



**THE EFFECT OF INTELLIGENT BUSINESS PROCESS  
MANAGEMENT MODEL ON PERFORMANCE OF SMES  
MEDIATED BY INNOVATION**



**DOCTOR OF PHILOSOPHY**

**2023**



**Institute of Technology Management and Entrepreneurship**

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MANAGEMENT MODEL ON PERFORMANCE OF SMEs  
MEDIATED BY INNOVATION**

**اونيورسيتي تيكنيكل مليسيا ملاك**  
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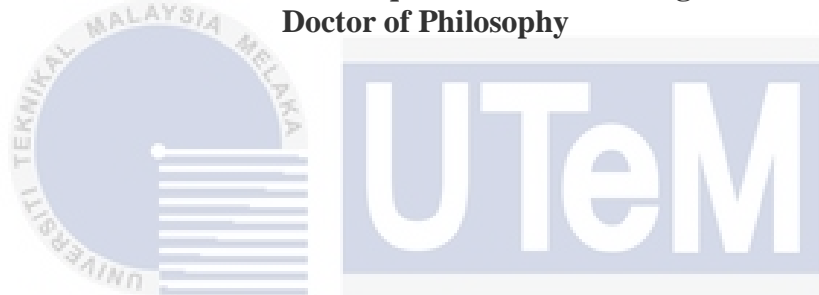
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**THE EFFECT OF INTELLIGENT BUSINESS PROCESS MANAGEMENT  
MODEL ON PERFORMANCE OF SMEs MEDIATED BY INNOVATION**

**SAEED YOUSIF AHMED ALI AL ALI**

**A thesis submitted  
in fulfillment of the requirements for the degree of  
Doctor of Philosophy**



**Institute of Technology Management and Entrepreneurship**

**UNIVERSITI TEKNIKAL MALAYSIA MELAKA**


**UNIVERSITI TEKNIKAL MALAYSIA MELAKA**

**2023**

## DECLARATION

I declare that this thesis entitled “The Effect of Intelligent Business Process Management Model on Performance of SMEs Mediated by Innovation” is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature

  
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## APPROVAL

I hereby declare that I have read this thesis and in my opinion, this thesis is sufficient in terms of scope and quality for the award of Doctor of Philosophy.

  
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## DEDICATION

I dedicate this thesis to my family and to the inspiring my father Yousif Al-Ali for encouraging me to complete my higher education.



## ABSTRACT

Small and Medium Enterprises (SMEs) in the UAE play a crucial role in driving the country's economic growth. However, their lack of innovation impedes their competitiveness in the business landscape. Although past research has explored methods to enhance SME performance, such as the use of artificial intelligence (AI) and business process automation, understanding the factors influencing the successful adoption of these technologies in the UAE's unique business environment remains a challenge. This study aims to fill these gaps by exploring the factors influencing the adoption of Intelligent Business Process Management (iBPM) among UAE SMEs. It examines the effect of iBPM adoption on SMEs' innovation and performance while evaluating the role of innovation as a mediating factor between iBPM adoption and performance. The study also proposes a comprehensive model capturing these relationships, framed by the Technology-Organization-Environment Framework. To achieve these objectives, a survey design was employed, and a questionnaire was distributed to SMEs via simple random sampling. The data collected from 377 respondents were analyzed using SPSS PLS-SEM Smart PLS software version 3.2.8. The findings of this study reveal that IT Infrastructure, Employees Competencies, Organizational Culture, and Strategic Alignment significantly influence iBPM adoption. However, factors such as Management Support, Government Support, and Market Condition do not have a significant impact, suggesting that organizational and environmental factors may not be strong drivers of iBPM adoption among SMEs in the UAE. Furthermore, iBPM adoption was found to have a positive influence on innovation and organizational performance. The positive relationship between iBPM adoption, innovation, and performance highlights the importance of adopting iBPM for enhancing competitiveness in the UAE. Importantly, innovation was found to partially mediate the relationship between iBPM and organizational performance, emphasizing the importance for SMEs to focus on nurturing innovation and integrating it into their iBPM initiatives to achieve greater benefits. These findings contribute to the development of SMEs by providing insights into how iBPM adoption and innovation can enhance their performance and competitiveness, ultimately aligning with the UAE's strategic goals. Additionally, they guide SMEs and policymakers in devising strategies to promote iBPM adoption and foster a more innovative and competitive SME sector.

