to core innovation and competitive advantage determinants (Vora et al., 2012; Martín-de Castro et al., 2013). For a firm to proliferate, having an entrepreneurial orientation (EO) is essential for spotting new market opportunities, starting new ventures, and strengthening competitive advantage (Huang & Wang, 2011; Zhai et al., 2018). Boso et al. (2013) defines EO as businesses' resources and capabilities connected to TI. Although several earlier studies suggested that EO encourages creativity, the connection between EO and TI is still underdeveloped in the literature (Hussain et al., 2021).

Furthermore, research from SME and entrepreneurship studies indicates that having network mobilization competence, or the capacity to build networks of partners, is a crucial requirement for small businesses to be innovative and expand (Hoang & Antonic, 2003; Hung, 2006). Social capital plays a significant role in this establishment process (Chetty & Campbell-Hunt, 2003; Cross et al., 2002; Elfring & Hulsink, 2003). Vital technical innovation can result from the combination of the structural, relative, and cognitive components (Cayrat & Cossette, 2021; Guerrero et al., 2021). Like this, a company is seen from the RBV perspective as a collection of resources, including essential intangible resources, which can help it gain a competitive edge and generate higher profits. SC, therefore, stands out amid these intangible resources (Chisholm & Nielsen, 2009). Nevertheless, although it is recognized that SC plays a significant role in SME networks, more needs to be known about the dynamics of its use in business growth (Maurer & Ebers, 2006).

According to Lohana et al. (2019) and Chong et al. (2019), the contribution of technology to industrial SMEs in the Iraqi Kurdistan region remains a significant concern. The study aims to investigate the impact of Entrepreneurial Orientation (EC) and Social Capital (SO) on the Technological Innovation (TI) of Kurdistan SMEs in the Kurdistan region of Iraq. Iraqi SMEs must be receptive to new technologies to succeed, as these technologies are essential for building connections with businesses

worldwide that may participate in the global economy. Therefore, it is anticipated that this research will help SMEs innovate technologically to get a competitive advantage.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT:

Technological Innovation

Technology innovation (TI) is described as the capability to acclimate to unanticipated technological advances, the most recent scientific discoveries, and the adaptability of new technological inventions to satisfy the needs of existing customers and potential customers in the future (Adler & Shenhar, 1990). It can also be defined as technological innovation, which "is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations" (Manual, 2005, p. 46). Several researchers underlined the significance of TI in enhancing technological efficiency (Donbesuur et al., 2020; Guan et al., 2013). It is an inevitable requirement for SMEs that want to create and maintain a competitive advantage or flourish in new markets (Singh et al., 2017). This study focuses on the SME sector in Kurdistan because SMEs are essential for economic development (Ali, 2020). However, according to the Department of Statistics of Kurdistan's SME Census, 88.3% of SMEs do not use online marketing. Micro-enterprises only use it 10 per cent of the time compared to small and medium-sized businesses, which use it at respective rates of 24.2 and 33.6 per cent (RAND, 2020). As online marketing has been mentioned in prior research as a competitive tactic for SMEs to promote themselves among other businesses, this is a crucial component in achieving business success (Subramaniam & Youndt, 2005). Since SMEs are more inclined to take risks and react rapidly to progressive market demands (Singh et al., 2017), this study focuses on TI in Kurdish SMEs. According to Morgan and Frishammar (2015), these attributes make it possible for small enterprises to take advantage of external information more successfully than their larger rivals. Furthermore, they can influence growth and innovation activities and have profited fully from the government's preferential monetary policies (Zhang & Shi, 2012). As a result, they will significantly influence innovation and growth.

