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Barriers in Adopting Technological Innovation, Organizational Capacity, and Business Environment into Iraq SMEs: A preliminary Study

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Abstract: A successful Small and Medium Sized Enterprise (SME) is highly depends on the performance of innovation business environment, technology adoption, and organizational capacity of a company. This study is aims to identify the barriers to influence the growth of SMEs in the aspect of product innovation, and next, these factors were used to evaluate its interconnection with business practices, technology utilization, and capacity building in relation to growth SMEs'. Furthermore, the insight views of innovative development in a fast-growing market (the macro-environmental viewpoint) are discussed, which give a bigger picture and understanding of SME's capability to innovate and grow. In this study the data was gathered by using an online questionnaire which consisted of 41 questions. The proposed questionnaire contains of five sections, (a- General information about the company; b- Barriers to SMEs'Growth; c- Support for SMEs'; d- Motivation of innovation/open innovation; e- Growth in comparison to competitors). SPSS software was used to analyze the variables relationships. The obtained results indicate that both innovation and open innovation have moderate and somehow strong positive correlation relation with growth and innovativeness SMEs. For future research, more similar cases in terms of innovativeness and growth process are needed to confirm the research conclusions.

Keywords: Innovation, Innovation Business Environment, Technology Adoption, SMEs, Organization Capacity.

1. Introduction

Nowadays, the economic growth in both developed and developing countries are highly influenced by small and medium enterprises (SMEs) performance. SMEs contribute more than 70% of GDP in most of the countries including Iraq and Malaysia. The role of small and medium firms as a source of innovation and business growth is not only crucial but also a necessity to upsurge profit productivity [1]. Such SMEs are eager to idealize their business models, creating innovative ideas, removing inefficient processes and products for high turnover and quick economic growth [2].

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Therefore, SMEs are needed to provide a sensitive balance in the market by fueling the competitive advantages and quelling the risk of a monopolistic system.

The developed nations are mostly profit-driven and hence they recognize the significance of innovation within the competitive business environment. In such a manner, the provision of support for SMEs is considered a top priority [3], [4]. SMEs which embrace innovation do not only enhance their capacity to survive in the global markets but also enjoy productive growth as a consequence of that innovation [5].

In this regard of innovation, technological innovation is considered more beneficial towards the development of a company. In consideration of the important role innovation plays for the growth of SMEs, this study is subjected to the effect of innovative business atmosphere and usage of technology on (SMEs) growth. The growth of SMEs is highly influenced by various factors, the most crucial of which include innovation business environment (IBE), organization capacity (OC), and application of technology (TA). It is thus highly likely to highlight the significance of the cross-connected relationships of such factors which then can help SMEs to develop an efficient growth plan.

This study investigates the inter-relationship of SMEs' with IBE, OC and TA for promoting the growth and development of SMEs. The main objective of the study is to determine the degree of positive relationship when IBE, OC and TA are barriers proportional with SMEs growth and innovation.

2. Barriers to influence SMEs innovation growth

This section describes the internal and external barriers that influence the SMEs growth in technological innovation aspect.

2.1 Main barriers in SMEs

Table 1 shows the list of main barriers that may affect the SMEs performance in terms of technological innovation.

Table 1: Main Barriers in Literature Review

Barriers	References
Finance	[6], [11]
Norms and Standards	[9], [12]
Problems with Inputs	[8], [13]
Regulations	[14], [15]
Macroeconomic Conditions	[16], [17]
Legislation	[9]
High Perceived Risks	[7]
Government Policies	[8]
Access to Technology Providers	[8]
Government's Environment	[8]
Labor and Consumer Protection Policies	[8]
Federal Laws	[14]
Accreditation Guidelines	[14]
Lack of Customer response to New products, services and Process	[9]
High inflation the long-term	[16]
High Economic Risks	[18]
Competitors Copying Products	[10]
Finding Suitable Human Resource	[19]
Bureaucracy	[19]
Trouble Finding Right Cooperation Partners	[19]
Uncertain Demand	[11]
Lack of Demand for Innovation	[11]
Innovation is Risky	[13]

Size of the Home Market			[15]

2.2 The barriers in context to categories

The grouped information of the barriers in context to categories such as Innovative Business Environment Barriers, organizational barriers, and Technology Barriers are presented in Table 2.

