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**INNOVATION CAPABILITY, DISRUPTIVE
TECHNOLOGY AND SME'S PERFORMANCE IN
MALAYSIA**



**DOCTOR OF BUSINESS ADMINISTRATION
UNIVERSITY UTARA MALAYSIA
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**INNOVATION CAPABILITY, DISRUPTIVE
TECHNOLOGY AND SME'S PERFORMANCE IN
MALAYSIA**

By

DALJEET SINGH MALKEET SINGH



UUM
Universiti Utara Malaysia

**Thesis Submitted to
Othman Yeop Abdullah Graduate School of Business,
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Administration**



**OTHMAN YEOP ABDULLAH GRADUATE SCHOOL OF BUSINESS
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ABSTRACT

The aim of this study is to examine the relationship between innovation capacity (IC), and firm performance (FP) mediated by disruptive technology (DT) among SMEs within Selangor, Malaysia. The theoretical model is based on the Resource-Based Theory and the Theory of Innovation. To answer the research questions, four hypotheses were formulated. They are; (i) There is a significant relationship between innovative capacity and SMEs performance, (ii) There is a significant relationship between innovative capacity and disruptive technology, (iii) There is a significant relationship between disruptive technology and SMEs performance, (iv) There is a significant relationship between innovative capacity and SMEs performance mediated by disruptive technology. Self-administrated questionnaires were distributed to 800 owner-managers of SMEs in Selangor. A total of 150 firms responded in this study. This study utilised the Partial Least Squares Structural Equation Modelling (PLS-SEM) to establish validity and reliability of measurement model and test the relationships. The results show a positive and significant relationship between innovation capacity and firm performance mediated by disruptive technology. Owner-manager of SMEs should emphasize innovativeness on all four (4) dimensions of innovations to ensure better firm performance. The results of this study also provides a better insight for various stakeholders to further understand the effects of IC and DT on SMEs performance. The study provides empirical evidence for theoretical relationship hypothesized in the research framework and also adds to knowledge on the importance of innovativeness in all aspects of firm's offering along with adoption of disruptive technologies in predicting firm performance. The study is confined to firm operating in Selangor. It is recommended that future research should also include other state(s) in Malaysia.

Keywords: innovative capacity, disruptive technology, SMEs' performance,

ABSTRAK

Tujuan kajian ini ialah untuk mengkaji hubungan antara kapasiti inovasi (IC), prestasi firma (FP) perusahaan kecil dan sederhana (PKS) dan mengantara oleh gangguan teknologi di kalangan PKS di Selangor, Malaysia. Model teoritis adalah berdasarkan Teori Berasaskan Sumber dan Teori Inovasi. Untuk menjawab soalan penyelidikan, empat hipotesis telah di bentuk. Iaitu (i) Terdapat hubungan yang signifikan antara keupayaan inovatif dan prestasi PKS, (ii) Terdapat hubungan yang signifikan antara keupayaan inovatif dan teknologi yang mengganggu, (iii) Terdapat hubungan yang signifikan antara teknologi mengganggu dan prestasi PKS, (iv) Terdapat hubungan yang signifikan antara keupayaan inovatif dan prestasi PKS yang mengantara oleh teknologi yang mengganggu. Soal selidik sendiri telah diedarkan kepada 800 pemilik pengurus PKS di Selangor. Sejumlah 150 firma telah bertindak balas dalam kajian ini. Kajian ini menggunakan Model Persamaan Struktur Separa Separa (PLS-SEM) untuk membuktikan kesahan dan kebolehpercayaan model pengukuran dan menguji hubungan. Keputusan menunjukkan hubungan yang positif dan signifikan antara keupayaan inovasi dan prestasi firma yang di mengantara oleh gangguan teknologi. Pengurus pemilik PKS perlu menekankan inovasi dalam empat (4) dimensi inovasi untuk memastikan prestasi firma yang lebih baik. Hasil kajian ini memberikan gambaran yang lebih baik kepada pelbagai pihak berkepentingan untuk lebih memahami kesan kapasiti inovasi dan gangguan teknologi terhadap prestasi PKS. Kajian ini memberikan bukti empirikal untuk hubungan teori yang dihipotesiskan dalam rangka penyelidikan dan juga menambahkan pengetahuan mengenai pentingnya inovasi dalam semua aspek penawaran firma bersama dengan penggunaan gangguan teknologi dalam meramalkan prestasi firma. Kajian ini terhad kepada firma yang beroperasi di Selangor. Adalah dicadangkan bahawa penyelidikan pada masa hadapan perlu di masukkan negeri lain juga di Malaysia.