Entrepreneurial Orientation and Technological Innovation

According to Covin and Miller (2014), a firm's EO plays a significant role in developing and adapting to environmental changes. These depend on the entrepreneurial opportunities that emerge from innovation and technological changes, macroeconomics, demographic shifts, and industrial crisis (Jin & Cho, 2018). EO tremendously impacts how a company acts and thinks, emphasizing the pre-emptive pursuit of entrepreneurial opportunities (Tarhini, A., & Obeidat et al., 2018; Zeffane, 2014). According to the Resource-Based Perspective (RBV) paradigm, EO is a crucial resource for company innovation and accomplishment (Bakar & Ahmad, 2010; Gupta et al., 2011; Zahra & George, 2017; Wales et al., 2013). Therefore, by conceptualizing EO as a combination of strategic cultural and organizational factors, its contribution to improving enterprises' capacity to respond to outward environmental oscillations through the creation of various innovations may be discovered (Radicic et al., 2019). As a result, EO may affect a company, specifically considering the shortening of product lifecycles, creating uncertainty and jeopardizing profitability, forcing current operations to search for new prospects constantly. Additionally, innovative businesses create and unveil new commodities and technologies that can offer outstanding performance and be regarded as the economy's growth engine (Kraus et al., 2012; Otero-Neira et al., 2013). Overall, EO epitomizes the company's propensity to veer off course and venture into uncharted territory (Zahra & George, 2017).it

If a company adopts an EO, there will be higher levels of innovation (Covin & Wales, 2011; Meyer et al., 2022). For instance, Yun et al. (2016) have demonstrated how high-tech companies that use EO have seen improvements in the performance of their product and process innovation. However,

proactivity, risk-taking, and innovativeness can support the behavior of entrepreneurial enterprises (Zaheer et al., 2021; Saha et al., 2017). According to Vora et al. (2012), organizations empower their workers to be more autonomous. They allow them to take the initiative in resolving specific workplace issues, involve them in decision-making, introduce new ideas, and empower them to be proactive in seizing opportunities. They have seen constructive improvements in their ability to innovate products and services and streamline organizational procedures. Moreover, the EO dimensions include innovativeness, proactiveness, and risk-taking) operates independently, impacting product and process innovation.

Messersmith and Wales (2011) revealed a non-significant association between EO and small enterprises' innovation despite these disagreements. However, Boso et al. (2012) precisely described the connection between EO and product innovation. They asserted that a high level of innovativeness, one of the EO qualities, is the primary factor underlying this link. According to Baker & Aljanabi (2017) and Engelen et al. (2015), product innovation and innovativeness are intensely correlated.

Numerous studies have noted the significance of EO's other aspects. For instance, taking risks can elevate the ability to propagate innovative goods and processes (Chen, 2012; Cheng et al., 2012; Anokhin et al., 2015), as risk-taking tends to benefit businesses and aid in the creation of innovations (Kocak 2017; & Luo, 2020). Based on the discussion above, this study proposed the following hypothesis:

H1: Entrepreneurial Orientation has a positive impact on the Technological Innovation of Kurdistan SMEs.

Social capital and Technological Innovation

A significant idea in social capital (SC) is that a business organization can obtain capital from the larger society in which it operates. Trust, social norms, and networks are as important as financial and human capital in sustaining a firm's value-creation activities, such as organizational innovation performance (Lin, 2017). On the other hand, innovation is a crucial element of organizational survival and progress in modern and international business contexts characterized by volatility, dynamism, and fierce competition (Serageldin & Grootaert, 2017). Therefore, it is essential to consider how the SC of the society where SMEs are established could assist SMEs in TI (Boohene et al., 2019). SC significantly impacts the SME's TI. In this instance, this association suggests that robust SME social networks can boost their capacity for innovation. The impact of social capital on creating an innovative environment can be described (Purwati & Hamzah, 2021). As a result, companies need interaction with their surroundings to develop rather than doing so in seclusion. A company's innovation is greatly aided by social capital, both in the form of formal and informal networks. First, knowledge sharing is crucial to innovation, especially in high-technology fields where knowledge is highly specialized. Networks are made up of connections between individuals and between corporations. These relationships enable, facilitate, and accelerate information sharing while lowering the cost of information retrieval. The network also synergizes, combining complementary ideas, skills, and financial resources. The networks link diverse concepts and innovative ideas. Additionally, networks help speed up the diffusion of innovation and facilitate it on their own (Sukoco et al., 2018; Wu et al., 2021). This result is consistent with studies by Camps et al. (2014), Aljanabi (2017), Huang & Wang (2011), and Chen (2012) that demonstrate how social capital may be calculated using the following criterion:

First, there is a well-established connection between SC and technological innovation (Camps & Marques, 2014; Nahapiet & Ghoshal, 1998). SC that encourages contact and communication among employees is created partly by the relationships that people forge through their history of interactions inside a company. Hence, active knowledge-sharing is made easier inside the business by reducing the requirement for monitoring and control systems. As a result, the company has more leeway to come up with and develop new concepts (Camps & Marques, 2018; Gupta and Yayla et al., 2011). Intriguingly,

Camps & Marques (2018) discovered that SC had a beneficial effect on both technical and non-technical innovation in their case study on SMEs. Therefore, increased SC in SMEs promotes effective gathering and sharing of new knowledge and market changes.

