

**ASSESSING THE ELECTRONIC
MANUFACTURING INDUSTRY SUPPLIERS
READINESS TOWARDS GREEN TECHNOLOGY
IMPLEMENTATION**

MOHD NIZAM BIN SAMSUDIN

UNIVERSITI SAINS MALAYSIA

2015

**ASSESSING THE ELECTRONIC MANUFACTURING INDUSTRY
SUPPLIERS READINESS TOWARDS GREEN TECHNOLOGY
IMPLEMENTATION**

by

MOHD NIZAM BIN SAMSUDIN

**Thesis submitted in fulfilment of the requirement
for the degree of Master of Research**

JULY 2015

ACKNOWLEDGEMENT

Praise be to Almighty God ALLAH for His Guidance and Blessing without which Life is Meaningless

Grateful, all praise to Allah. Despite the obstacles that I went through during the Master by Research study, with HIS permission and grace, I managed to complete this research successfully. Although the front cover of this thesis only has my name on it, I humbly acknowledged the help, contribution and supports given by numerous parties to make the completion of this study a reality. Here, I wish my sincere gratitude and heartiest appreciation to those who directly or indirectly helped me along this lively but sometimes, lonely journey.

In the process of completing this report, many people have generously given their time and help. First and foremost, I would like to express my deep gratitude to my supervisor, Associate Professor Dr. Mohd Wira Mohd Shafiei for being very supportive and helpful throughout the research. I also wish to extend the thanks to all the members of staff (past and present) in the School of HBP, Universiti Sains Malaysia for any help that may have been given to me for sharing much experience, support, help and understanding. I also dedicate my thanks to the Ministry of Higher Education Malaysia who had borne my entire academic tuition fees under the government's My Brain15 Programme.

Finally, I dedicated this Master of research to my parents, Samsudin Awang and Kalesom Kechik for the devotion, education, and endless pouring of love from the first day I was born into this world.

TABLE OF CONTENTS

	Page
Acknowledgement.....	ii
Table of Contents.....	iii
List of Tables.....	x
List of Figures.....	xii
List of Abbreviations.....	xiv
Abstrak (Bahasa Malaysia).....	xiv
Abstract (English).....	xv
CHAPTER 1: INTRODUCTION	
1.1 Introduction.....	1
1.2 Research Background.....	1
1.3 Problem Statement.....	4
1.4 Objectives.....	6
1.5 Significance of Research.....	6
1.6 Limitations & Scope.....	7
1.7 Organisation of the Thesis.....	8
CHAPTER 2: LITERATURE REVIEW	
2.1 Introduction.....	10
2.2 Theory of Readiness.....	10
2.3 Change Management.....	15
2.4 Organisational Change.....	17

2.5	Internal Organisational Change.....	21
2.5.1	Individual Attributes.....	22
2.5.1(a)	Willingness.....	23
2.5.1(b)	Beliefs & Attitudes.....	24
2.5.1(c)	Perception.....	26
2.5.2	Organisational Characteristics.....	27
2.5.2(a)	Organisational Structure.....	29
2.5.2(b)	Organisational Culture.....	31
2.5.2(c)	Organisational Climate.....	33
2.5.2(d)	Organisational Resources.....	37
2.6	Introduction of Electronic Industry.....	38
2.6.1	The Workflow Development for Electronic Industry.....	39
2.6.2	Logical Data Model to Support an Environmental Management System within an Electronic Industry.....	39
2.6.3	A Substrate less Process for Sustainable Manufacture of Electronic Assemblies.....	40
2.7	Background of GreenTechnology.....	41
2.7.1	Environmental Pollution.....	43
2.7.2	“Greenhouse” Effect.....	44
2.7.2(a)	What is exactly the “Greenhouse” Effect.....	44
2.7.3	Ozone Layer.....	45
2.7.4	Factors Related Accelerated Climate Change.....	46
2.7.4(a)	Global Warming.....	46
2.7.4(b)	Renewable Energy for Rural Social and Economic Development.....	47

2.7.5	Barriers to Green Technology Innovation in Large and Medium-Sized Enterprises.....	47
2.7.6	Constructing Green System of Engineering Experimental Teaching Based on Virtual Instrument Technology.....	48
2.7.7	Application of Green Technologies in Developing Countries — Reduced Carbon Emission and Conservation of Energy.....	48
2.7.8	Readiness of the Electronic Industry to Implement Green Technology.....	49
2.8	Summary.....	51

CHAPTER 3: THE READINESS THEORY AND ELECTRONIC MANUFACTURING INDUSTRY SUPPLIERS

3.1	Introduction.....	52
3.2	Theory of Readiness.....	53
3.3	Change Management.....	60
3.4	Organisational Change.....	62
3.5	Internal Organisational Factors.....	67
3.5.1	Individual Attributes.....	68
3.5.1(a)	Willingness.....	70
3.5.1(b)	Beliefs and Attitudes.....	72
3.5.1(c)	Perception.....	77
3.5.2	Organisational Characteristics.....	79
3.5.2(a)	Organisational Structure.....	80
3.5.2(b)	Organisational Culture.....	81

