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**EFFECT OF THE MANUFACTURING PRACTICES AND  
TECHNOLOGICAL CAPABILITY ON MANUFACTURING  
PERFORMANCE IN MALAYSIA**



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**DOCTOR OF PHILOSOPHY  
UNIVERSITI UTARA MALAYSIA**

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**EFFECT OF THE MANUFACTURING PRACTICES AND TECHNOLOGICAL  
CAPABILITY ON MANUFACTURING PERFORMANCE IN MALAYSIA**



**By**  
**NURAZWA AHMAD**

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**Universiti Utara Malaysia**

**Thesis submitted to  
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in Fulfillment of the Requirement for the Degree of Doctor of Philosophy**



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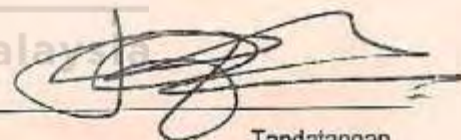
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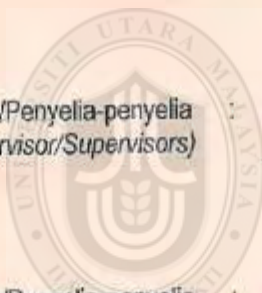
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## ABSTRACT

Presently, despite the notably enhanced performance, there is a concern about low implementation on technological incorporation and insufficient technological capabilities (TCs) in manufacturing companies in Malaysia. There is also a loophole in aligning the firm's manufacturing strategies, its objectives and its capabilities. This research aimed to analyze the TC moderating effect on practices and performance relationship. A quantitative research with stratified random sampling procedure was employed to gather responses from 175 manufacturers in Malaysia. Hierarchical regression analyses revealed that two levels of TC, namely technological acquiring capability (TAC) and technological upgrading capability (TUC) have impacted the practices-performance relationships very minimally. TAC moderated the relationship between: strategic supplier partnership (SSP) and setup-time reduction with quality; information technology (IT), SSP, and quality culture (QC) with flexibility; QC with cost; and customer relationship (CR), information sharing, SSP, and QC with delivery. TUC moderated the relationship between IT and QC with cost; and between CR, QC, and production layout with delivery. However, TUC did not influence the relationships between manufacturing practices dimensions and, both quality and flexibility. The study contributes firstly, to the body of knowledge by examining the moderating roles of TC. Secondly, it complements the resource-based view (RBV) theory regarding the interconnection between firm resources, routines, capabilities, and performance. Thirdly, it particularly benefits the industrial practitioners, where the study provides the latest practical information and reveals the current status of the industry. Fourthly, the practitioners are also at an advantage when they are aware of the strategies, highlighted in this study, of overcoming the anticipated challenges in the business. Finally, the study supports the idea that every practice and capability implemented within the company will eventually affect a certain area of performance.

**Keywords:** manufacturing performance, technological capability, manufacturing practices

## ABSTRAK

Pada masa kini, terdapat kebimbangan tentang kekurangan pelaksanaan penggabungan teknologi dan keupayaan teknologi (TC) yang tidak mencukupi dalam syarikat-syarikat pembuatan di Malaysia walaupun prestasinya telah dipertingkatkan. Di samping itu, terdapat juga kelemahan dalam penjajaran antara strategi pembuatan syarikat, objektif dan keupayaan. Tujuan kajian ini dilakukan adalah untuk menganalisis kesan penyederhana TC terhadap hubungan amalan dan prestasi. Satu penyelidikan kuantitatif dengan prosedur persampelan rawak berstrata telah digunakan untuk mengumpul jawapan daripada 175 pengilang di Malaysia. Analisis regresi hierarki mendedahkan bahawa terdapat dua tahap TC iaitu; keupayaan memperoleh teknologi (TAC) dan keupayaan peningkatan teknologi (TUC), yang telah memberi kesan kepada hubungan amalan-prestasi paling minimum. TAC menyederhana hubungan antara; pembekal strategik (SSP) dan persediaan-pengurangan masa dengan kualiti; teknologi maklumat (IT), SSP, dan budaya kualiti (QC) dengan fleksibiliti; QC dengan kos; dan hubungan pelanggan (CR), perkongsian maklumat, SSP, dan QC dengan penghantaran. Manakala, TUC menyederhana hubungan antara; IT dan QC dengan kos; dan antara CR, QC, dan susun atur pengeluaran dengan penghantaran. Walau bagaimanapun, TUC tidak mempengaruhi hubungan antara dimensi amalan pengilangan dengan kedua-dua kualiti dan fleksibiliti. Terdapat beberapa sumbangan yang telah diberikan oleh kajian ini. Sumbangan yang pertama ialah kepada khazanah ilmu dengan mengkaji peranan penyederhana TC. Kedua, kajian ini melengkapkan teori pandangan berasaskan sumber (RBV) berkaitan saling hubungan antara sumber dalam syarikat, rutin, keupayaan, dan prestasi. Sumbangan ketiga ialah kepada pengamal industri, kerana kajian ini menyediakan maklumat praktikal yang terkini dan mendedahkan status semasa tentang industri. Sumbangan keempat ialah memberi kelebihan kepada pengamal kerana telah mengetahui strategi bagi mengatasi cabaran-cabaran yang dijangkakan dalam perniagaan. Akhir sekali, kajian ini menyokong idea bahawa setiap amalan dan keupayaan yang dilaksanakan dalam syarikat akan mempengaruhi prestasi tertentu.