Additionally, this creates a stimulating environment for coming up with new ideas. These factors are crucial for developing and executing new product designs, price strategies, sales channels, and promotions. As a result, these SMEs can attain a greater degree of TI (Rauch et al., 2009). Therefore, the following hypothesis is proposed:

H2: Social Capital has a positive impact on the Technological Innovation of Kurdistan SMEs

Based on the above discussion, it is observed that entrepreneurial orientation and social capital are crucial components; however, they need consistent results towards technology innovation. So, this study aims to investigate the role of EO and SC toward TI in Kurdistan.

The framework of the study

Figure 1 presents the constructs and the hypothesized relationships. This framework intends to explain the influence of entrepreneurial orientation (EO), Social capital (SC) on technological innovation (TI) among industrial SMEs. RBV theory demonstrates how firms can achieve and maintain their TI by maximizing resource usage (Adler & Shenhar, 1991; Grande et al., 2011).

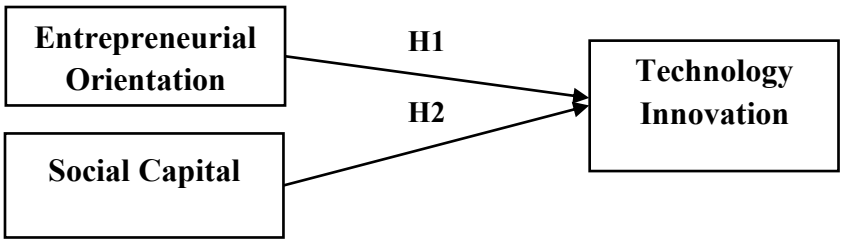

Figure 1*: Research Model*

METHODOLOGY

Based on a cross-sectional survey, this study applies a cross-sectional design. The sample was selected from a list of industrial SMEs operating in Kurdistan in 2020. This information includes a work area, strength, number of employees, and industry type. However, all industrial SMEs operating in the three Kurdistan states, Erbil, Sulaiman, and Duhok, are the population of this study. In 2020, 2,925 industries were operating in Kurdistan, according to the Ministry of Industry and Trade Kurdistan Regional Government (MTIKRG, 2020). These industries offer various production options and engage in a wide range of industrial pursuits. It includes the automotive sector, telecommunications industry, metal industry, non-metal industry, construction materials, travel & tourism services, mineral water industry, and general trading. Therefore, eight groupings of industrial SMEs encompass the target population. This study has utilized a stratified sampling method. In stratified sampling, researchers divide a population into homogeneous subpopulations called strata based on specific characteristics. This study population includes eight groups of industrial SMEs so using stratified sampling is justified. The sample size of this study is 340, based on the criterion set by Krejcie & Morgan (1970).

Data Collection Method and Measurement Instruments

Data has been collected using the survey questionnaire from small business owners. Small business owners were provided with a questionnaire to obtain the necessary data from a representative sample. The data were collected by research assistants from small business owners physically. A five-point Likert scale, from "strongly disagree" to "strongly agree" is used to measure the subjective estimates of the item statements in the variable section as prescribed by the earlier studies.

The study has one dependent variable Technological Innovation (TI), and two independent variables, including Entrepreneurial Orientation (EO) and Social Capital (SC). All the variables measurement has been selected from the existing scales in the literature. EO contains 16 items, and the measurement has been adapted from Bontis et al. (1998) and Cohen & Levinthal (1990). At the same time, SC contains 14 items adapted from Massa and Voronov (2017) and Dyllick & Rost (2017). This study used (11) items to measure the dependent variable (TI), which were adapted from Demmer & Calantone, (2011), and Atuahene-Gima, (1995). The measurement constructs are given in the Appendix section of the article.