## **KESAN MODEL PROSES PENGURUSAN PERNIAGAAN PINTAR TERHADAP PRESTASI PKS DIMEDIASI OLEH INOVASI**

### **ABSTRAK**

*Perniagaan Kecil dan Sederhana (PKS) di UAE memainkan peranan penting dalam mendorong pertumbuhan ekonomi negara. Walau bagaimanapun, kurangnya inovasi menghalang daya saing mereka dalam landskap perniagaan. Walaupun kajian terdahulu telah meneroka kaedah untuk meningkatkan prestasi PKS, seperti penggunaan kecerdasan buatan (AI) dan automatik proses perniagaan, pemahaman faktor-faktor yang mempengaruhi penerimaan berjaya teknologi-teknologi ini dalam persekitaran perniagaan unik UAE masih merupakan satu cabaran. Kajian ini bertujuan untuk mengisi kesenjangan tersebut dengan meneroka faktor-faktor yang mempengaruhi penerimaan Pengurusan Proses Perniagaan Cepak (iBPM) di kalangan PKS UAE. Ia mengkaji kesan penerimaan iBPM terhadap inovasi dan prestasi PKS sambil menilai peranan inovasi sebagai faktor penengah antara penerimaan iBPM dan prestasi. Kajian ini juga mencadangkan satu model komprehensif yang menggambarkan hubungan-hubungan ini, berdasarkan Kerangka Teknologi-Organisasi-Alam Sekitar. Bagi mencapai objektif ini, satu reka bentuk kaji selidik digunakan, dan soal selidik diedarkan kepada PKS melalui sampel rawak mudah. Data yang dikumpulkan daripada 377 responden dianalisis menggunakan perisian SPSS PLS-SEM Smart PLS versi 3.2.8. Hasil kajian ini mengungkapkan bahawa Infrastruktur IT, Kemahiran Kakitangan, Budaya Organisasi, dan Keserasian Strategik mempengaruhi penerimaan iBPM dengan signifikan. Walau bagaimanapun, faktor-faktor seperti Sokongan Pengurusan, Sokongan Kerajaan, dan Keadaan Pasaran tidak mempunyai impak yang signifikan, menunjukkan bahawa faktor-faktor organisasi dan alam sekitar mungkin bukan pendorong utama penerimaan iBPM di kalangan PKS di UAE. Selain itu, penerimaan iBPM didapati mempunyai pengaruh positif terhadap inovasi dan prestasi organisasi. Hubungan positif antara penerimaan iBPM, inovasi, dan prestasi menunjukkan kepentingan mengadopsi iBPM untuk meningkatkan daya saing di UAE. Secara penting, inovasi didapati mengantara secara separa hubungan antara iBPM dan prestasi organisasi, menekankan kepentingan bagi PKS untuk memberi tumpuan kepada perkembangan inovasi dan mengintegrasikannya ke dalam inisiatif iBPM mereka untuk mencapai manfaat yang lebih besar. Penemuan ini menyumbang kepada perkembangan PKS dengan memberikan wawasan mengenai bagaimana penerimaan iBPM dan inovasi dapat meningkatkan prestasi dan daya saing mereka, akhirnya sejajar dengan matlamat strategik UAE. Selain itu, mereka memandu PKS dan pembuat dasar dalam merancang strategi untuk mempromosikan penerimaan iBPM dan memupuk sektor PKS yang lebih inovatif dan berdaya saing.*



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In the Name of Allah, the Most Gracious, the Most Merciful

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I would like to extend my appreciation to the Universiti Teknikal Malaysia Melaka (UTeM) for providing the research platform. I also would like to thank many staff at the Institute of Technology Management and Entrepreneurship (IPTK) for their enormous administrative and dedicated assistance.