**Kata kunci:** prestasi pembuatan, keupayaan teknologikal, amalan pengilangan



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– Appendix 14.1

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– Appendix 14.2



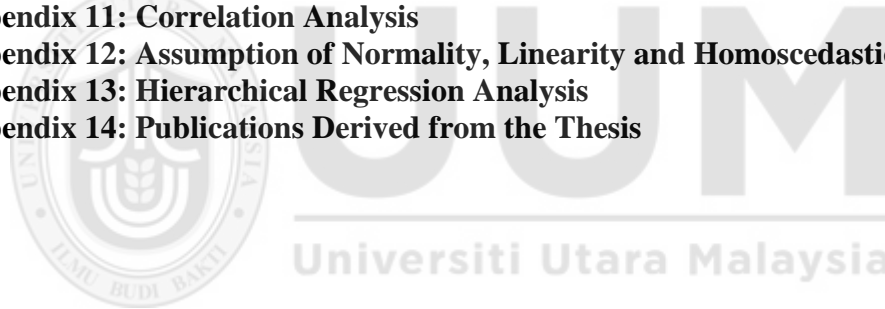
## TABLE OF CONTENT

	<b>Page</b>
<b>TITLE PAGE</b>	<b>i</b>
<b>CERTIFICATION OF THESIS WORK</b>	<b>ii</b>
<b>PERMISSION TO USE</b>	<b>iv</b>
<b>ABSTRACT</b>	<b>v</b>
<b>ABSTRAK</b>	<b>vi</b>
<b>ACKNOWLEDGEMENT</b>	<b>vii</b>
<b>PUBLICATIONS DERIVED FROM THIS THESIS</b>	<b>viii</b>
<b>TABLE OF CONTENT</b>	<b>ix</b>
<b>LIST OF TABLES</b>	<b>xiii</b>
<b>LIST OF FIGURES</b>	<b>xvi</b>
<b>LIST OF ABBREVIATION</b>	<b>xviii</b>
<b>CHAPTER ONE INTRODUCTION</b>	<b>1</b>
1.1 Introduction	1
1.2 Background of the Study	1
1.2.1 Industrial Master Plan	5
1.2.2 Manufacturing Sector Competitiveness	8
1.3 Problem Statement	14
1.4 Research Questions	19
1.5 Research Objectives	20
1.6 Significance of the Study	20
1.7 Scope and Limitations of the Study	23
1.8 Definition of Key Terms	24
1.9 Organization of the Thesis	27
<b>CHAPTER TWO LITERATURE REVIEW</b>	<b>30</b>
2.1 Introduction	30
2.2 Manufacturing Performance (MP)	30
2.2.1 Definition of Manufacturing Performance	37
2.2.2 Dimensions of Manufacturing Performance	38
2.2.3 Quality	45
2.2.4 Cost	47
2.2.5 Delivery	49
2.2.6 Flexibility	50
2.2.7 Past Studies on Manufacturing Performance	51
2.3 Manufacturing Practices	53
2.3.1 Selection of Manufacturing Practices	56
2.3.2 Total Quality Management (TQM)	63
2.3.3 Just-In-Time (JIT)	70
2.3.4 Human Resource Management (HRM)	78
2.3.5 Supply Chain Management (SCM)	85
2.4 Technological Capability (TC)	90
2.4.1 Definitions of Technological Capability	92
2.4.2 Dimensions of Technological Capability	97
2.4.3 Past Studies on Technological Capability and Performance	99
2.4.4 Moderating Role of Technological Capability	110