Data Analysis Method

The data is analyzed using the Structural Equation Modelling (SEM) technique with Smart-PLS 3.0 software to assess this study's measurement and structural models. The benefit of using the PLS technique is that the latent construct can be described as either reflective or formative construction (Hair et al., 2017). This study followed a reflective model assessment. After correcting the measurement indicators, the PLS approach was utilized to develop the research model. One of the statistical methods employed in SEM is PLS analysis, which assesses both the measurement and structural models (Hair et al., 2014). On the other hand, this study used the PLS technique to assess the measurement and structural models thoroughly.

RESULTS AND DISCUSSION

Respondents' Demographic Profile

Table 1 shows the respondent's demographic information. The findings reflect the small size of most eastern communities, including the Kurdistan area of Iraq. Most of the study's respondents are male, around 91%. Around 46.7% of the respondents fall under the age group 46 to 55 years. In addition, table 1 revealed that 32.1% of the respondents are from the non-metal sector, followed by the metal sector (24.1%) and the construction material sector (23.8%). Most of the respondents have working experience that falls between 5-15 years, around 56.7%. About 97.6% of respondents work under a Kurdish-owned company. Moreover, the education level information discloses that approximately 47.4% of the respondents have a bachelor's degree, followed by a Secondary school certificate (25.6%) and a master's degree (10%).

Table 1:

Demographic profile of the questionnaire respondents

Variable	Classification of variables	Frequency	(%)
Gender	Male	309	90.9
	Female	31	9.1
Age	less than 20 years	13	3.8

	21 to 25 years	31	9.1
	26 to 30 years	60	17.6
	31 to 35 years	31	9.1
	36 to 40 years	11	3.2
	41 to 45 years	20	5.9
	46 to 50 years	94	27.6
	51 to 55 years	65	19.1
	above 55 years	15	4.4
Sector	Metal Industry	82	24.1
	Non-metal Industry	109	32.1
	Construction Material	81	23.8
	Travel & Tourism Service	27	7.9
	Automobile Sector	16	4.7
	Mineral Water Industry	10	2.9
	Telecommunication Industry	8	2.4
	General Trading	7	2.1
Working Experience	less than 5 years	19	5.6
	6 to 10 years	96	28.2
	11 to 15 years	97	28.5
	16 to 20 years	61	17.9
	21 to 25 years	43	12.6
	More than 25 years	24	7.1
Ownership	Kurdish Owned	332	97.6
	Foreign Owned	8	2.4
Education	No certificate held	12	3.5
	Primary school	13	3.8
	Secondary school	87	25.6
	Bachelor’s Degree	161	47.4
	Master	34	10.0
	PhD	28	8.2
	Others	5	1.5

Measurement assessment

The measurement model was evaluated based on evaluation standards for measurement and structural model. Analysation of the convergent validity, discriminant validity, and Heterotrait-Monotrait ratio of correlation (HTMT) was part of the assessment for this measurement model.

Convergent validity

By assessing the construct reliability, including Cronbach's alpha (α), Composite Reliability (CR), and Average Variance Extracted (AVE), the convergent validity is evaluated (Fornell & Larcker, 1981; Kasim et al., 2022). The convergent validity of the model's constructs is shown in Table 3. The items' loadings were evaluated in response, and it was discovered that the overall loadings were higher than 0.60. The factor loadings of all remaining components vary from 0.689 to 0.912, above Hair et al. (2017)'s threshold of 0.6. The average percentage of variation retrieved from the observed data is measured statistically using the AVE method. The recommended standard value for AVE should be more than 0.50 to guarantee that the latent variable can, on average, explain more than half of the

variance of its indicator (Henseler & Sarstedt, 2013). AVE values in this research ranged from 0.588 to 0.760, over the suggested cut-off value of 0.50.