Table 2: The barriers in context to categories

Categories	No.	Barriers	References
Innovative Business Environment Barrier	1	Inadequate R&D, Design and Test in the firm	[8], [10]
	2	Culture	[14], [16]
	3	Resistance to Change	[9], [13]
	4	Lack of Use of Employees Ideas	[20]
	5	Lack of Suggestions for Innovations	[20]
	6	Innovation not a priority	[13]
	7	No need to innovate	[13]
Organizational Barrier	1	Financial Problems	[6], [8], [10], [11], [20]
	2	Cost	[7], [9], [11], [18]
	3	Qualified Staff	[9], [10], [15], [17], [21], [22]
	4	Education	[10], [23]
	5	Management Expertise	[6], [20]
	6	Time	[8], [10]
	7	Bureaucracy	[10], [14]
	8	Organizational Structure	[20]
	9	Research Management and Protection	[10], [19]
Technology Barriers	1	Lack of Information on Technologies	[9], [11], [18]
	2	Lack of Information on Markets	[9], [11]
	3	Cost of new technology	[24], [26]
	4	Knowledge of the New Product Development Process	[10]
	5	Internationalization	[19]
	6	Insufficient Tools for Decision making and Process-modelling	[17]
	7	Competence	[13], [22]

3. Methodology

This study aims to determine the relationship of technology and innovation criteria in SMEs. The deductive approach has been chosen for this study since we need confirm the theory in the selected area. This approach will enable us to create a theoretical basis that we can base our survey guide on and the creation of hypotheses that explain the conceptual model that can be tested.

In this research, the criteria found in the literature were used to develop into a research model as shown in Fig.1. It can be seen in the provided schematic diagram that each element has a drastic influence over the adopted innovation besides affecting each other. The purpose of this approach is to confirm the theoretical relationships of the identified variables with reflects with other researches [27].
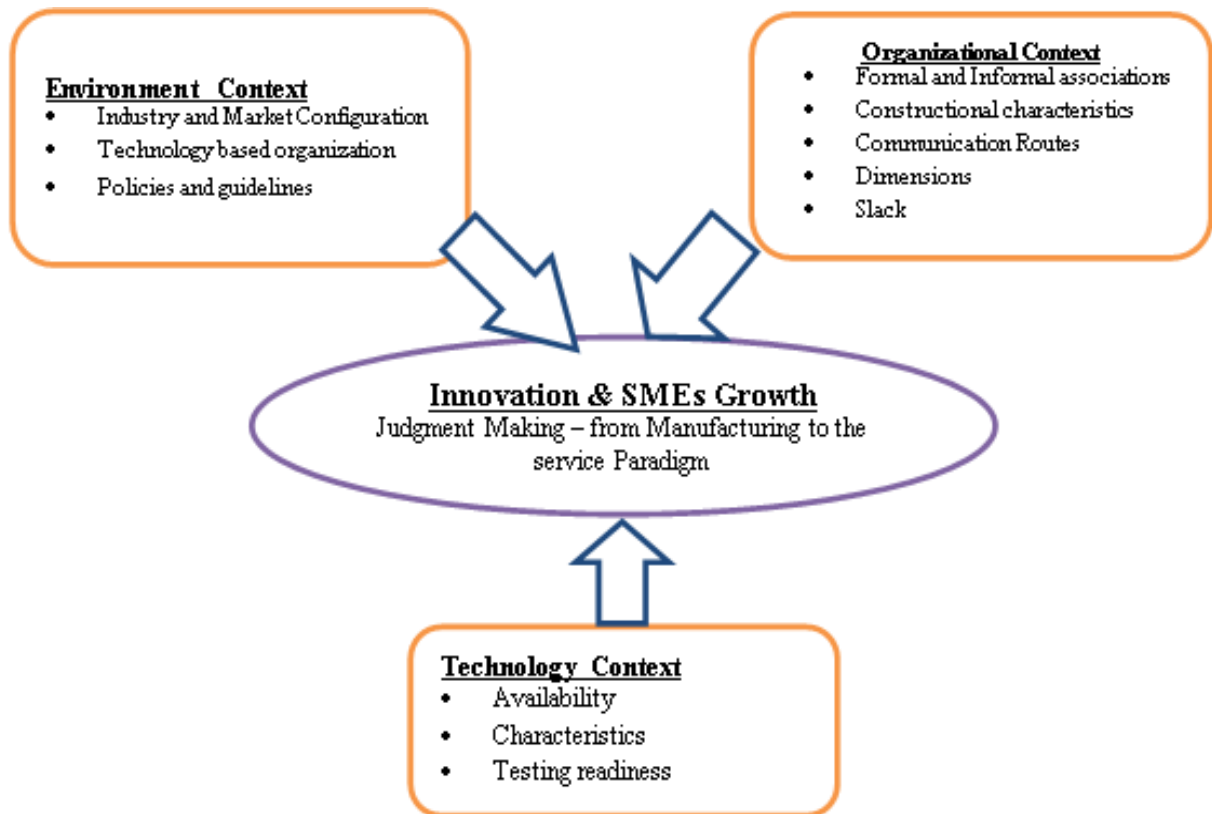
Figure 1: Technology organization environment framework