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## TABLE OF CONTENTS

	<b>PAGE</b>
<b>DECLARATION</b>	
<b>APPROVAL</b>	
<b>DEDICATIONS</b>	
<b>ABSTRACT</b>	<b>i</b>
<b>ABSTRAK</b>	<b>ii</b>
<b>ACKNOWLEDGEMENTS</b>	<b>iii</b>
<b>TABLE OF CONTENTS</b>	<b>iv</b>
<b>LIST OF TABLES</b>	<b>viii</b>
<b>LIST OF FIGURES</b>	<b>xi</b>
<b>LIST OF SYMBOLS</b>	<b>xii</b>
<b>LIST OF ABBREVIATIONS</b>	<b>xiii</b>
<b>LIST OF APPENDICES</b>	<b>xiv</b>
<b>LIST OF PUBLICATIONS</b>	<b>xv</b>
<b>CHAPTER 1 INTRODUCTION</b>	<b>1</b>
1.1 Background	1
1.1.1 The importance of Small Medium Enterprises (SMEs)	1
1.1.2 Challenges for SMEs in embracing technology	3
1.1.3 Potential of Intelligent Business Process Management (iBPM) to SMEs	4
1.1.4 Small Medium Enterprises (SMEs) in the global	6
1.1.5 Small Medium Enterprises (SMEs) in the UAE	8
1.2 Problem statement	9
1.3 Research question	14
1.4 Research objective	14
1.5 Scope of research	15
1.6 Operational definitions	16
1.7 Thesis Outline	19
<b>CHAPTER 2 LITERATURE REVIEW</b>	<b>21</b>
2.1 Introduction	21
2.1 Small and Medium Enterprises in the UAE	21
2.1.1 SMEs and government supports in the UAE	21
2.1.2 Digitalization of SMEs in the UAE	25
2.2 Intelligent Business Process Management (iBPM) and SMEs	26
2.2.1 Definition of iBPM	26
2.2.2 Differences between conventional BPM and iBPM	27
2.2.3 iBPM in different countries	29
2.2.4 Potentials of iBPM for SMEs	30
2.3 Previous studies related to factors affecting the adoption of iBPM	33
2.4 Factors affecting the adoption of iBPM	38
2.4.1 Technological factors	39
2.4.1.1 IT infrastructure	39
2.4.2 Organizational factors	41

2.4.2.1	Employees competencies	41
2.4.2.2	Management support	43
2.4.2.3	Organizational culture	44
2.4.2.4	Strategic alignment	45
2.4.3	Environmental factors	46
2.4.3.1	Government support	46
2.4.3.2	Market conditions	47
2.5	Theories governing the adoption of iBPM	49
2.5.1	Technology-Organization-Environment (TOE) framework	51
2.5.2	Previous studies related to performance and innovation of SMEs	54
2.6	Performance and innovation of SMEs	62
2.6.1	Organizational performance of SMEs	62
2.6.2	Innovation of SMEs	65
2.6.3	Relationship between adoption of iBPM with performance and innovation of SMEs	70
2.6.4	Relationship between innovation and performance of SMEs	72
2.6.5	Mediating effect of innovation on adoption of iBPM and performance of SMEs	73
2.7	Conceptual framework and hypotheses	75
2.8	Summary	79
<b>CHAPTER 3                      METHODOLOGY</b>		<b>80</b>
3.1	Introduction	80
3.2	Research design and research process	80
3.3	Measurement of research constructs	84
3.3.1	Factors affecting iBPM adoption	85
3.3.1.1	IT infrastructure	85
3.3.1.2	Employee competencies	86
3.3.1.3	Management support	87
3.3.1.4	Organizational culture	87
3.3.1.5	Strategic alignment	88
3.3.1.6	Government support	89
3.3.1.7	Market conditions	90
3.3.2	iBPM adoption	91
3.3.3	Innovation	93
3.3.4	Organization performance	94
3.4	Population and sampling	95
3.5	Sampling size and technique	97
3.5.1	Sampling size	97
3.5.2	Sampling technique	99
3.6	Instrumentation	101
3.6.1	Questionnaire design	102
3.6.2	Questionnaire validation	104
3.6.3	Pilot test: Questionnaire reliability	106
3.7	Data collection procedures	109
3.8	Data analysis	109
3.8.1	Preliminary data analysis	110
3.8.2	Structural Equation Modeling (SEM)	110