Table 2:

Convergent validity analysis

Construct	Item Code	Factor loading	Cronbach's Alpha	rho_A	Composite Reliability	(AVE)
Entrepreneurial Orientation	Proac1	0.846		0.921	0.940	0.760
	Proac2	0.863		0.903	0.916	0.775
	Proac3	0.835		0.945	0.932	0.752
	Proac4	0.840				
	Proac5	0.873				
	Risk1	0.845				
	Risk2	0.877	0.920			
	Risk3	0.843	0.903			
	Risk4	0.847	0.945			
	Innovati1	0.858				
	Innovati2	0.855				
	Innovati3	0.872				
	Innovati4	0.869				
	Innovati5	0.865				
	Innovati6	0.868				
	Innovati7	0.872				
Social Capital	Struc1	0.866	0.906	0.909	0.930	0.727
	Struc2	0.869				
	Struc3	0.870				
	Struc4	0.823				
	Struc5	0.835				0.732
	Relat1	0.840	0.878	0.879	0.916	
	Relat2	0.834				
	Relat3	0.852				
	Relat4	0.895				
	Cogni1	0.817				
	Cogni2	0.825	0.902	0.904	0.928	0.720
	Cogni3	0.856				
	Cogni4	0.865				
	Cogni5	0.876				
	PC1	0.697	0.824		0.977	0.588
Technological Innovation	PC2	0.765				
	PC3	0.821				
	PC4	0.820		0.830	0.940	0.607
	PC5	0.725	0.868			
	PD1	0.695				
	PD2	0.689				
	PD3	0.778		0.875		
	PD4	0.795				
	PD5	0.829				
	PD6	0.870				

Note: *: $p < 0.05$, **: $p < 0.01$, ***: $p < 0.001$, CR=Composite Reliability, AVE=Average Variance Extracted.
*Product Innovation (PD); and Process Innovation (PC). Proactiveness (Proac), risk-taking (Risk), innovativeness (Innovati); and Social Capital are demonstrated by three dimensions: structure (struc), relative (relat), and cognitive (Cogn).

Discriminant validity

Table 3 displays the Fornell-Larcker criterion for discriminant validity. The results show that the inter-construct correlations are smaller than the square roots of AVE values. The inter-construct correlations in the rows where they appear are smaller than these values. The discriminant validity of this measurement model is sound.

Table 3:

Correlations and discriminant validity

	Cogn	Innovati	PC	PD	Proac	Relat	Risk	Struc
Cogn	0.848							
Innovati	-0.065	0.867						
PC	0.294	0.412	0.767					
PD	0.285	0.358	0.885	0.779				
Proac	-0.042	0.941	0.436	0.360	0.872			
Relat	0.877	-0.061	0.245	0.215	-0.063	0.856		
Risk	-0.032	0.957	0.407	0.333	0.968	-0.041	0.880	
Struc	0.854	-0.060	0.291	0.258	-0.070	0.883	-0.042	0.853

Note: *Product Innovation (PD); and Process Innovation (PC). proactiveness (Proac), risk-taking (Risk), and innovativeness (Innovati); and Social Capital is demonstrated by three dimensions: structure (struc), relative (relat), and cognitive (Cogn).

Heterotrait- Monotrait ratio of correlation (HTMT)

Table 4 demonstrates that all correlation values obtained fall below the lowest predefined threshold of 0.85, indicating an acceptable level of HTMT as a standard for evaluating discriminant validity. Henseler et al. (2015) suggested using HTMT as an alternate method for evaluating discriminant validity. HTMT is the proportion of correlations within constructs to correlations between constructs. The HTMT approach is a scientific estimate of the valid correlations between two constructs under ideal assessment. An HTMT value less than 0.85 or less than 0.90 indicates that discriminant validity exists (Gold et al., 2001; Kline, 2015). All the values meet the HTMT criteria of less than 0.85 or 0.90, as shown in Table 4, other than Proac-risk; risk-innova; PD-PC; Risk-Proac and Struc-Relat. The measurement model's sufficient reliability, convergent validity, and discriminant validity are shown in Figure 2.

Table 4.

