

**THE STUDY OF THE INFLUENCE OF TECHNOLOGY READINESS ON
SMART SUPPLY CHAIN PERFORMANCE IN MANUFACTURING FIRMS**

ANISA SHAZWANI BINTI NAHIZAM (B061910431)



اونيورسيتي تيكنيكل مليسيا ملاك

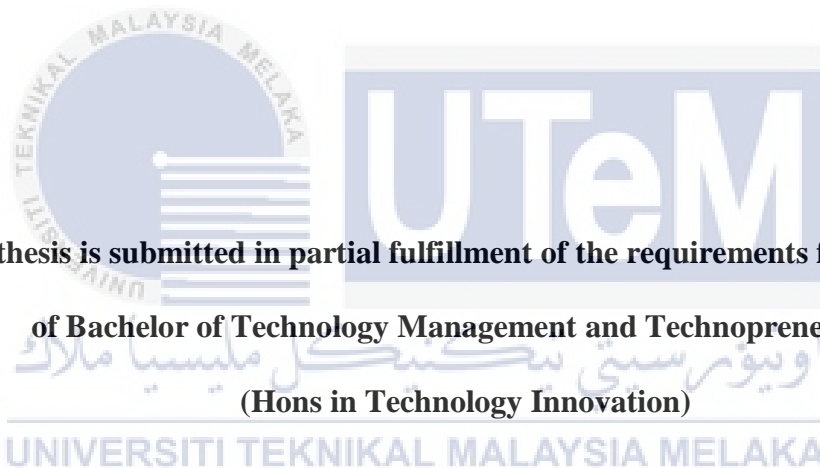
Bachelor of Technology Management with Honours (Technology Innovation)
Final Year Project

Faculty of Technology Management and Technopreneurship

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

**THE STUDY OF THE INFLUENCE OF TECHNOLOGY READINESS ON
SMART SUPPLY CHAIN PERFORMANCE IN MANUFACTURING FIRMS**

ANISA SHAZWANI BINTI NAHIZAM (B061910431)



**This thesis is submitted in partial fulfillment of the requirements for the award
of Bachelor of Technology Management and Technopreneurship
(Hons in Technology Innovation)**

Faculty of Technology Management and Technopreneurship

Universiti Teknikal Malaysia Melaka (UTeM)

19 JUNE 2022

APPROVAL

“I hereby declare that I had read and go through for this thesis and it is adequate in term of scope and quality which fulfill the requirements for the awards Bachelor of Technology Management (Technology Innovation) with Honours”



SIGNATURE :

NAME OF SUPERVISOR : PN. NOR RATNA BINTI MASROM

DATE : 19 JUNE 2022

TS DR. NURULIZWA BINTI ABDUL RASHID
TIMBALAN DEKAN PENYELIDIKAN DAN PENGAJIAN SISWA-SISWI
FAKULTI PENKURUSAN TEKNOLOGI DAN TEKNOLOGIAHAWAHIH
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

SIGNATURE :

NAME OF PANEL : TS. DR. NURULIZWA BINTI ABDUL RASHID

DATE : 19 JUNE 2022

DECLARATION OF ORIGINAL WORK

I hereby declare that the work in this study 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 the candidature of any other degree.



DEDICATION

I would like to express my appreciation to my beloved family and friends, who were always encouraging and supportive as I worked on the research. In addition, my supervisor, Pn. Nor Ratna Binti Masrom, and panel, Ts. Dr. Nurulizwa Binti Abdul Rashid, supervised my research, and course mates assisted me in completing the research path.



ACKNOWLEDGEMENT

First and foremost, it is a great chance for me to study research of “The influence of technology readiness on smart supply chain performance in manufacturing firms.” As for my preparation for this research, I had a look at numerous sources such as books, news, and related journals, which enabled me to acquire more relevant information linked to my research topic. In the beginning, I am very thankful to Pn. Nor Ratna Binti Masrom represented my respective supervisors. Thanks to him, I always have full support, direction, and guidance for me as long as I finish my research.