Keywords: kapasiti inovatif, gangguan teknologi, prestasi firma PKS

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TABLE OF CONTENTS

TITLE PAGE.....	i
CERTIFICATION OF THESIS WORK.....	ii
PERMISSION TO USE.....	iv
ABSTRACT.....	v
ABSTRAK.....	vi
ACKNOWLEDGMENT.....	vii
TABLE OF CONTENTS.....	viii
LIST OF TABLES.....	xiv
LIST OF FIGURES.....	xvi
LIST OF ABBREVIATIONS.....	xvii
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.1 Introduction.....	1
1.2 Background of Study.....	1
1.3 Problem Statement.....	13
1.4 Research Questions.....	21
1.5 Research Objectives.....	22
1.6 Significance of Study.....	23
1.7 Scope of the Study.....	24
1.8 Organization of the Thesis.....	26
CHAPTER TWO.....	27
LITERATURE REVIEW.....	27
2.1 Introduction.....	27
2.2 Definition of SMEs.....	27
2.2.1 Small business perspective.....	30
2.3 Rationale of promoting SMEs in Malaysia.....	32
2.4 Background and profile of SMEs in Malaysia.....	33
2.4.1 SME corporation Malaysia (SMEECorp).....	37
2.5 Performance of SMEs in Malaysia.....	38
2.6 SME performance, innovative capacity and disruptive technology.....	41
2.6.1 Brief overview of SME performance worldwide.....	43
2.7 Definition of innovation in brief.....	47
2.7.1 Innovation capacity.....	49
2.8 Definition of disruptive technology.....	58
2.8.1 Disruptive technology.....	61
2.9 Theoretical review – underpinning theory.....	64
2.9.1 Penrose and Barney – resourced-based-view (RBV).....	65
2.9.2 Schumpeterian theory of innovation.....	69
2.10 Summary.....	72

CHAPTER THREE.....	75
METHODOLOGY.....	75
3.1 Introduction.....	75
3.2 Research framework.....	75
3.3 Hypotheses development.....	77
3.3.1 Relationship between innovative capacity and SMEs performance.....	78
3.3.1.1 Product innovation.....	78
3.3.1.2 Process innovation.....	81
3.3.1.3 Marketing innovation.....	82
3.3.1.4 Organizational innovation.....	85
3.3.2 Relationship between innovative capacity and disruptive technology.....	87
3.3.3 Relationship between disruptive technology and SME performance.....	89
3.3.4 Relationship between innovative capacity and SME performance being mediated by disruptive technology.....	91
3.4 Research design.....	94
3.5 Unit of analysis.....	96
3.5.1 Independent variable.....	96
3.5.2 Dependent variable.....	98
3.5.3 Mediating variable.....	98
3.6 Operational definition.....	99
3.6.1 SMEs performance.....	99
3.6.2 Innovative capacity.....	102
3.6.3 Disruptive technology.....	103
3.7 Instruments for measurement of variable.....	105
3.7.1 Face validity.....	111
3.7.2 Reliability analysis results.....	112
3.8 Sample.....	113
3.8.1 Sample size determination.....	115
3.8.2 Sample selection.....	116
3.9 Data collection procedure.....	118
3.10 Technique of data Analysis.....	120
3.10.1 Missing data.....	122
3.10.2 Assessment of outliers.....	122
3.10.3 Assessment of normality.....	122
3.10.4 Multicollinearity.....	123
3.10.5 Descriptive analysis.....	123
3.10.6 Path model estimation.....	124
3.10.7 Justification for using PLS-SEM technique.....	124
3.11 PLS-SEM analysis.....	125
3.12 Evaluating the measurement models.....	126
3.12.1 Evaluating reflective measurement models.....	127
3.12.2 Evaluating formative measurement models.....	129
3.13 Evaluating the structural model.....	130