3.9	Ethics consideration	112
3.10	Summary	113
<b>CHAPTER 4 ANALYSIS AND RESULTS</b>		<b>115</b>
4.1	Introduction	115
4.2	Data editing and coding	115
4.3	Data screening	116
	4.3.1 Treatment of missing data	116
	4.3.2 Common method variance	117
4.4	Assessment of the normality	119
	4.4.1 Normality statistics of preliminary measures	120
4.5	Demographic analysis	121
4.6	Descriptive analysis	123
	4.6.1 IT infrastructure (TTS)	123
	4.6.2 Employee competencies (EC)	124
	4.6.3 Management support (MS)	125
	4.6.4 Organizational culture(OC)	126
	4.6.5 Strategic alignment (SA)	127
	4.6.6 Government support (GS)	128
	4.6.7 Market condition (MC)	129
	4.6.8 Intelligent Business Process Management (iBPM) adoption	130
	4.6.9 Innovation (INV)	131
	4.6.10 Organization performance (OG)	132
4.7	Research model analysis	133
	4.7.1 Assessment of measurement model	133
	4.7.1.1 Composite reliability (CR) and internal consistency (IC)	134
	4.7.1.2 Indicator reliability	134
	4.7.1.3 Convergent validity	139
	4.7.1.4 Discriminant validity	140
	4.7.2 Assessment of structural model	143
	4.7.2.1 Multicollinearity	144
	4.7.2.2 Path coefficient	145
	4.7.2.3 Hypothesis testing	146
	4.7.2.4 Coefficient of determination ( $R^2$ )	150
	4.7.3 Mediating variable analysis	151
	4.7.3.1 Mediating effect of innovation (iBPM→Innovation→ Organizational Performance)	151
4.8	Summary	153
<b>CHAPTER 5 CONCLUSION AND RECOMMENDATIONS</b>		<b>155</b>
5.1	Introduction	155
5.2	Summary of research	155
5.3	Discussion of the main findings	159
	5.3.1 Demographic of the respondents	159
	5.3.2 Validation of the relationship	161
	5.3.2.1 Direct relationship between technical, organizational and environmental factors on iBPM adoption	162
	5.3.2.2 The effect of iBPM on innovation and performance of SMEs	164

5.3.2.3	Mediating effect of innovation on the relationship between iBPM and organizational performance	165
5.4	Contribution to research	168
5.4.1	Contribution to knowledge	168
5.4.2	Contribution to practice	170
5.5	Limitations of research	171
5.6	Recommendation for future studies	172
5.7	Final remarks	173
<b>REFERENCES</b>		<b>174</b>
<b>APPENDICES</b>		<b>227</b>



## LIST OF TABLES

<b>TABLE</b>	<b>TITLE</b>	<b>PAGE</b>
Table 2.1	Indicators of SMEs in the UAE	23
Table 2.2	Differences between conventional BPM and iBPM	27
Table 2.3	Component of iBPM and its potential for SMEs	30
Table 2.4	Summary of selected previous studies: Factors affecting adoption of iBPM	35
Table 2.5	Overview of underpinning theories adopted by previous research	49
Table 2.6	Selected studies that adopt TOE framework	52
Table 2.7	Summary of previous studies related to performance and innovation of SMEs	56
Table 2.8	Definition of different types of performance	63
Table 2.9	Definition of different types of innovation	67
Table 3.1	Measurement of IT infrastructure	85
Table 3.2	Measurement of employee competencies	86
Table 3.3	Measurement of management support	87
Table 3.4	Measurement of organizational culture	88
Table 3.5	Measurement of strategic alignment	89
Table 3.6	Measurement for government support	90
Table 3.7	Measurement for market condition	91
Table 3.8	Measurement for iBPM adoption	92
Table 3.9	Measurement of innovation	93
Table 3.10	Measurement of performance	95
Table 3.11	Dubai SMEs based on sectors	97
Table 3.12	Krejcie Morgan (1970) sampling size table	99
Table 3.13	Determination of sample from each sector	100

Table 3.14	Questionnaire design	103
Table 3.15	Profile of the experts	105
Table 3.16	Deleted items from the questionnaire	106
Table 3.17	The rule of thumb for internal consistency based on Cronbach's alpha value	107
Table 3.18	Cronbach's alpha values for all the constructs	108
Table 3.19	Key factors in ethical consideration	112
Table 4.1	Values of skewness and kurtosis	120
Table 4.2	Profile of respondents	122
Table 4.3	Descriptive statistics of IT infrastructure	124
Table 4.4	Descriptive statistics of employee competencies	125
Table 4.5	Descriptive statistics of management support	126
Table 4.6	Descriptive statistics of organizational culture	127
Table 4.7	Descriptive statistics of strategic alignment	128
Table 4.8	Descriptive statistics of government support	129
Table 4.9	Descriptive statistics of market condition	130
Table 4.10	Descriptive statistics of iBPM adoption	131
Table 4.11	Descriptive statistics of innovation	132
Table 4.12	Descriptive statistics of organizational performance	133
Table 4.13	Internal consistency measures	134
Table 4.14	Indicator outer loadings (Before elimination)	135
Table 4.15	List of eliminated items	137
Table 4.16	Indicator outer loadings (After elimination)	137
Table 4.17	Average variance extracted (AVE) values	140
Table 4.18	Fornell-Larker criterion	141
Table 4.19	Cross-loading	141