Secondly, I would like to thank Ts. Dr. Nurulizwa Binti Abdul Rashid for providing me my earlier advance for my research. I have completed my research with their direction, support, and observation. Last but not least, I would not forget to thank my loving family and my parents for never give up helped, supported and inspired me on my road of research. Lastly, I am appreciating my fellow friends who always eager to help me in dealing with the problem, for completing my final year of the project.

ABSTRACT

Smart supply chain nowadays is very important for suppliers, manufacturers, customers and especially to the company. Meanwhile, in Malaysia, smart supply chain is still blurred. Even though this practice can give an impact on firm performance, but many companies still unconscious about this. The aim of this research is to identify the level of technology readiness among manufacturing firms. After that, these studies also analyze the relationship between technology readiness and smart supply chain performance among manufacturing firms. Before that, the researcher will identify the highest factor of technology readiness contribute to smart supply chain management performance among manufacturing firms. A survey was carried out through a set of questionnaires to distribute to the respondent. About 120 respondents of manufacturing firms in Malaysia which come from different position in the company and industry had answered the questionnaire. The data were analysed using inferential analysis. From the data analysis and findings, all the elements such as optimism, innovativeness and discomfort will be footef. Hence, this element can give the impact on smart supply chain performance in manufacturing firms. There is theory and practical implication of this study such as introducing a new knowledge and the technology readiness can improve the implementation of this practice. Other than that, the future research can do a research about smart supply chain at a big company or international company.

Keyword: technology readiness, smart supply chain performance , manufacturing firms

ABSTRAK

Rangkaian bekalan pintar pada masa kini sangat penting untuk pembekal, pengilang, pelanggan dan terutamanya kepada syarikat. Sementara itu, di Malaysia, rantaian bekalan pintar masih kabur. Walaupun melalui amalan ini boleh memberi impak kepada prestasi firma, tetapi banyak syarikat masih tidak sedar tentang perkara ini. Matlamat penyelidikan ini adalah untuk mengenal pasti tahap kesediaan teknologi dalam kalangan firma pembuatan. Selepas itu, kajian ini juga menganalisis hubungan antara kesediaan teknologi dan prestasi rantaian bekalan pintar dalam kalangan firma pembuatan. Sebelum itu, pengkaji akan mengenal pasti faktor hishest kesediaan teknologi menyumbang kepada prestasi pengurusan rantaian bekalan pintar di kalangan firma pembuatan. Tinjauan telah dijalankan melalui satu set soal selidik untuk diedarkan kepada responden. Kira-kira 120 responden firma perkilangan di Malaysia yang berasal dari kedudukan berbeza dalam syarikat dan industri telah menjawab soal selidik tersebut. Data dianalisis menggunakan analisis inferensi. Daripada analisis dan penemuan data, semua elemen seperti optimisme, inovasi dan ketidakselesaian akan menjadi tumpuan. Oleh itu, elemen ini boleh memberi kesan kepada prestasi rantaian bekalan pintar dalam firma pembuatan. Terdapat teori dan implikasi praktikal daripada kajian ini seperti memperkenalkan sesuatu pengetahuan baharu dan kesediaan teknologi dapat menambah baik pelaksanaan amalan ini. Selain daripada itu, kajian masa hadapan boleh membuat kajian tentang rantaian bekalan pintar di syarikat besar atau syarikat antarabangsa.

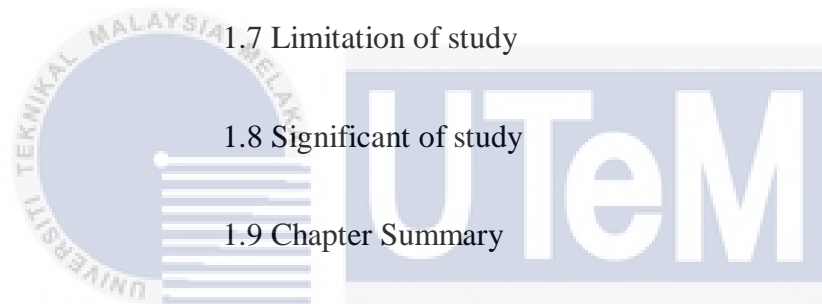
Kata kunci: kesediaan teknologi, prestasi rantaian bekalan pintar, firma pembuatan

..