3.14	Summary.....	132
CHAPTER FOUR..... 133		
ANALYSIS OF FINDINGS..... 133		
4.1	Introduction.....	133
4.2	Analysis of survey responses.....	133
4.2.1	Goodness of data.....	133
4.2.2	Response rate	134
4.2.3	Non-response bias test.....	135
4.2.4	Profile of respondents	137
4.3	Data screening analysis.....	140
4.3.1	Treatment of missing data.....	140
4.3.2	Outliers assessment.....	140
4.3.3	Normality assessment.....	141
4.3.4	Multicollinearity assessment.....	143
4.4	PLS-SEM analysis.....	146
4.4.1	Innovation capacity.....	148
4.4.2	Disruptive technology as mediating variable.....	150
4.4.3	SMEs performance as endogenous variable.....	151
4.5	Measurement model assessment.....	152
4.5.1	Assessing the reflective measurement model.....	152
4.6	Structural model assessment.....	157
4.6.1	Mediation analysis.....	162
4.7	Recapitulation of the study findings.....	162
4.8	Summary.....	163
CHAPTER FIVE..... 164		
DISCUSSION, RECOMMENDATION AND CONCLUSION..... 164		
5.1	Introduction.....	164
5.2	Recapitulation of study findings.....	164
5.3	Discussion.....	165
5.3.1	Positive relationship between IC and SMEs firm Performance.....	165
5.3.2	Positive relations between IC and disruptive Technology.....	167
5.3.3	Positive relationship between DT and SMEs performance..	168
5.3.4	Mediating role of DT on positive relationship between IC and SMEs performance.....	170
5.4	Implications of the study.....	172
5.4.1	Managerial and practical implications.....	173
5.4.2	Theoretical implications.....	179
5.4.3	Methodological implications.....	180
5.5	Limitations and suggestions for future research.....	181
5.6	Conclusion.....	183
REFERENCES..... 184		
APPENDIXES..... 222		

LIST OF TABLES

	Page	
1.1	SME - by sector in numbers	6
1.2	The number of business closures 2002-2006	14
1.3	Winding-up and striking-off of companies	15
1.4	Termination of business	16
2.1	Bolton's definition of small firms	28
2.2	Malaysian SME definition by category	30
2.3	SME - by sector in numbers	35
2.4	SME – distribution in % by sector and by states	35
2.5	SME – distribution in numbers by sector in various state	36
2.6	SME – distribution in % by size and by sector	36
2.7	SME strength and weaknesses	39
2.8	SME GDP share by key economic activity	40
2.9	Major indicators for SMEs, 2010-2020	41
2.10	Few of past studies related to SMEs performance & challenges	42
2.11	Few examples of disruptive technologies	59
2.12	Historical view of the underpinning theories	68
3.1	Instruments of study variables	105
3.2	Measurement instruments	107
3.3	Cronbach alpha – innovative capacity	112
3.4	Cronbach alpha – disruptive technology	112
3.5	Cronbach alpha – SMEs performance	112
3.6	Distribution of SME in service sector by sub-sector & size	114
4.1	Description of approach methods	134
4.2	Non-response bias test results	136
4.3	Independent sample t-test	137
4.4	Demographic profile of respondents	138
4.5	Skewness and kurtosis	142
4.6	Correlation among exogenous variable	145
4.7	Multicollinearity test based on tolerance and VIF values	146
4.8	Internal consistency and convergent validity	153
4.9	Heterotrait-Monotrait ration of correlation (HTMT)	155
4.10	Evaluating the second-order reflective and formative constructs	157
4.11	HTMT results	157
4.12	Direct relationship results	161
4.13	Mediation analysis results	162
4.14	Recapitulation of the study findings	163

LIST OF FIGURES

	Page	
2.1	Product and process innovation	51
2.2	Radical and incremental innovation	52
3.1	Research framework	76
3.2	Likert scale – innovative capacity	106
3.3	Likert scale – SME business performance	107
3.4	Likert scale – disruptive technology	107
3.5	G*Power – sample size calculation	116
4.1	Histogram and normal probability plot of dependent variable	143
4.2	Specifying the measurement model	147
4.3	Specifying innovation capacity measurement model	149
4.4	Specifying disruptive technology measurement model	150
4.5	Specifying SMEs performance measurement model	151
4.6	Conceptual model	159
4.7	Conceptual model with results	160



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LIST OF ABBREVIATIONS

BNM	Bank negara Malaysia
BOS	Blue ocean strategy
CCM	Company commission of Malaysia (known as Suruhanjaya syarikat Malaysia)
DTI	Department of trade & industry
DV	Dependent variable
EFA	Exploratory factor analysis
EU	European union
EO	Entrepreneurial orientation
EPU	Economic planning unit
FAO	Food and agriculture organization
F&B	Food and beverages
GDP	Gross domestic product
HI	Human intellectual
ICA	Industrial coordination act
ICT	Information and communication technology
IO	Industrial organization
IP	Intellectual property
IPR	Intellectual property rights
IV	Independent variable
KMO	Keiser meyer-olkin
KTAK	Ministry of energy, water and communications
M&E	Machinery and equipment