Heterotrait-Monotrait (HTMT) Ratio criterion value

	Cogni	Innova	PC	PD	Proac	Relat	Risk	Social Capital	Struc
Cogni									
Innova	0.077								
PC	0.342	0.473							
PD	0.322	0.393	1.039						
Proac	0.080	1.009	0.509	0.399					
Relat	0.982	0.069	0.289	0.246	0.084				
Risk	0.064	1.036	0.480	0.373	1.062	0.054			
Struc	0.938	0.066	0.338	0.291	0.080	0.985	0.050	1.023	

Note: *Product Innovation (PD); and Process Innovation (PC). proactiveness (Proac), risk-taking (Risk), and innovativeness (Innovati); and Social Capital is demonstrated by three dimensions: structure (struc), relative (relat), and cognitive (Cogn).

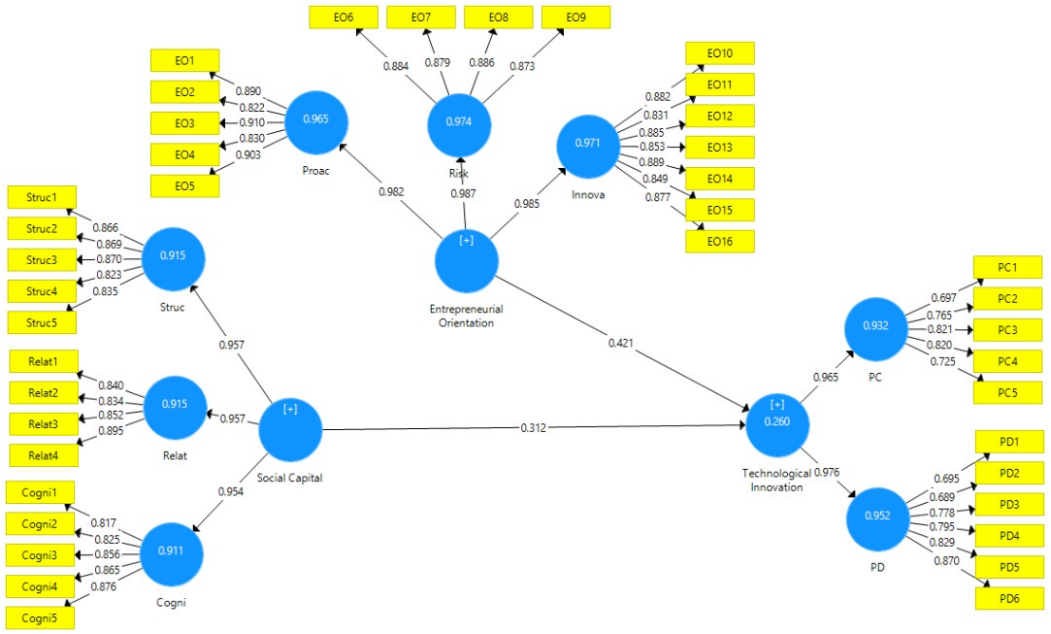

Figure 2: *Measurement model*

Structural assessment

This study includes a conceptual model analysis of the structural model to provide a clear picture of the consequences and to assess each assumption separately. The direct connections between the independent and dependent variables are examined first when examining the inner model. In the Smart-PLS, the PLS-SEM algorithm was used to examine the size of the path coefficients. The PLS-SEM bootstrapping method was employed to examine the applicability of the relationship between the route coefficients. The original number of occurrences served as the case count, and the final findings were obtained using 5,000 bootstrap samples in total (Hair et al., 2017; Henseler et al., 2015). Hypothesis testing is possible once the outer model's quality has been determined. The hypothesis model was tested using Smart PLS 3.0.

Establishing second-order constructs

Table 5 illustrates the establishment of second-order constructs for all investigated variables. Since the R squared values for the two first-order constructs, namely product innovation and process innovation, are 0.932 and 0.953, respectively, they effectively explain the technological innovation construct. Additionally, the Fornell & Larcker (1981) and Hair et al. (2017) criteria are used to confirm that each construct is unique. Similar to this, it was proposed that the three first-order constructs of proactiveness (Proac), risk-taking (Risk), and innovativeness (Innovati) would be used to measure the EO construct. The R squared values of 0.965, 0.974, and 0.971 demonstrate how effectively the EO construct explains these constructs. Finally, Structure (Struc), Relative (Relat), and Cognitive (Cogni) constructs are used to explain the SC construct. The R-squared values for these constructs are 0.915, 0.915, and 0.910, respectively.