3.5.2(c)	Organisational Climate.....	85
3.5.2(d)	Organisational Resources.....	87
3.6	Electronic Manufacturing Suppliers Industry Readiness.....	90
3.7	Summary.....	94

CHAPTER 4: RESEARCH METHODOLOGY

4.1	Introduction.....	95
4.2	Conceptual Framework.....	95
4.3	Hypothesis Development.....	100
4.3.1	The Relationship between Individual Attributes and Electronic Manufacturing Industry Suppliers Readiness.....	100
4.3.2	The Relationship between Organisational Characteristics and Electronic Manufacturing Industry Suppliers Readiness.....	101
4.4	Research Design.....	102
4.4.1	Sampling Procedure.....	104
4.4.2	Data Collection Process.....	108
4.5	Instrumentation.....	110
4.5.1	Measurements & Instrumentation.....	113
4.5.2	Measurement & Operationalization of Variables.....	113
4.5.2(a)	Individual Attributes.....	115
4.5.2(b)	Organisational Characteristics.....	117
4.5.3	Electronic Manufacturing Industry Suppliers Readiness.....	119
4.5.4	Summary of Variables and Measurement of Instruments.....	120
4.5.5	Reliability Analysis of Instruments.....	121
4.5.6	Analysis of Validity of Instruments.....	123

4.6	Statistical Analysis.....	124
4.6.1	Descriptive Analysis.....	125
4.6.2	Factor Analysis.....	125
4.6.3	Correlation Analysis.....	126
4.6.4	Regression Analysis.....	126
4.7	Traceability and Processes.....	127
4.8	Summary.....	128

CHAPTER 5: DATA ANALYSIS & FINDINGS

5.1	Introduction.....	129
5.2	General Information.....	130
5.2.1	Profile of Respondents.....	130
5.2.2	Profile of Organisational Electronic Manufacturing Industry Suppliers.....	133
5.3	The Test of Assumptions – Linearity, Normality, Homoscedasticity and Multicoloinerity Conditions of the Data.....	134
5.4	Relationship between Readiness Factors and Electronic Industry Suppliers Readiness.....	140
5.4.1	Relationship between Individual Attributes and Electronic Manufacturing Industry Suppliers.....	142
5.4.2	Relationship between Organisational Characteristics and Electronic Manufacturing Industry Suppliers Readiness.....	142
5.4.3	Summary.....	143
5.5	Assessing the Readiness of Electronic Industry Suppliers to Implement on Green Technology Implementation.....	144

5.5.1	Dimension of Readiness: Optimism.....	148
5.5.2	Dimension of Readiness: Innovativeness.....	149
5.5.3	Dimension of Readiness: Discomfort.....	149
5.5.4	Dimension of Readiness: Insecurity.....	150
5.5.5	Extent of Electronic Industry Suppliers Readiness in Terms of Green Technology Implementation.....	151
5.5.6	Summary.....	152
5.6	Contents of Readiness.....	153
5.6.1	Factor analysis for Independent and Dependent Variables.....	153
5.6.1(a)	Individual Attributes.....	155
5.6.1(b)	Organisational Characteristics.....	157
5.6.1(c)	Electronic Manufacturing Industry Suppliers Readiness.....	160
5.6.2	Reliability Analysis for Instruments of Model.....	162
5.6.3	The Proposed Theoretical Model.....	163
5.6.4	The Implementation of Readiness Content.....	164
5.7	Summary.....	167

CHAPTER 6: CONCLUSION AND RECOMMENDATION

6.1	Introduction.....	168
6.2	Main Findings of the Study.....	170
6.2.1	Objective 1: To Determine the Factors That Contributes to the Organisational Readiness for Change.....	170
6.2.2	Objective 2: To Examine the Relationship between the Internal Organisational Factors and Electronic Manufacturing Industry	172

Suppliers of Green Technology Implementation.....	
6.2.3 Objective 3: To Assess the State of Readiness to Implement Green Technology among Electronic Manufacturing Industry Suppliers in Melaka, Malaysia.....	173
6.2.4 Objective 4: To Propose a Check List for Green Technology Implementation among Electronic Manufacturing Industry Suppliers in Melaka, Malaysia.....	174
6.3 The Fundamental Contributions of the Study.....	174
6.4 Limitation of the Research.....	175
6.4.1 Generalisation Issues.....	175
6.4.2 Methodological Perspective.....	176
6.5 Research Recommendation.....	177
References.....	179
Appendices.....	207