In this study, we wanted to understand the relationship between SMEs' IBE, OC, and technology adoption with the growth and innovativeness of SMEs.

The study is correlational in nature and tried to analyse the relationship between TA, OC, and innovative IBE on the SMEs' growth and innovation. To conduct most studies, qualitative and quantitative approaches were used. The qualitative approach is trying to understand what a respondent meant.

On the other hand, the quantitative approach is trying to clarify the relationship between different data and to identify ways of collecting and analysing data. This study used the qualitative method and inductive theoretical approaches to revisit of literature review to deepen the subject and gain knowledge. the data analysed into the software SPSS.

Includes a set of techniques applied to sampling, data collection, data analysis, which are known as methods quantitative or qualitative analysis. Through interviews with several participants uses a qualitative method where information is collected and through using a pre-designed survey questionnaire technique with distinctive characteristics of purpose, procedure, and analysis. In order to estimate the impact of innovation IBE and technology usage on SMEs growth, 107 Iraq, the Middle East, and European, SMEs were included in this survey research to get possible results.

The data was gathered by using an online questionnaire which consisted of 41 questions that were designed after formulating the research questions. The proposed questionnaire contains five sections:

a) General information about the company

b) Barriers to SMEs' Growth

i. IBE Barriers

ii. Technology Adoption Barriers

iii. Organizational Capacity Barriers

c) Support for SMEs'

d) Motivation of innovation/open innovation

e) Growth in comparison to competitors.

4. Results and Discussion

4.1 Relationship of IBE, Technology Adoption, Organizational Capacity with Innovation and SMEs Growth

The aim is to find the correlation between innovation growth and barrier toward innovation and SMEs growth. The interior portion of the structural developed model (Developed Technology Organization Environment DTOE) involves the dependent associations among TA, OC, and IBE with the innovation and SMEs' growth. The quality of the model links was evaluated by R^2 (Squared Multiple Correlations), and Goodness-of-Fit of the model. From the results of SPSS program for statistical analysis, it is distinct that almost the whole data is normally distributed and lies within the normal distribution.