2.5	Underpinning Theory	114
2.5.1	Resource-Based View (RBV) Theory	115
2.5.2	The Connection of RBV and this Study	118
2.6	Gap Analysis	124
2.7	Chapter Summary	125
<b>CHAPTER THREE RESEARCH METHODOLOGY</b>		<b>127</b>
3.1	Introduction	127
3.2	Research Framework	127
3.3	Hypotheses Development	130
3.3.1	Relationship between the Independent Variables on Dependent Variables	132
3.3.2	Moderating Effects of Technological Capability on the Relationship between Independent Variables and Dependent Variables	138
3.3.3	Relationship among Hypotheses, Research Questions and Objectives	142
3.4	Research Design	143
3.4.1	Research Process	144
3.4.1	Purpose of Research	144
3.4.2	Types of Investigation	145
3.4.3	Time Dimension	145
3.4.4	Unit of Analysis	146
3.5	Operational Definition	147
3.5.1	Manufacturing Performance	147
3.5.2	Manufacturing Practices	149
3.5.3	Technological Capability	151
3.6	Measurement of Variables or Instrumentation	152
3.6.1	Survey Design	152
3.6.2	Variable Measurement	155
3.6.3	Scale of the Questionnaire	161
3.6.4	Pre-testing the Survey Instrument	162
3.7	Sampling Design	164
3.7.1	Population	164
3.7.2	Sampling Frame	165
3.7.3	Sample Size	167
3.7.4	Sampling Technique	168
3.8	Data Collection Procedures	171
3.9	Techniques of Data Analysis	173
3.9.1	Data Cleaning and Screening	173
3.9.2	Descriptive Analysis	174
3.9.3	Factor and Reliability Analysis	174
3.9.4	Correlation Analysis	176
3.9.5	Regression Analysis	176
3.10	Chapter Summary	177
<b>CHAPTER FOUR DATA ANALYSIS AND FINDINGS</b>		<b>179</b>
4.1	Introduction	179
4.2	Data Screening	179
4.3	Response Rate	180
4.4	Demographic Profile of Respondents	182

4.5	Non Response Bias	185
4.6	Goodness of Measures	186
4.6.1	Factor Analysis	186
4.6.2	Factor Analysis of Independent Variables: Manufacturing Practices	188
4.6.3	Factor Analysis of Moderating Variables: Technological Capability	193
4.6.4	Factor Analysis of Dependent Variables: Manufacturing Performance	194
4.6.5	Reliability Analysis	196
4.6.6	Common Method Variance (CMV) Test	198
4.7	Revised Framework and Restatement of Hypotheses	198
4.8	Descriptive Statistics	204
4.9	Correlation Analysis	206
4.10	Testing Statistical Assumptions	211
4.10.1	Normality	211
4.10.2	Linearity	212
4.10.3	Multicollinearity	213
4.10.4	Homoscedasticity	214
4.10.5	Independence of Observation	215
4.11	Hypotheses Testing	216
4.11.1	Hierarchical Regression of Technological Capability Dimensions on the Relationship between Manufacturing Practices Dimensions and Quality Performance	219
4.11.2	Hierarchical Regression of Technological Capability Dimensions on the Relationship between Manufacturing Practices Dimensions and Flexibility Performance	225
4.11.3	Hierarchical Regression of Technological Capability Dimensions on the Relationship between Manufacturing Practices Dimensions and Cost Performance	232
4.11.4	Hierarchical Regression of Technological Capability Dimensions on the Relationship between Manufacturing Practices Dimensions and Delivery Performance	240
4.11.5	Summary of Hypotheses Testing	251
4.12	Chapter Summary	256
<b>CHAPTER FIVE DISCUSSION AND CONCLUSION</b>		<b>259</b>
5.1	Introduction	259
5.2	Recapitulation of Research Findings	259
5.3	Discussion of Findings – Manufacturing Practices and Manufacturing Performance	261
5.3.1	Manufacturing Practices and Quality Performance	263
5.3.2	Manufacturing Practices and Flexibility Performance	266
5.3.3	Manufacturing Practices and Cost Performance	271
5.3.4	Manufacturing Practices and Delivery Performance	275
5.4	Discussion of Findings – Moderating Effects of Technological Capability	278
5.4.1	Technological Capability, Manufacturing Practices and Quality Performance	282
5.4.2	Technological Capability, Manufacturing Practices and Flexibility Performance	283
5.4.3	Technological Capability, Manufacturing Practices and Cost Performance	286