MIDA	Malaysian industrial development authority
MITI	Ministry of trade and industry
MOF	Ministry of finance
MOSTI	Ministry of science technology and innovation
Myke Survey	Malaysian content knowledge survey
NAIC	North American industry classification
NPD	New product development
NSDC	National SME development council
NSI	National survey of innovation
OECD	Organization for economic co-operation and development
OEM	Original equipment manufacturer
OR	Original resources
OSLO Manual	OECD (Organization for economic co-operation and development) – guidelines for collecting and interpreting innovation data
PCA	Principal component analysis
PDP	Product development performance
PIP	Product innovation performance
RBV	Resource-based view
R&D	Research and development
RM	Ringgit Malaysia
US-SBA	United states-small business advocacy
SEM	Structure equation model
SmartPLS	SmartPLS statistical package

SMEs	Small medium enterprises
SMIDEC	Small and medium industries development corporation
SPSS	SPSS statistics software package
SSM	Suruhanjaya syarikat Malaysia
UK	United Kingdom
UNDP	United nation development program
URL	Universal resource locator
USA	United States of America
USD	United States dollar
US SBA	United States small business administration
UUM	Universiti utara Malaysia
VRIN	Valuable, rare, inimitable and non-substitutable
VRIO	Valuable, rare, inimitable and organization



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LIST OF APPENDICES

	Page
Appendix A Research survey questionnaires	222
Appendix B Letter for data collection	228
Appendix C Pre-test results	229
Appendix D Results of Mahalanobis D ²	230



CHAPTER ONE

INTRODUCTION

1.1 Introduction

Chapter one (1) consist of background of the research, problem statement of the research, research questions, objectives of the research, motivation and relevant significance of the study, scope and limitation of the research, and concludes with organization of the thesis structure.

1.2 Background of Study

The thriving world's economic growth over the last few years has been aided and spurred by, the contributions of small firms in every country (OECD, 2008, 2015; EIM, 2010). Based on considerable contributions by the SMEs to the development of a country, many countries including Malaysian government had put in place various types of schemes, incentives, campaigns, assistance, and programs to further encourage more people to get involved into entrepreneurship particularly in SME sectors and enterprises. The impact of these efforts had positively resulted, in an increase of establishment of enterprises (micro, small and medium). Research by Deakins & Freel (2006) reported that, in terms of the establishment figure in the (United States of America) USA, more than 600,000 new firms have been established every year since early 1990s to 2002.

Despite increase of establishment, failure rate of these establishment are equally at alarming rate. In his research, Van Praag (2003) stressed, whilst the number of

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Appendix – ‘A’	
Independent Variable (IV) items:- Innovative Capacity (IC).	
PRODUCT INNOVATION:-	Strongly <-----> Strongly
<i>For the last 3 years, (or since establishment) our company has:-</i>	Disagree Agree
INOVASI PRODUK:-	Sangat <-----> Sangat
Untuk 3 tahun yang lepas, (atau sejak penubuhan) syarikat kami telah; -	Tidak Setuju Setuju
1. Increase range of goods and services. Menambahkan pelbagai barangan dan perkhidmatan.	1 2 3 4 5
2. Replace products being phased-out. Menggantikan produk yang telah tamat tempoh.	1 2 3 4 5
3. Improve quality of goods and services. Menambah baik kualiti barangan dan perkhidmatan.	1 2 3 4 5
4. Achieved industrial technical standards. Mencapai standard teknikal industri.	1 2 3 4 5
5. Develop environment-friendly products. Membangunkan produk mesra alam.	1 2 3 4 5
PROCESS INNOVATION:-	Strongly <-----> Strongly
<i>For the last 3 years, (or since establishment) our company has:-</i>	Disagree Agree
INOVASI PROSES:-	Sangat <-----> Sangat
Untuk 3 tahun yang lepas, (atau sejak penubuhan) syarikat kami telah; -	Tidak Setuju Setuju
1. Increase capacity of production or service provision. Meningkatkan kapasiti pengeluaran atau penyediaan	1 2 3 4 5
2. Reduce consumption of materials and energy. Mengurangkan penggunaan bahan dan tenaga.	1 2 3 4 5
3. Reduce unit labour cost. Mengurangkan kos buruh seunit.	1 2 3 4 5
4. Reduce negative environmental impacts. Mengurangkan kesan negatif alam sekitar.	1 2 3 4 5