TABLE OF CONTENTS

CHAPTER	CONTENT	PAGES
	TITLE	i
	APPROVAL	ii
	DECLARATION OF ORIGINAL WORKS	iii
	DEDICATION	iv
	ACKNOWLEDGEMENT	v
	ABSTRACT	vi
	UNIVERSITI TEKNIKAL MALAYSIA MELAKA ABSTRAK	vii
	TABLE OF CONTENT	viii
	LIST OF TABLES	ix
	LIST OF FIGURES	x
	LIST OF APPENDICES	xi
CHAPTER 1	INTRODUCTION	

1.1 Introduction	1
1.2 Background of Study	1
1.3 Problem Statement	2
1.4 Research Questions	4
1.5 Research Objectives	4
1.6 Scope of Research	5
1.7 Limitation of study	5
1.8 Significant of study	6
1.9 Chapter Summary	7



اونيورسيتي تيكنيكل مليسيا ملاك

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction	8
2.2 Technology Readiness	8
2.2.1 Optimism	9
2.2.2 Innovativeness	10
2.2.3 Discomfort	11
2.2.4 Insecurity	12

2.3 Smart Supply Chain	13
2.4 Smart Supply Chain Performance	13
2.5 Reasearch Framework	15
2.6 Hypothesis Testing	15
2.7 Summary	16

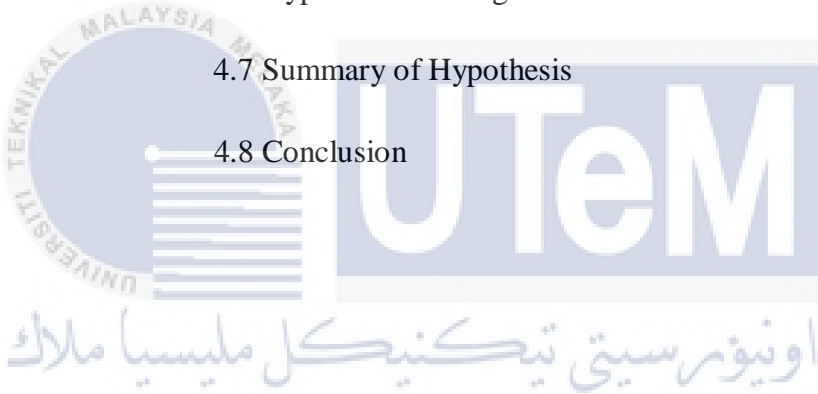
CHAPTER 3	RESEARCH METHODOLOGY	
	3.1 Introduction	17
	3.2 Research Design	17
	3.3 Methodological Choice	18
	3.4 Data Collection	19
	3.4.1 Questionnaire Developement	20
	3.4.2 Sample Size	21
	3.4.3 Population and Sample Size	22
	3.4.4 Research Location	22
	3.5 Data Analysis	22
	3.5.1 Validity Analysis	23

3.5.1.1 Internal Validity	23
3.5.1.2 External Validity	26
3.5.2 Reliability Analysis	24
3.5.3 Cronbach's Alpha	24
3.5.4 Multiple Regressions	25
3.6 Pilot Test	26
3.7 Time Horizon	26
3.8 Summary	27

CHAPTER 4

ANALYSIS AND DISCUSSION

4.1 Introduction	28
4.2 Pilot test	28
4.3 Descriptive Statistics of Demographic	29
Background	
4.3.1 Ownership	30
4.3.2 Job Title	31
4.3.3 Department	33
4.3.4 Working Experiences	34
4.4 Descriptive Statistics	35
4.4.1 Descriptive Statistics of Independent	37