5.4.4	Technological Capability, Manufacturing Practices and Delivery Performance	289
5.5	Conclusions	295
5.6	Contributions of the Study	296
5.6.1	Theoretical Contributions	296
5.6.2	Practical Contributions	300
5.7	Limitations of the Present Study and Suggestions for Future Studies	303
5.8	Concluding Remarks	306
	<b>REFERENCES</b>	<b>308</b>
	<b>APPENDICES</b>	<b>337</b>
	<b>Appendix 1: Survey Questionnaire</b>	<b>337</b>
	<b>Appendix 2: Invitation Letter to Validate Content of Survey Questionnaire</b>	<b>352</b>
	<b>Appendix 3: Table for Determining Sample Size</b>	<b>359</b>
	<b>Appendix 4: Cover Letter</b>	<b>360</b>
	<b>Appendix 5: Certification of Study</b>	<b>361</b>
	<b>Appendix 6: Approval Letter for Data Collection</b>	<b>362</b>
	<b>Appendix 7: Demographic Profile</b>	<b>363</b>
	<b>Appendix 8: Factor Analysis</b>	<b>365</b>
	<b>Appendix 9: Reliability Analysis</b>	<b>370</b>
	<b>Appendix 10: Harman's Single Factor Test</b>	<b>377</b>
	<b>Appendix 11: Correlation Analysis</b>	<b>379</b>
	<b>Appendix 12: Assumption of Normality, Linearity and Homoscedasticity</b>	<b>381</b>
	<b>Appendix 13: Hierarchical Regression Analysis</b>	<b>389</b>
	<b>Appendix 14: Publications Derived from the Thesis</b>	<b>405</b>



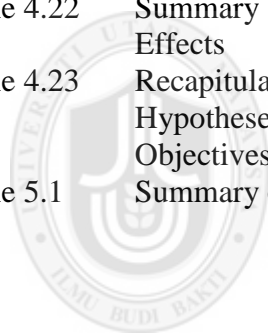
## LIST OF TABLES

<b>Table</b>		<b>Page</b>
Table 1.1	Malaysia Gross Domestic Product Growth	2
Table 1.2	Malaysia's GDP Percentage Share	3
Table 1.3	Strategies to Address Business Challenges for Manufacturing Sector	11
Table 1.4	Malaysia Business Leaders – Survey on Challenges and Strategies	12
Table 1.5	Potential Research Areas Related to Manufacturing Sector Global Business Challenges Strategies	16
Table 2.1	Ranking of Performance Measure Categories	28
Table 2.2	A Comparison between Traditional and Non-Traditional Performance Measures	32
Table 2.3	Summary of Manufacturing Performance Dimensions Found in the Literature Survey	36
Table 2.4	Summary of Quality Performance Measurements Found in Literature Survey	43
Table 2.5	Summary of Cost Performance Measurements Found in Literature Survey	45
Table 2.6	Summary of Delivery Performance Measurements Found in Literature Survey	46
Table 2.7	Summary of Flexibility Performance Measurements Found in Literature Survey	47
Table 2.8	Summary of Manufacturing Practices Found in the Literature Survey and Number of Studies by Year	51
Table 2.9	Summary of Past Key Empirical Studies on Manufacturing Practices	56
Table 2.10	Summary of Some Selected Past Empirical Studies on Quality Management Practices and Manufacturing Performance	62
Table 2.11	Summary of Some Selected Past Empirical Studies on Just-in-Time Practices and Manufacturing Performance	70
Table 2.12	Summary of Some Selected Past Empirical Studies on Human Resource Management Practices and Manufacturing Performance	76
Table 2.13	Summary of Some Selected Past Empirical Studies on Supply Chain Management Practices and Manufacturing Performance	81
Table 2.14	Technological Capability Definitions	85
Table 2.15	Recapitulated of Gaps Analysis between Present Study and Previous Studies	117
Table 3.1	Summary of Hypotheses Statements of the Relationship between Manufacturing Practices and Manufacturing Performance	129