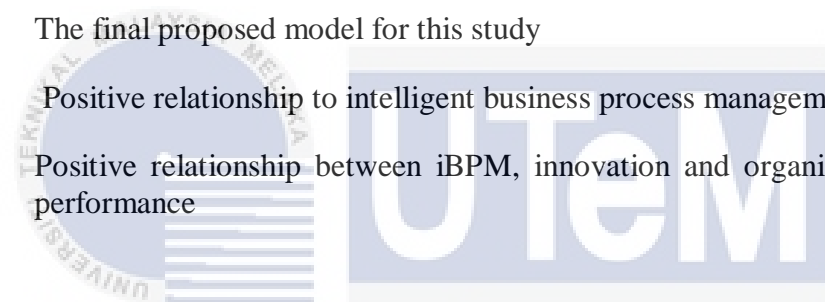
Table 4.20	VIF values	144
Table 4.21	Path coefficient	146
Table 4.22	Coefficient of determination	151
Table 4.23	Direct and indirect paths: iBPM → Innovation → Organizational Performance	152
Table 4.24	Summary of the results of direct hypotheses testing	154
Table 4.25	The results of indirect hypothesis testing	154
Table 5.1	A comparison of previous studies on the determinants of success in organizations	167





## LIST OF FIGURES

FIGURE	TITLE	PAGE
Figure 2.1	Conceptual framework	75
Figure 3.1	Research design	81
Figure 3.2	Research process	82
Figure 3.3	The process of developing the questionnaire	101
Figure 4.1	Structure model with t-statistics	139
Figure 4.2	Structure model with T-statistics	153
Figure 5.1	The final proposed model for this study	157
Figure 5.2	Positive relationship to intelligent business process management	163
Figure 5.3	Positive relationship between iBPM, innovation and organization performance	165



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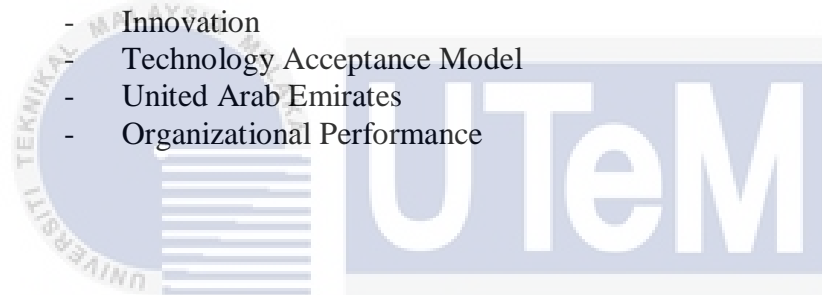
## LIST OF SYMBOLS

$\delta$	-	Voltage angle
$R^2$	-	Coefficient of Determination



## LIST OF ABBREVIATIONS

iBPM	-	Intelligent Business Process Management
BPM	-	Business Process Management
AI	-	Artificial Intelligence
SMEs	-	Small and Medium Enterprises
KFED	-	Khalifa Fund for Enterprise Development
CRM	-	Customer Relationship Management
TOE	-	The Technology-Organization-Environment
ITS	-	IT Infrastructure
EC	-	Employee Competencies
OC	-	Organizational Culture
SA	-	Strategic Alignment
GS	-	Government Support
MC	-	Market Conditions
INV	-	Innovation
TAM	-	Technology Acceptance Model
UAE	-	United Arab Emirates
OG	-	Organizational Performance



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## LIST OF APPENDICES

APPENDIX	TITLE	PAGE
Appendix A	Questionnaire for survey	227
Appendix B	Questionnaire for validation	236



## LIST OF PUBLICATIONS

The followings are the list of publications related to the work on this thesis:

- S. Al-Ali, S. Sidek, S.A. Al-Shami, 2022. The Growth and Challenges of SMEs in Abu Dhabi, *International Journal of Human and Technology Interaction*, 6 (1), ISSN. 2590 – 3551.
- S. Al-Ali, S. Sidek, 2023. The Impact of BPM Approach for the Success Performance of SMEs, *Seybold Report Journal of business and Management*, 18(3), 123-129. <https://seyboldreport.net/abstract-2023/3-123.html>



# CHAPTER 1

## INTRODUCTION

### 1.1 Background

#### 1.1.1 The importance of Small Medium Enterprises (SMEs)

Small and Medium-sized Enterprises (SMEs) are organizations with a limited number of employees and a relatively low annual turnover (Agostini and Nosella, 2020). The World Bank (2021) defines SMEs as businesses with fewer than 250 employees, an annual turnover of less than \$50 million, or total assets of less than \$43 million. In developing countries, SMEs account for up to 90% of businesses, while in developed countries, they contribute to over 50% of the GDP and provide up to 80% of new job opportunities (Zafar and Mustafa, 2017). Thus, the significance of SMEs in the economy is undeniable.