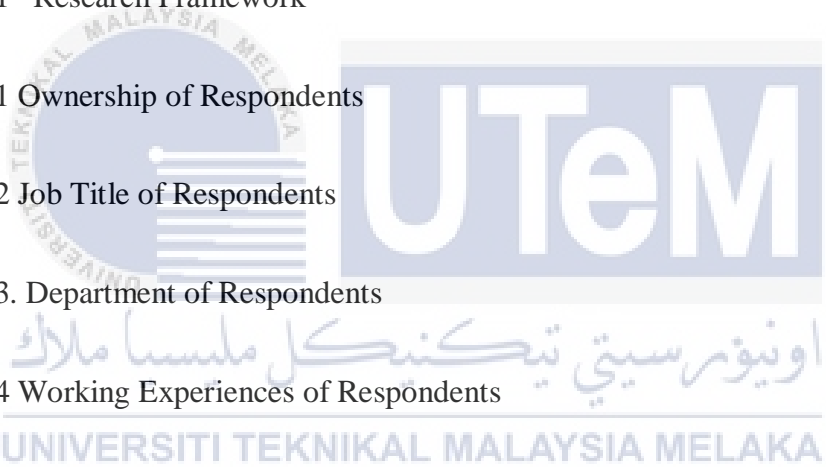
Variables I	
4.4.1 Descriptive Statistics of Independent	39
Variables II	
4.4.1 Descriptive Statistics of Independent	40
Variables III	
4.5 Result of Measurement	42
4.5.1 Validity Test	42
4.5.2 Reliability Test	46
4.6 Hypothesis Testing	48
4.7 Summary of Hypothesis	51
4.8 Conclusion	53
	
CHAPTER 5	DISCUSSION, RECOMMENDATION AND CONCLUSION
5.1 Introduction	54
5.2 Summary of the Study	54
5.3 Discussion on the Demographic	54
Background	
5.4 Discussion on Research Objectives	55

5.5 Implication of the study	58
5.6 Limitation of the study	61
5.7 Recommendations for Future Research	61
5.6 Conclusion	62
5.6 Summary	63



LIST OF THE FIGURES

FIGURE	PAGE
2.1 Research Framework	15
4.1 Ownership of Respondents	31
4.2 Job Title of Respondents	32
4.3. Department of Respondents	34
4.4 Working Experiences of Respondents	35



LIST OF THE TABLES

TABLES	TITLE	PAGE
3.1	Cronbach's Alpha Coefficient Range and Strength	24
	of AssociationSource	25
3.3	Gantt chart of timeline research for PSM 1	27
4.1	Reliability Statistics	29
4.2	Ownership of Respondents	30
4.3	Job Title of Respondents	31
4.4	Department of Respondents	33
4.5	Working experiences of Respondents	34
4.6	Descriptive Statistics for Independent Variables	36
4.7	Descriptive Statistics of Dependent Variable	37
4.8	Descriptive Statistics of Optimism	37

4.9	Descriptive Statistics of Innovativeness	39
4.10	Descriptive Statistics of Discomfort	40
4.11	Range of Pearson's Correlation Coefficients and the Interpretation	43
4.12	Correlations between Variables	44
4.13	Cronbach's Alpha Coefficient Range and Strength	46
	of Association	
4.14	Case Processing Summary	47
4.15	Reliability Test for Independent Variables and Dependent Variable	47
4.16	Multiple Regression Analysis	48
4.17	Multiple Regression Analysis (ANOVA)	49
4.18	Multiple Regression Analysis (Coefficients)	50
4.19	Summary for Hypothesis	52
5.1	Summary of Hypothesis Testing	57

CHAPTER 1

INTRODUCTION

1.1 Introduction



This chapter explains about background of the study, research problem, research question, research objectives, research scope, significance of study, limitation of study and importance of the study. To complete a Bachelor Degree Dissertation (Projek Sarjana Muda PSM) in Faculty of Technology Management and Technopreneurship (Bachelor of Innovation), researcher chooses to investigate the influence of technology readiness on smart supply chain performance in manufacturing firms.