Appendix – ‘A’ (Continue)	
5. Improve Health and Safety Menambah-baik kesihatan dan keselamatan.	Sangat <-----> Sangat Tidak Setuju Setuju
6. Reduce process design cost. Mengurangkan kos reka-bentuk proses.	1 2 3 4 5
7. Reduce mobilization lead time. Mengurangkan masa mobilisasi.	1 2 3 4 5
<u>MARKETING INNOVATION:-</u> <i>For the last 3 years, (or since establishment) our company has:-</i>	Strongly <-----> Strongly Disagree Agree
<u>INOVASI PEMASARAN:-</u> Untuk 3 tahun yang lepas, (atau sejak penubuhan) syarikat kami telah; -	Sangat <-----> Sangat Tidak Setuju Setuju
1. Enter new market. Memasuki pasaran baru.	1 2 3 4 5
2. Increase or maintain market share. Meningkatkan atau mengekalkan saham pasaran.	1 2 3 4 5
3. Increase the ability to adapt to different client demand. Meningkatkan keupayaan untuk menyesuaikan diri dengan	1 2 3 4 5
4. Develop stronger relationship with customers. Membangunkan hubungan kukuh dengan pelanggan.	1 2 3 4 5
5. Increase awareness on product and services. Meningkatkan kesedaran tentang produk/servis.	1 2 3 4 5
<u>ORGANIZATIONAL INNOVATION:-</u> <i>For the last 3 years, (or since establishment) our company has:-</i>	Strongly <-----> Strongly Disagree Agree
<u>INOVASI ORGANISASI:-</u> Untuk 3 tahun yang lepas, (atau sejak penubuhan) syarikat kami telah; -	Sangat <-----> Sangat Tidak Setuju Setuju
1. Increase sharing or transferring the knowledge with other organization. Meningkatkan perkongsian atau pemindahkan pengetahuan dengan organisasi lain.	1 2 3 4 5

Appendix – ‘A’ (Continue)						
		Strongly <-----> Strongly				
		Disagree		Agree		
2. Improve communications and interaction among different business activities/units.		1	2	3	4	5
Meningkatkan komunikasi dan interaksi di kalangan unit perniagaan yang berbeza.						
3. Improve IT capabilities.		1	2	3	4	5
Menambah-baik keupayaan Teknologi Maklumat/IT.						
4. Improve flexibility of production or service provision.		1	2	3	4	5
Menambah-baik fleksibiliti pengeluaran atau penyediaan perkhidmatan.						
5. Increase efficiency in delivering goods and services.		1	2	3	4	5
Meningkatkan kecekapan dalam penyampaian barangan dan perkhidmatan.						
6. Reduced time to respond to customer needs.		1	2	3	4	5
Mengurangkan masa untuk bertindak balas terhadap keperluan pelanggan.						
7. Improve working environment.		1	2	3	4	5
Menambah-baik persekitaran kerja.						
8. Meet regulatory requirements.		1	2	3	4	5
Memenuhi keperluan peraturan.						
9. Reduced operating costs for service provision.		1	2	3	4	5
Mengurangkan kos operasi untuk penyediaan perkhidmatan.						

Appendix – ‘A’ (Continue)

Mediator Variable – Disruptive Technology (DT)	
TECHNOLOGY SENSING CAPABILITY: <i>For the last 3 years, (or since establishment) our company;-</i>	Strongly <-----> Strongly Disagree Agree
MENGESAN KEUPAYAAN TEKNOLOGI: Untuk 3 tahun yang lepas, (atau sejak penubuhan) syarikat kami; -	Sangat <-----> Sangat Tidak Setuju Setuju
1. Actively seek intelligence on disruptive technologies that are likely to affect our business. Secara aktif mencari risikan mengenai teknologi terkini yang mungkin menjejaskan perniagaan kami.	1 2 3 4 5
2. Are often quick to detect changes in technologies that might affect our business. Sentiasa pantas mengesan perubahan dalam teknologi yang mungkin menjejaskan perniagaan kami.	1 2 3 4 5
3. Periodically review the likely effect of changes in technology on our business. Secara berkala mengkaji kesan kemungkinan perubahan dalam teknologi perniagaan kami.	1 2 3 4 5
4. Are often one of the first in our industry to detect technological developments that may potentially affect our business. Sentiasa merupakan salah satu yang pertama dalam industri untuk mengesan perkembangan teknologi yang berpotensi yang boleh menjejaskan perniagaan kami.	1 2 3 4 5