<b>Table</b>		<b>Page</b>
Table 3.2	Summary of Hypotheses Statements for the Moderating Effect of Technological Capability on the relationship between Manufacturing Practices and Manufacturing Performance.	133
Table 3.3	Recapitulated of the Relationship between Hypotheses Statements, Research Questions and Research Objectives	134
Table 3.4	Measurement of Variables and Items	147
Table 3.5	Variable Measurement of Manufacturing Practices	149
Table 3.6	Variable Measurement of Technological Capability	151
Table 3.7	Variable Measurement of Manufacturing Performance	152
Table 3.8	Contribution to Manufacturing Sector GDP's Share	158
Table 3.9	List of Manufacturing Division's Group	159
Table 3.10	Total Population of Current Study	160
Table 3.11	The Procedure for Selecting a Stratified Sample	162
Table 3.12	Summary of the Sampling Frame and Stratification Process	163
Table 4.1	Response Rate	171
Table 4.2	Demographic Profiles of the Respondents	173
Table 4.3	Non Response Bias Analysis on Main Variables for Early and Late Responses	176
Table 4.4	Summary of Factor Analysis for Independent Variable: Manufacturing Practices	181
Table 4.5	Summary of Factor Analysis for Moderating Variable: Technological Capability	185
Table 4.6	Summary of Factor Analysis for Dependent Variable: Manufacturing Performance	186
Table 4.7	Reliability Analysis	188
Table 4.8	Summary of Restatement of Hypotheses	192
Table 4.9	Descriptive Statistics for All Variables	196
Table 4.10	Pearson's Correlation between the Constructs	199
Table 4.11	Normality Analysis	202
Table 4.12	Tolerance and VIF Values	203
Table 4.13	Hierarchical Regression Results: the Moderating Effects of Technological Acquiring Capability on the Relationship between Manufacturing Practices Dimensions and Quality Performance	211
Table 4.14	Hierarchical Regression Results: the Moderating Effects of Technological Upgrading Capability on the Relationship between Manufacturing Practices Dimensions and Quality Performance	214
Table 4.15	Hierarchical Regression Results: the Moderating Effects of Technological Acquiring Capability on the Relationship between Manufacturing Practices Dimensions and Flexibility Performance	217
Table 4.16	Hierarchical Regression Results: the Moderating Effects of Technological Upgrading Capability on the Relationship between Manufacturing Practices Dimensions and Flexibility Performance	221



<b>Table</b>		<b>Page</b>
Table 4.17	Hierarchical Regression Results: the Moderating Effects of Technological Acquiring Capability on the Relationship between Manufacturing Practices Dimensions and Cost Performance	224
Table 4.18	Hierarchical Regression Results: the Moderating Effects of Technological Upgrading Capability on the Relationship between Manufacturing Practices Dimensions and Cost Performance	226
Table 4.19	Hierarchical Regression Results: the Moderating Effects of Technological Acquiring Capability on the Relationship between Manufacturing Practices Dimensions and Delivery Performance	232
Table 4.20	Hierarchical Regression Results: the Moderating Effects of Technological Upgrading Capability on the Relationship between Manufacturing Practices Dimensions and Delivery Performance	237
Table 4.21	Summary of the Hypotheses Testing between the Manufacturing Practices Dimensions on the Manufacturing Performance Dimensions	242
Table 4.22	Summary of the Hypotheses Testing of the Moderating Effects	243
Table 4.23	Recapitulated of the Research Findings between Revised Hypotheses Statements, Research Questions and Research Objectives	247
Table 5.1	Summary of the Moderators	269