Table 5:

Establishment of Second-Order Constructs

Second Order Construct	First Order Construct	Path coefficient	Std. Error	T-value	P-Value	R square
Technological Innovation	Product Innovation	0.965	0.004	249.953	0.000	0.932
	Process Innovation	0.976	0.003	389.607	0.000	0.952
Entrepreneurial Orientation	Proactiveness	0.985	0.003	384.252	0.000	0.965
	Risk-Taking	0.982	0.003	385.766	0.000	0.974
	Innovativeness	0.987	0.002	442.479	0.000	0.971
Social Capital	Structure	0.954	0.006	154.198	0.000	0.915
	Relative	0.957	0.005	183.916	0.000	0.915
	Cognitive	0.957	0.005	199.797	0.000	0.910

Hypothesis Testing

Two direct hypotheses pertinent to the study's goals are shown in Table 7. The findings show that, at the 0.01 level of significance, entrepreneurial orientation (EO) significantly and positively promotes technical innovation (TI) ($\beta = 0.421$, $t=10.021$, $p<0.000$). Finally, both H1 and H2 were supported since the association between social capital (SC), and TI findings are positive and significant at the 0.01 significance level ($\beta = 0.312$ $t = 6.341$, $p<0.000$).

Table 6:

Results of the Structural Model

Hyp. No.	Hypothesis Statement	Path Coefficient	Standard Error	T-Value	P-Value	Decision
H1	EO -> TI	0.421**	0.042	10.021	0.000	Supported
H2	SC-> TI	0.312***	0.049	6.341	0.000	Supported

Note: *: $p < 0.05$, **: $p < 0.01$, ***: $p < 0.001$, CR=Composite Reliability, AVE=Average Variance Extracted.
*Technology innovation (TI); Entrepreneurial Orientation (EO) and Social Capital (SC)

Discussion

The study aims to investigate the impact of SC and EO on the TI of Kurdistan SMEs. Additionally, it explores the connections between EO, SC, and TI. This study extends the scope of TI research to SMEs in evolving economies. Therefore, we have demonstrated that EO and SC have a substantial role in increasing technology innovation for SMEs with low internal knowledge and which rely heavily on externally generated knowledge (Grande et al., 2011; Huang & Wang, 2019) contributed to the literature on TI.

This study validates earlier studies that found EO to be one of the critical determinants of TI (Omar et al., 2016; Gao et al., 2018). In a study, Aljanabi and Noor (2015) intended to boost the level of innovation in SMEs by evaluating innovation as an EO result based on this assumption. In Kurdistan, the EO of industrial firms is a dependable tool for accomplishing technical innovation, which can be

linked to instability, mainly to political and security turmoil that occasionally trembles Iraq but not in Kurdistan. The area has stabilized and benefited from several planning and development initiatives since 2004. As a result, it is an excellent opportunity for companies willing to diversify into new markets and products. Hence, developing TI and participating in import competition may provide access to this booming local market.

Moreover, this study found a substantial and favorable connection between SC and TI, supporting previous studies (Lin, 2017; Boohene et al., 2019). Jalali and Thurasamy (2013) stated that "SC increases innovation by enhancing a company's knowledge performance". Besides, SC also affects enduring success through innovation. In addition, SC enables companies to have complete access to information and financial and non-financial resources to foster innovative products and services (Florin & Schulze, (2003).

For 340 industrial SMEs in Kurdistan, this study theoretically hypothesized and experimentally examined the impact of EO and SC on the performance of TI. Findings indicate that EO and SC significantly improve TI. The performance of innovation can be improved to increase the performance of the business by strengthening the EO and SC spirit. This study has thereby contributed to the field of innovation capabilities research by demonstrating how EO and SC improve TI for SMEs in Kurdistan.