Appendix – ‘A’ (Continue)	
<u>TECHNOLOGY RESPONSE CAPABILITY:</u>	Strongly <-----> Strongly
<i>For the last 3 years, (or since establishment) our company;-</i>	Disagree Agree
<u>MEMBALAS KEUPAYAAN TEKNOLOGI:</u>	Sangat <-----> Sangat
Untuk 3 tahun yang lepas, (atau sejak penubuhan) syarikat kami; -	Tidak Setuju Setuju
1. Generally respond very quickly to the emergence of disruptive technologies. Kebiasanya bertindak balas dengan cepat terhadap kemunculan teknologi terkini.	1 2 3 4 5
2. Tends to be first to adopt disruptive technologies, compared to others in our industry. Cenderung untuk menjadi yang pertama untuk menerima pakai teknologi terkini, berbanding dengan syarikat lain dalam industri kami.	1 2 3 4 5
3. Tend to adopt new technologies that add-value to our current investment. Cenderung untuk menerima pakai teknologi baru yang menambah-nilai terhadap pelaburan semasa kami.	1 2 3 4 5
<u>TECHNOLOGY INVESTMENT:</u>	Strongly <-----> Strongly
<i>For the last 3 years, (or since establishment) our company has;-</i>	Disagree Agree
<u>PELABURAN TEKNOLOGI:</u>	Sangat <-----> Sangat
Untuk 3 tahun yang lepas, (atau sejak penubuhan) syarikat kami telah; -	Tidak Setuju Setuju
1. Allocated a sufficient budget for purchasing IT/information technology hardware. Memperuntukkan bajet yang mencukupi untuk membeli perkakasan teknologi maklumat/IT.	1 2 3 4 5
2. Allocated a sufficient budget for purchasing IT/information technology software. Memperuntukkan bajet yang mencukupi untuk membeli perisian teknologi maklumat/IT.	1 2 3 4 5
3. Emphasized IT/information technology knowledge enhancement among staff. Menitik-beratkan pemantapan pengetahuan teknologi maklumat/IT dikalangan staf.	1 2 3 4 5

Appendix 'A': Continue

(Respondents Questionnaires) Demographic Information

Please mark "X" in the appropriate box

Age / Umur.	1) <input type="checkbox"/> Below 30 yrs / Kurang dari 30 tahun 2) <input type="checkbox"/> 31 - 40 yrs / Antara 31-40 tahun 3) <input type="checkbox"/> 41 - 50 yrs / Antara 41-50 tahun 4) <input type="checkbox"/> 51 - 60 / Antara 51-60 tahun 5) <input type="checkbox"/> 61 and above / Melebihi 61 tahun
Gender / Jantina.	1) <input type="checkbox"/> Female / Perempuan 2) <input type="checkbox"/> Male / Lelaki
Highest Education Level / Pendidikan.	1) <input type="checkbox"/> Senior High School / Sekolah Menengah 2) <input type="checkbox"/> College Diploma / Kolej 3) <input type="checkbox"/> Degree / Ijazah 4) <input type="checkbox"/> Master Degree / Ijazah Sarjana 5) <input type="checkbox"/> Doctorate Degree / Ijazah Doktor Falsafah
How long has your company been established/operating / Bila syarikat ditubuhkan/Usia.	1) <input type="checkbox"/> Less than 5 years / Kurang dari 5 tahun 2) <input type="checkbox"/> 5-10 years / Antara 5-10 tahun 3) <input type="checkbox"/> 11-15 years / Antara 11-15 tahun 4) <input type="checkbox"/> 16 - 20 years / Antara 16-20 tahun 5) <input type="checkbox"/> More than 21 years / Melebihi dari 21 tahun
What is the nature of your company's business activity / Jenis Perniagaan.	1) <input type="checkbox"/> Professional Business Services / Perkhidmatan Profesional 2) <input type="checkbox"/> Manufacturing / Pembuatan 3) <input type="checkbox"/> Construction / Pembinaan 4) <input type="checkbox"/> Finance or Insurance / Kewangan atau Insuran 5) <input type="checkbox"/> Tourism / Pelancongan 6) <input type="checkbox"/> Education / Pendidikan 7) <input type="checkbox"/> Agriculture or livestock / Pertanian atau Penternakan 8) <input type="checkbox"/> Healthcare or Pharmaceutical / Kesihatan atau farmasi 9) <input type="checkbox"/> Distribution or Transportation / Pengedaran atau Pengangkutan/Logistic 10) <input type="checkbox"/> Food and Beverage / Makanan dan Minuman 11) <input type="checkbox"/> Textile or Apparels / Pakain atau Tekstil 12) <input type="checkbox"/> Electrical or Electronics / Elektrik atau Elektronik 13) <input type="checkbox"/> Others / Lain-lain (pls specify)
What is the total number of employees / Jumlah Pekerja.	1) <input type="checkbox"/> Fewer than 5 / Kurang dari 5 orang 2) <input type="checkbox"/> 5-30 / Antara 5-30 orang 3) <input type="checkbox"/> 31-75 / Antara 31-75 orang 4) <input type="checkbox"/> 76-200 / Antara 76-200 orang 5) <input type="checkbox"/> More than 200 / Melebihi dari 200 orang
What is the annual/yearly sales Turn-over (Yearly Total Sales) / Jumlah dagangan Tahunan.	1) <input type="checkbox"/> Below RM 300,000 Thousand / Kurang dari RM300 Ribu 2) <input type="checkbox"/> Between RM 300 Thousand – RM 3 Million / Antara RM300 Ribu- RM 3 3) <input type="checkbox"/> Between RM 3 Million – RM 20 Million / Antara RM 3 Juta – RM 20 Juta 4) <input type="checkbox"/> Between RM 20 Million – RM 50 Million / Antara RM20 Juta – RM50