1.2 Background of study

Modern supply chain processes demand cutting-edge technological advancements, best digitization practises, and technical solutions. The actions

included in the supply chain process collectively from many consumers and suppliers connected by cutting-edge technologies are known as the smart supply chain. Data accessibility, relationships, collaboration, and market knowledge are all improved by the smart supply chain. The company can utilise this information to improve the consumer's experience with, ability to produce, and credibility of its products. In order to maximise the benefits for manufacturing companies, organisations across the globe strive to give full attention to the application of digitalization in production and supply chain management. The smart supply chain has given the businesses many advantages, but many of those advantages are still underutilised. There are several reasons why the advantages of digitization are not being fully utilised, including the disruption of the firm's change or managers' irresponsibility. The combination of digital tools and tactics that link the customer to the supplier and the entire workforce to one another is necessary for the smart supply chain to be profitable. The integration of smart technologies and digital transformation are the two key components of the smart supply chain.

They came to the conclusion that technology development is necessary for effective smart supply chain transformation. By utilising digital technologies, digital transformation is the innovation of organisational culture to stimulate uniqueness in corporate operations and production. The company employs digital technologies to innovate business processes in stage one. Specific tasks are carried out in the second stage, such as deciding whether or not shops should move from a physical storefront to an online platform. In the third phase, businesses use digital technologies to alter the value of their products.

Using digital technologies like 3D printing, big data analysis, and the Internet, Hagberg et al. (2016) claim that it is a process where businesses or industries

innovate their production process. By enhancing the relationship between the customer and supplier and fostering internal and external collaboration, the business can accelerate product value and increase its profit margin. The digital transformation is not something that can be accomplished by one person; rather, it requires a programme of collective effort. Therefore, effective smart supply chain management is crucial to enabling businesses to shift their traditional methods of conducting business, restructure task execution, partner and stakeholder interaction, and create a new business model.



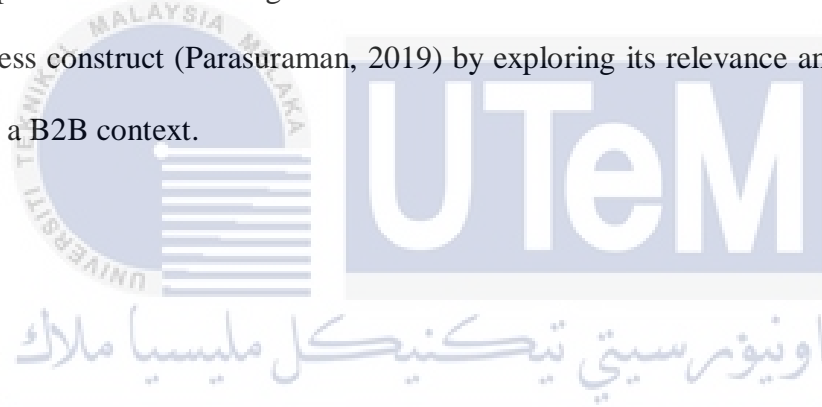
The term 'smart' has even been coopted in economics, with smart economy gradually becoming a thing and referring to technologies that support new forms of collaboration and value creation that lead to innovation, competitiveness and entrepreneurship (Haddud & Khare, 2020). Even so the pace of the adoption of technologies readiness has not been as high as expected and furthermore not all of the adoption projects have been successful (Pham et al., 2020). Another theoretical foundation is technology readiness (McNamara et al., 2022; Queiroz et al., 2019). Technology readiness has been demonstrated by many empirical studies to have impacts on smart supply chain performance (Poushneh & Vasquez-Parraga, 2018). Based on the integration of the chain model, technology readiness, and evidence

from previous empirical studies, the current study examines factors that influence intention to use toward smart supply chain . (Pham et al., 2018). In a business-to-business (B2B) context, the readiness of organisations to engage with new and existing technologies is important especially manufacturing firms who need to exploit the benefits of the Internet as a medium to extend their business activities.