For R^2 element in IBE Barriers, Technology Barriers, OC Barriers, and Innovation and Growth are (0.641, 0.871, and 0.774) and (0.862, 0.820, and 0.764) respectively. Through these outcomes, it shows that R^2 can be of adequate to great quality.

4.2 Correlation Test of Variables

4.2.1. Innovative IBE with Innovation

In quantitative analysis using SPSS, the Pearson r values are shown in the Table.3, for each variable of barriers towards innovative (IBE) with innovation. Correlation coefficient r values are moderately positive and show a meaningful association. The barriers have a direct and positive relationship with innovation. This demonstrates that innovation and (IBE) are highly correlated. The maximum value of Pearson correlation coefficient is for Lack of Use of Employees Ideas (IBE4) r=0.199. The least value r=0.061is for Organizational culture (IBE2).

Table 3: Correlation of Variables of IBE with Innovation

IBE Variables	r values of Innovation
IBE1	-0.016
IBE2	0.061
IBE3	0.103
IBE4	0.199
IBE5	0.063

Table 3 shows that lack of use employee (IBE4) ideas is the most common barrier to SMEs' growth and innovation adoption, because it has the highest value of Pearson correlation with innovation followed by Resistance to change, which is a crucial barrier against TA and innovative IBE for the company, and Lack of Innovative suggestions (IBE3) to deal with up-to-date technology and environment is a main concern of the companies. This indicates that small and medium enterprises (SMEs) should focus on gaining as many employee ideas as they can. According to above analysis, all variables of barriers toward internationalization have positive significant relationship with innovation.

4.2.2. growth with innovation

The Pearson correlation value is shown in the correlation Table 4, for each growth barriers toward internationalization and innovation. The values of correlation coefficient (r) are different as compared

to innovation. The correlation between innovation and growth both moderately positive and negative which have significant relationship. This shows that innovation is highly correlated with SMEs growth. The highest positive value of Pearson correlation coefficient r= 0.117 (Cash Flow (GR.5)) with innovation; the least positive Pearson correlation coefficient r=0 is (Investment) while there are some negative values showing weak relationship or no relationship.

Table 4: Correlation of Variables of growth with innovation

Variables of Growth	Correlation coefficient value
GR.1	0
GR.2	-0.054
GR.3	0.117
GR.4	-0.051
GR.5	0.126
GR.6	-0.153
GR.7	-0.001

The ranking table shows that Cash Flow (GR.5) has the highest value of Pearson correlation with innovation, followed by revenue growth (GR.3). This indicates that small and medium enterprises (SMEs) should put emphasis on Cash Flow and Revenue growth to strengthen and sustain innovation. According to above analysis four out of seven variables of growth have negative significant relationship with innovation.

4.2.3. innovative IBE with open innovation

The Pearson correlation value is shown in the correlation Table 5, for each IBE variable of barriers toward internationalization and open innovation. The values of correlation coefficient (r) differ as compared to innovation. The relationship between open innovation and IBE variable are positive, which indicates a significant relationship. The barriers have linear and positive relationship with open innovation. This shows that open innovation is highly correlated with innovative IBE. The highest positive value of Pearson correlation coefficient r= 0.234 is (Resistance to change IBE3) with open innovation; the least positive Pearson correlation coefficient r=0.022 is (Inadequate R&D IBE1).

Table 5: Correlation between open Innovation with barriers of innovative IBE

Variables of Barriers toward Internationalization	Correlation coefficient value
IBE1	0.022
IBE2	0.170
IBE3	0.234
IBE4	0.203
IBE5	0.172

The above ranking table shows that Resistance to Change (IBE3) has the highest value of Pearson correlation with open innovation, followed by Lack of Use of Employee Ideas (IBE4) and Lack of Suggestions (IBE5) for Innovations. This indicates that small and medium enterprises (SMEs) should put emphasis on Resistance to Change, Lack of Use of Employees Ideas and Lack of Suggestions for Innovations. According to above analysis seven out of nine variables of barriers toward internationalization have positive significant relationship with innovation.