Appendix 'B': Letter for Data Collection



UUM Kuala Lumpur
Universiti Utara Malaysia
41-3, Jalan Raja Muda Abdul Aziz
50300 Kuala Lumpur, Malaysia
Tel: (603) 2610 3000
Fax: (603) 2694 9228
<http://uumkl.uum.edu.my>

"MUAFKAT KEDAH"

Our Ref : UUM/UUMKL/P-39/133

Date : 31st May 2017

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

COLLECTION OF DATA FOR RESEARCH PURPOSES

We are pleased to inform you that the following individual is UUM Kuala Lumpur student who is presently pursuing his Doctor of Business Administration. He is required to collect data from your organization as a requirement for the BDMZ8024 Dissertation courses that he is pursuing this semester.

No.	Name	Matric No.	I/D No.
1.	Daljeet Singh Malkeet Singh	95474	650907065027

Since he has chosen your organization as herassignment, we would be most grateful if you could render all assistance to him to carry out his project successfully.

Please be informed that the data collected is purely for academic purposes and we assure you that all information or data will be kept strictly confidential.

We really appreciate your kindness and cooperation in the above matter.

Thank you.

"SCHOLARSHIP, VIRTUE AND SERVICE"

Sincerely yours,

DR. AHMAD RIZAL BIN MAZLAN
Director
UniversitiUtara Malaysia
Kuala Lumpur (UUMKL)



The Eminent Management University

Appendix 'C': Preliminary Cronbach's Alpha Test Results (SPSSv22)

INNOVATIVE CAPACITY (IC) – 'Independent Variable'

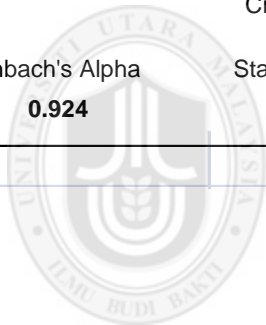
Reliability Statistics		
Cronbach's Alpha Based on		
Cronbach's Alpha	Standardized Items	N of Items
0.936	0.936	26

DISRUPTIVE TECHNOLOGY (DT – Mediator / Intervening Variable)

Reliability Statistics		
Cronbach's Alpha Based on		
Cronbach's Alpha	Standardized Items	N of Items
0.842	0.847	10

SMEs FIRM PERFORMANCE (FP – Dependent Variable)

Reliability Statistics		
Cronbach's Alpha Based on		
Cronbach's Alpha	Standardized Items	N of Items
0.924	0.924	10



UUM
Universiti Utara Malaysia

Appendix 'D': The results of the D² (Mahalanobis in SPSSv22)