Previous studies have suggested that technology readiness affects manufacturing firm use intention (AlMulhim., 2019). However, very few studies have been conducted in the smart supply chain environment on this factor (Pham et al., 2018). Findings from previous studies identified factors, such as lack of competencies, limited technological resources and the high cost of developing and maintaining websites as inhibitors of manufacturing firms readiness to adopt or advance their online presence (Kim, 2022; Poushneh & Vasquez-Parraga, 2018). From the foregoing, it appears that 'smartness' is not just a thing, but is here to stay. In practice, the term 'smart' has become highly politicized, and is mostly linked to environment friendly or green initiatives and is no longer necessarily about connectedness and interconnections, but more about how green an initiative is. While much attention has been given to the readiness of manufacturing firms to adopt new technologies including such models as the Technology Acceptance Model (TAM) (Mishra, 2018) and the work on diffusion of innovations (Olatunde et al., 2022), less attention has been given to the issue of how ready organisations are to adopt new technologies or to apply already adopted technologies in innovative ways (Jung-Yu and Chorng-Shyong, 2017).

A lone exception was research conducted by Pham et al. (2018), but this research only focused on the simple direct relationship between technology readiness and smart supply chain performance. There are no studies identified that

explore technological readiness and any theoretical underpinnings for smart supply chain. Consequently research focusing on the readiness of manufacturing to adopt new technologies such as the smart supply chain is considerably limited (Jung-Yu and Chorng-Shyong, 2010; Asare et al., 2020). Extant research on the readiness of manufacturing firms to adopt technology is even more limited (Kuan and Chau, 2001). Palmer et al. (2022) takes a different perspective and considers the prediction and assessment of ongoing usage of internet based customer service technology in a set of regional offices in the USA. This research design adopts an manufacturing firms perspective and examines the influence Technology Readiness on smart supply chain performance. In doing so it seeks to build on the multi-dimensional technology readiness construct (Parasuraman, 2019) by exploring its relevance and applicability within a B2B context.



1.4 Research Questions

The following research question is being addressed in this study:

- i. What are the level of technology readiness among manufacturing firms?
- ii. What is the relationship between technology readiness and smart supply chain performance among manufacturing firms?
- iii. What is the highest factor of technology readiness contribute to smart supply chain management performance among manufacturing firms?

1.5 Research Objectives

The research's objective was the study of the influence of technology readiness on use intention toward smart supply chain in manufacturing firms. The following are the research objectives:

- i. To identify the level of technology readiness among manufacturing firms.
- ii. To analyze the relationship between technology readiness and smart supply chain performance among manufacturing firms.
- iii. To find the highest factor of technology readiness contribute to smart supply chain management performance among manufacturing firms.



1.6 Scope of study

The scope of the study is the distribution of questionnaires to analyze the influence of technology readiness on smart supply chain performance in manufacturing firms. Respondents will consist of employees in manufacturing firms who hold positions at the executive level or higher. This study focused on respondents in job positions because they are more responsible in making decisions.

The resource-based view (RBV) theory were be used in this study. The Resource-Based View (RBV) hypothesis has become the dominant paradigm in strategic planning, allowing us to understand how organizations produce efficient decisions, according to the study. Furthermore, it provides us with critical information about the efficiency and management of the industry.

1.7 Limitation of study

In conducting this research, researcher faced with some limitations such as time constraint, lack of skill and knowledge and the cooperation from respondents. The researcher lacks both skill and knowledge because he or she has no prior research experience. Researcher has limit time of research due to the short period given in implementing her study. Researcher has some difficulties to find as much as information and details related to her study in a given timeframe. Because this study solely includes responses from manufacturing firms in Malaysia, the results are more focused on manufacturing firms than on respondents from other industries. One of the constraints was the respondents' honesty when answering the questionnaire about their expertise or understanding of technology readiness and its effect to smart supply chain. Respondents' cooperation includes the obligation to complete the questionnaires. The majority of them do not answer it entirely, and another constraint