CONCLUSION

Technology innovation highlights an organization's potential because of its competitive edge over competitors through new product development, technology, and other innovations. While innovation is essential for corporate success in the marketplace, SMEs in Kurdistan still fall short in the areas of marketing, technology, and manufacturing. As a result, they are unable to match the constantly shifting expectations of their clients in terms of technology innovation. So, this study aims to investigate the impact of Social Capital and Entrepreneurial Orientation on the Technology Innovation of Kurdistan SMEs. The study used stratified sampling and finally, 340 small business owners of Kurdistan responded to the survey questionnaire. The results of the study indicate that entrepreneurial orientation has a significant positive impact on technology innovation. In the case of Kurdistan, the industrial firms' entrepreneurial attitude is a solid tool for accomplishing technology innovation, which can be related to instability, particularly with the periodic political and security unrest that trembles Iraq but not in Kurdistan. The area has stabilized and benefited from several planning and development initiatives since 2004. In addition, social capital also shows a significant positive impact on technology innovation. Social capital can generate improved performance, creative products, and services, and ultimately a larger chance of success and a lower possibility of failure in Kurdistan.

Theoretical Contribution

This study has provided a new insight view on SME studies and shifted the development of business research from looking at the performance factors to a different angle which is identifying factors to improve SME performance. The endeavor to promote Technology Innovation in business may result from the desire to comprehend the significance of SME performance. The primary factors that were discovered to be significant to industrial SMEs in terms of the theory are entrepreneurial orientation and social capital. Given the inconsistent results of earlier investigations, this study contributes to the body of knowledge regarding TI and the variables that might influence such talents. The study also explores the TI framework, which is crucial for businesses to identify prospective capabilities and use them with the use of recent technologies. This could be a significant contribution, considering the absence of a theoretical framework and the substantial gap between previous studies.

Managerial Implications:

This study has significant functional implications for SME owners, policymakers, and managers to utilize their companies' EO and EC to support their TI. Also, TI is one of the most crucial survival factors for a business to pursue a strategic market position. Hence, the findings of this study will benefit institutions in Kurdistan to comprehend the importance of TI in assisting SME owners in various industries. By addressing the factors that affect these capabilities, which are crucial in determining innovation levels, assessing the TI of industrial SMEs can also help businesses realize and attain high levels of innovation. Managers must understand the usefulness of information beyond their firm's boundaries in leveraging innovation to help learn new approaches, boost the firm's innovativeness and proactivity, and lower the risk levels connected with the innovation process.

Limitations of the Study and Future Research:

The scope of this study has several limitations. First, while future research might concentrate on how to promote EO and what the antecedents for EO are, our study just considers the effect of EO and SC on TI. It would be interesting to distinguish between internal factors like a leader's style or organizational cultural attitudes, on the one hand, and external factors like the level of competition, legal requirements, and the speed at which customer demand changes, on the other. Second, because the study's environment was localized and focused on SMEs in Kurdistan, it was challenging to generalize the findings. The researchers suggest expanding previous studies on SMEs to different geographical areas. Future studies could examine this subject using a sample of businesses from various national backgrounds. Third, since many small enterprises in Kurdistan only have one owner, they cannot grow and raise cash on their own. Future research can concentrate on how SMEs would work together in a partnership to solve their financial problems and gain more benefits to improve their business innovatively.

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APPENDIX

Measurement Constructs

Technological Innovation	
Product Innovation	**Source**
1. My company can improve product design. 2. My company can develop environmentally friendly products. 3. My company can extend the range of products. 4. My company can replace outdated products 5. My company can reduce the time to develop a new product until it is launched in the market.	Demmer & Calantone, (2011)
Process Innovation	
1. My company can integrate production management activities. 2. My company can maintain a low level of stuck without impairing the manufacturing process. 3. My company has valuable knowledge on the best process and system for work organization. 4. My company can have valuable knowledge of manufacturing and technology processes. 5. My company its deliver products smoothly. 6. My company is developing a program to reduce the cost of products.	Atuahene-Gima, (1995)
Entrepreneurial Orientation	
Pro-activeness	
1. My company is always the first business to introduce the new products 2. My company emphasizes strongly on the development of new products 3. My company products more new products in comparisons with main competitors 4. We usually make changes to develop our products as compared to our main competitors 5. My company adopts a very competitive posture.	Bontis et al. (1998) and Cohen & Levinthal, (1990)
Risk-Taking	
1. My company shows great tolerance for high-risk projects 2. My company has a high performance in high-risk ventures with a high chance of return.	