No	Respondent	D2	Outlier in single digits	No	Respondent	D2	Outlier in single digits
1	1	29.57939	1	31	31	9.72637	0
2	2	25.21746	1	32	32	9.6661	0
3	3	22.02514	1	33	33	9.44459	0
4	4	21.24541	0	34	34	9.32599	0
5	5	19.2446	0	35	35	9.28263	0
6	6	19.13783	0	36	36	9.22371	0
7	7	18.57441	0	37	37	9.19655	0
8	8	18.49523	0	38	38	9.17642	0
9	9	18.26078	0	39	39	9.09545	0
10	10	18.20374	0	40	40	9.09213	0
11	11	17.96612	0	41	41	8.88623	0
12	12	16.25423	0	42	42	8.78504	0
13	13	15.95559	0	43	43	8.66477	0
14	14	15.19544	0	44	44	8.52305	0
15	15	15.02215	0	45	45	8.44513	0
16	16	13.24453	0	46	46	8.40913	0
17	17	12.70162	0	47	47	8.36273	0
18	18	12.51685	0	48	48	8.18374	0
19	19	12.46763	0	49	49	8.14902	0
20	20	12.37148	0	50	50	8.14228	0
21	21	12.27837	0	51	51	8.01322	0
22	22	11.9979	0	52	52	7.76338	0
23	23	11.59461	0	53	53	7.7543	0
24	24	11.59461	0	54	54	7.56269	0
25	25	11.01623	0	55	55	7.51758	0
26	26	10.67501	0	56	56	7.49418	0
27	27	10.57507	0	57	57	7.34975	0
28	28	10.29952	0	58	58	7.32897	0
29	29	10.24119	0	59	59	6.92109	0
30	30	10.23005	0	60	60	6.87313	0

Source for study: <https://www.youtube.com/watch?v=AXLAX6r5JgE> (Dr. Todd Grande)

Appendix 'D': The results of the D² (Mahalanobis in SPSSv22)

No	Respondent	D2	Outlier in single digits	No	Respondent	D2	Outlier in single digits
61	61	6.81262	1	91	91	4.49535	0
62	62	6.56472	1	92	92	4.47209	0
63	63	6.34746	1	93	93	4.46259	0
64	64	6.24998	0	94	94	4.4347	0
65	65	6.19102	0	95	95	4.41282	0
66	66	6.18767	0	96	96	4.3858	0
67	67	6.03791	0	97	97	4.33075	0
68	68	5.99335	0	98	98	4.31533	0
69	69	5.98142	0	99	99	4.31146	0
70	70	5.9743	0	100	100	4.30053	0
71	71	5.95248	0	101	101	4.21507	0
72	72	5.9181	0	102	102	4.19069	0
73	73	5.89605	0	103	103	4.07984	0
74	74	5.69268	0	104	104	3.91748	0
75	75	5.67487	0	105	105	3.67246	0
76	76	5.58661	0	106	106	3.66562	0
77	77	5.45345	0	107	107	3.48811	0
78	78	5.44984	0	108	108	3.38638	0
79	79	5.4417	0	109	109	3.32738	0
80	80	5.40598	0	110	110	3.23454	0
81	81	5.31362	0	111	111	3.23263	0
82	82	5.11123	0	112	112	2.94634	0
83	83	5.06491	0	113	113	2.73666	0
84	84	5.00788	0	114	114	2.7222	0
85	85	5.00602	0	115	115	2.69729	0
86	86	4.90504	0	116	116	2.66572	0
87	87	4.76041	0	117	117	2.53925	0
88	88	4.64959	0	118	118	2.52139	0
89	89	4.58214	0	119	119	2.51237	0
90	90	4.52079	0	120	120	2.47146	0

Appendix 'D': The results of the D² (Mahalanobis in SPSSv22)

No	Respondent	D2	Outlier in single digits
121	121	2.44504	1
122	122	2.33851	1
123	123	2.32992	1
124	124	2.32043	0
125	125	2.28664	0
126	126	2.04948	0
127	127	2.0355	0
128	128	1.97982	0
129	129	1.88452	0
130	130	1.87143	0
131	131	1.84343	0
132	132	1.83836	0
133	133	1.83688	0
134	134	1.76313	0
135	135	1.73379	0
136	136	1.69288	0
137	137	1.60957	0
138	138	1.57546	0
139	139	1.51045	0
140	140	1.49896	0
141	141	1.47001	0
142	142	1.44466	0
143	143	1.44325	0
144	144	1.33737	0
145	145	1.30433	0
146	146	1.13597	0
147	147	1.08027	0
148	148	1.04568	0
149	149	0.95256	0
150	150	0.922	0

Note: The no of outlier insignificant, hence were not deleted.