Small and Medium Enterprises (SMEs) play a crucial role in economic growth and development worldwide (Gherghina et al., 2020). These enterprises play a crucial role in economic growth, job creation, poverty reduction, income generation, and wealth creation (Chatterjee et al., 2021; OECD, 2022; Lutfi et al., 2022). Their flexibility and adaptability allow them to create new job opportunities, particularly in developing countries, helping to lift individuals out of poverty and improve their overall quality of life (Ibidunni et al., 2020). Moreover, the agility and responsiveness of SMEs to market changes enable them to foster innovation and drive technological advancements, ultimately contributing to the economic growth and development of nations (Hanifah et al., 2019).

SMEs exhibit diverse characteristics that contribute to their overall innovation performance, with certain internal attributes enabling them to excel in this area (Pullen et al., 2009). One of the critical attributes of SMEs is their ability to adopt and implement new technologies, such as ERP systems (Khadrouf et al., 2020). However, certain characteristics of SMEs, including limited resources and a lack of technological expertise, can impede the successful implementation of such systems (Supyuenyong et al., 2009; Khadrouf et al., 2020). Furthermore, SMEs tend to have different innovation patterns compared to larger enterprises, driven by a combination of internal and external factors (Pullen et al., 2009).

Even though large corporations are frequently linked with innovation, SMEs are integral in driving innovation within the global market (Hanifah et al., 2019; Gherghina et al., 2020). SMEs have demonstrated their ability to make unique and significant contributions to innovation by fostering a culture of creativity, collaboration, and flexibility (Hanifah et al., 2019; Abisuga-Oyekunle et al., 2019). Their smaller size allows them to adapt and respond to market changes more rapidly than their larger counterparts, enabling them to seize new opportunities and implement novel ideas more swiftly (Ibidunni et al., 2020). Moreover, SMEs often exhibit a higher degree of specialization in niche markets, which can lead to breakthrough innovations that disrupt industries and create new markets (Abisuga-Oyekunle et al., 2020; Ibidunni et al., 2020). As a result, the ongoing evolution of SMEs' role in the global market highlights their importance in promoting innovation and driving economic growth.

Recent trends suggest that the comparative advantages of small businesses have shifted towards knowledge-based activities, leading to a change in their roles within the economy. SMEs are increasingly recognized for their agility, adaptability, and ability to pursue targeted innovation strategies (Chatterjee et al., 2021; Lutfi et al., 2022). As a result,

they have become key drivers of innovation across various sectors, from technology to manufacturing and services.

SMEs hold a prominent position in the economy as engines of growth, job creation, and innovation. They contribute significantly to both developed and developing countries by embracing knowledge-based activities and implementing focused innovation strategies. By understanding and harnessing the innovative potential of SMEs, policymakers and business leaders can foster a more vibrant, resilient, and competitive economy.

### **1.1.2 Challenges for SMEs in embracing technology**

SMEs face numerous challenges that can hinder their growth and survival. One of the most significant challenges is the adoption of new technologies, such as big data and cloud ERP systems (Razzaq et al., 2020; Ghaleb et al., 2021). However, the implementation of new technologies can be expensive and requires technical expertise, which many SMEs lack. Moreover, SMEs face difficulties in identifying the right technology that aligns with their specific needs and business strategies (Gašperlin et al., 2021).

The COVID-19 pandemic has also brought about unprecedented challenges for SMEs worldwide, including those in the UAE region. The pandemic has resulted in the closure of many businesses, layoffs, and decreased revenue for SMEs in the region, as well as the need to address new health and safety protocols, disrupted supply chains, and changes in customer behavior and demand (Ajmal et al., 2021; Alhajeri, 2022; Zahoor et al., 2023).

Furthermore, the lack of knowledge and skills in areas such as business process management (BPM) can pose a challenge for SMEs. While BPM can enhance the efficiency and effectiveness of SMEs' business processes, many SMEs lack the technical skills and knowledge required for its implementation (Kolar, 2014). In addition, embedding time management into database management systems can also pose a challenge to SMEs due to