4.2.4. variable of growth with open innovation

The correlation Table 6 shows the value of Pearson Correlation for each variable of growth with open innovation. The values of correlation coefficient (r) are different as compared to open innovation. The relationship between open innovation and growth both are moderately positive and negative which shows some significant relationship. The growth has linear and positive relationship with open innovation. This actually shows that open innovation is highly correlated with SMEs growth.

The highest positive value of Pearson correlation coefficient r= 0.045 (Market Share Growth (GR.4)) with open innovation; the least positive Pearson correlation coefficient r=0 is (Investment) while there are some negative values showing weak relationship or no relationship.

Table 6: Correlation between open Innovation and Growth

Variables of Growth	Correlation coefficient
GR.1	0.045
GR.2	0.027
GR.3	0.077
GR.4	0.294
GR.5	0.0
GR.6	0.228
GR.7	0.177

The above ranking table shows that Market Share Growth (GR.4) has the highest value of Pearson Correlation with open innovation. It followed by Productivity growth (GR.6). This indicates that SMEs should put emphasis on Market Share growth and productivity growth. According to above analysis four out of seven variables of growth have positive significant relationship with open innovation, but four out of seven have negative relationship with innovation.

The above analysis shows that both innovation and open innovation have moderate and somehow strong positive correlation relation with growth and TA and OC. The outcome of the data confirms our all-research hypothesis. There is a high correlation of Technology, OC and innovative IBE barriers with SMEs' growth and innovation. There is a high correlation between SMEs' growth and SMEs' Innovation. There is a positive correlation between open innovation and SMEs' growth.

4.3. Cronbach's Validation (Reliability) tests for Variables

Social research has two basic principles first Reliability, secondly validity. Reliability shows the capability of an instrument or organization to produce consistent results. It is also described by precision and objectivity. In the other side, validity is the capability to achieve careful outcome and to measure what is assumed to be measured.

A valid measures will produce real events that reflect the real situation and the surrounding situation that it needs to work [28]. By using SPSS program, almost all of the reliability of the tools assessed by the reliability coefficient (Cronbach'α) are above the traditional level of (0.7) (see Table.7). Therefore, reliability analysis confirms the validity and reliability the variables in this study.

Table 7: Reliability tests

Variables	Cronbach's Alpha	No. of Items
Innovative Business IBE with Innovation	0.701	6
Growth with Innovation	0.808	8
Organization Capacity with Open Innovation	0.747	9
Growth with Open innovation	0.800	8

Cronbach's alpha used to measure internal consistency. Usually, it is used when there are multiple questions in a survey that constitute the scope and want to determine whether the measure is a reliable, if you are concerned with the reliability of inter-rater. The alpha coefficients suggest that the items have relatively high internal consistency.

5. Conclusion

This study used rigorous methodology and research design to confirm the theoretical relationships of SMEs barriers factors. To measure of practices effect, the practice of innovation, business growth to prevent the negative effects. This study has builds from the literature business, innovation management and discussions with the SMEs practitioners, academics, researchers, businesses, and industry experts and market experts. This study illustrated the relationship between barriers in TA, IBE and OC from firm's point of views.

The study provides a comprehensive discussion regarding the importance of innovation as a base that includes the complete firm conditions and behavior. According to the study, the research suggests the direction and connection between these practices that are responsible for innovative in SMEs and their relationships with business growth. The proposed research model provides several significant relationships between the barriers, innovative practices and technology associated with growth and performance.

The results indicate that both innovation and open innovation have moderate and somehow strong positive correlation relation with growth and innovativeness SMEs. The study basically identifies the important aspect of innovative growth. It suggests that the owners' characteristics including managing direction plays a vital role in shaping and taking a decision related innovation, technology system and adopting new methodologies. For future research, it is suggested to include more similar cases in terms of innovativeness and growth process to increase the validity of the research findings.

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