## LIST OF FIGURES

<b>Figure</b>		<b>Page</b>
Figure 1.1	Malaysia's manufacturing share of GDP	3
Figure 1.2	The Malaysia's economy development journey	6
Figure 1.3	The evolution of industrialization in Malaysia	7
Figure 1.4	The Global Competitiveness Index framework	8
Figure 1.5	Performance of ASEAN members in the 2013-2014 GCI, rank out of 148 economies	9
Figure 1.6	Evolution in Malaysia's competitiveness performance by rank	10
Figure 2.1	High performance manufacturing model	48
Figure 2.2	A system perspective of operation management	50
Figure 2.3	Conceptual path diagram of a moderated model	103
Figure 2.4	Conceptual framework	118
Figure 3.1	Theoretical framework	120
Figure 3.2	The moderator model	122
Figure 3.3	Outline of research process	136
Figure 4.1	The revised research framework of the study	190
Figure 4.2	Framework for identifying moderator variables	208
Figure 4.3	The moderating effects of technological acquiring capability on the relationship between strategic supplier partnership and quality performance	212
Figure 4.4	The moderating effects of technological acquiring capability on the relationship between setup-time reduction and quality performance	213
Figure 4.5	The moderating effects of technological acquiring capability on the relationship between information technology and flexibility performance	218
Figure 4.6	The moderating effects of technological acquiring capability on the relationship between strategic supplier partnership and flexibility performance	219
Figure 4.7	The moderating effects of technological acquiring capability on the relationship between quality culture and flexibility performance	220
Figure 4.8	The moderating effects of technological acquiring capability on the relationship between quality culture and cost performance	225
Figure 4.9	The moderating effects of technological upgrading capability on the relationship between information technology and cost performance	228
Figure 4.10	The moderating effects of technological upgrading capability on the relationship between quality culture and cost performance	229
Figure 4.11	The moderating effects of technological acquiring capability on the relationship between customer relationship and delivery performance	233

<b>Figure</b>		<b>Page</b>
Figure 4.12	The moderating effects of technological acquiring capability on the relationship between information sharing and delivery performance	234
Figure 4.13	The moderating effects of technological acquiring capability on the relationship between strategic supplier partnership and delivery performance	235
Figure 4.14	The moderating effects of technological acquiring capability on the relationship between quality culture and delivery performance	236
Figure 4.15	The moderating effects of technological upgrading capability on the relationship between customer relationship and delivery performance	238
Figure 4.16	The moderating effects of technological upgrading capability on the relationship between quality culture and delivery performance	239
Figure 4.17	The moderating effects of technological upgrading capability on the relationship between production layout and delivery performance	240
Figure 4.18	The moderators identified in the study based on typology of specification variables by Sharma et al., 1981	248



  
 Universiti Utara Malaysia

## LIST OF ABBREVIATION

<b>Abbreviation</b>	<b>Description of Abbreviation</b>
10MP	Tenth Malaysia Plan
BNM	Bank Negara Malaysia
CR	Customer Relationship
FDI	Foreign Direct Investment
GCI	Global Competitiveness Index
GDP	Growth Domestic Product
GMRG	Global Manufacturing Research Group
HRM	Human Resource Management
IMP	Industrial Master Plan
IS	Information Sharing
IT	Information Technology
JIT	Just-in-Time
MIDA	Malaysian Investment Development Authority
MITI	Ministry of International Trade and Industry
MP	Manufacturing Performance
MPC	Malaysia Productivity Corporation
NEP	New Economic Policy
NPD	New Product Development
OECD	Organization of Economic Corporation Development
OUM	Open University Malaysia
PL	Production Layout
QC	Quality Culture
RBV	Resource-Based View
SCM	Supply Chain Management
SME	Small and Medium Enterprise
SSP	Strategic Supplier Partnership
STR	Setup-Time Reduction
TAC	Technological Acquiring Capability
TC	Technological Capability
TESL	Teaching English as a Second Language
TQM	Total Quality Management
TUC	Technological Upgrading Capability
UNCTAD	United Nations Conference on Trade and Development
WCM	World Class Manufacturing

# CHAPTER ONE

## INTRODUCTION

### 1.1 Introduction

In the introductory chapter, the thesis will be presenting eight main subsections. The thesis starts with a brief introduction on background of the study and followed by the problem statements. After that, the researcher will forward a set of research questions that lead to the development of research objectives. Theoretical and practical contributions in pursuing the research will be discussed later on followed by the research scope and limitation. Consequently, the definition of the key concepts will be stated accordingly before arriving at the final subsection which concludes overall thesis arrangement.

### 1.2 Background of the Study

Manufacturing sector has become the driving force for the industrial development in late-industrializing economies (Lall, 1995). Manufacturing propels Malaysian growth and industrialization since the launched of the New Economy Policy (NEP) in 1971. Manufacturing sector was known for its dynamic roles which contributed to the expansion of its own growth and also other sectors (Rasiah, 1996). The government of Malaysia is highly committed in improving and enhancing its manufacturing sector to be one of the key sector for industrial development of the country through series of strategic government plans such as the Malaysian Plan (MP) and the more specific indicative plan of Industrial Master Plan (IMP). About twenty years ago, the government of Malaysia started to concentrate on the development and improvement in the manufacturing sector. This sector is considered as the leading catalyst to the

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