LIST OF TABLE

	Page
Table 3.1 Characteristics of Readiness Segments	93
Table 4.1 Number of Electronics Manufacturing Industry Suppliers in Melaka	106
Table 4.2 Population and Recommended Sample Size of the Study	108
Table 4.3 Measures and Layout of the Questionnaires	112
Table 4.4 Summary of Variables and Measurement of Instrument	121
Table 4.5 Reliability Level of Instruments	123
Table 5.1 Demographic Profile of Respondents	132
Table 5.2 Profile of Organisational of Electronic Manufacturing Industry Suppliers	134
Table 5.3 The Guidelines of Correlation Coefficient	141
Table 5.4 Pearson Correlation between Dependent and Independent Variables	141
Table 5.5 Summary of Test Result of Pearson Product Moment Coefficient Correlation – Relationship between Readiness Factors and Electronic Manufacturing Industry Suppliers Readiness	144
Table 5.6 Characteristics of Readiness Segments	147
Table 5.7 Electronic Manufacturing Industry Suppliers Readiness: Dimension on Optimism	148
Table 5.8 Dimension of Readiness: Innovativeness	149
Table 5.9 Electronic Manufacturing Industry Suppliers Readiness:	150

	Dimension of Discomfort	
Table 5.10	Electronic Manufacturing Industry Suppliers Readiness:	151
	Dimensions of Insecurity	
Table 5.11	Extent of Electronic Manufacturing Industry Suppliers to Implement on Green Technology Implementation	152
Table 5.12	Summary of Readiness Segments for Electronic Manufacturing Industry Suppliers Readiness to Implement Green Technology	153
Table 5.13	KMO and Bartlett's Test for Individual Attributes	155
Table 5.14	Factor Analysis for Individual Attributes	156
Table 5.15	KMO and Bartlett's Test for Organisational Characteristics	158
Table 5.16	Factor Analysis for Organisational Characteristics	158
Table 5.17	KMO and Bartlett's Test for Electronic Manufacturing Industry Suppliers Readiness	160
Table 5.18	Factor Analysis for Electronic Manufacturing Industry Suppliers Readiness	160
Table 5.19	Reliability Test of Instruments – Cronbach's Alpha	163
Table 5.20	Multiple Regression Results for Independent and Dependent Variables (Overall Readiness of Electronic Manufacturing Industry Suppliers in Implementation Green Technology)	166
Table 5.21	Multiple Regression Results for Independent (Overall Readiness of Electronic Manufacturing Industry Suppliers)	166
Table 6.1	Summarise of the Study	169

LIST OF FIGURES

	Page
Figure 2.1 Determine & Outcomes of Organisational Readiness for Change	15
Figure 2.2 Workplace Readiness Factors	21
Figure 3.1 An Integrated Model of Readiness for Change	59
Figure 3.2 Workplace Readiness Model	64
Figure 3.3 The Burke-Litwin in Model of Organisational Change	66
Figure 4.1 Proposed Theoretical Framework for Factor that Contribute to the Electronic Manufacturing Industry Suppliers Readiness to Green Technology Implementation	99
Figure 4.2 Conceptual Relationship between Individual Attributes and Electronic Manufacturing Industry Suppliers	100
Figure 4.3 Conceptual Relationship between Organisational Characteristics and Electronic Manufacturing Industry Suppliers Readiness	101
Figure 4.4 The Independent and Dependent Variables	115
Figure 4.5 The Construct of Individual Attributes	115
Figure 4.6 The Construct of Organisational Characteristics	117
Figure 4.7 The Construct of Electronic Manufacturing Industry Suppliers Readiness	119

LIST OF ABBREVIATIONS

Acronym	<i>Detail</i>
BPR	Business Process Reengineering
GEO	Green Energy Office
PTM	Pusat Tenaga Malaysia
ST	Suruhanjaya Tenaga
ITA	Investment Tax Allowance
ISO	International Standards Organization
IEC	International Electro Technical Committee
SAGE	Strategic Advisory Group Environment
WEEE	Waste Electrical and Electronic Equipment
NO	Nitrogen Monoxide
CO ₂	Carbon Dioxide
SO ₂	Sulphur Dioxide
RE	Renewable Energy
GHG	Greenhouse Gases
GT	Green Technology
TR	Technology Readiness
SSTs	Self-Service Technologies
WCED	World Commission on Environment and Development
EMIS	Electronic Manufacturing Industry Suppliers

MENILAI KEBERSEDIAAN PEMBEKAL-PEMBEKAL INDUSTRI ELEKTRONIK KEARAH PERLAKSANAAN TEKNOLOGI HIJAU

ABSTRAK

Kesan dan akibat daripada pemanasan global terhadap bumi telah menyeru komuniti antarabangsa untuk mengambil langkah-langkah drastik. Salah satu langkah penyelesaian yang dicadangkan oleh The Intergovernmental Panel of Climate Change (IPCC) adalah pengenalan kepada teknologi hijau. Kajian ini bermatlamat untuk menilai tahap kesediaan pembekal-pembekal industri pembuatan elektronik di Melaka dalam penerimaan teknologi hijau. Satu kajian menggunakan struktur soal selidik telah dijalankan terhadap kumpulan responden di Melaka. Sampel responden diambil daripada senarai pembekal industri pembuatan elektronik dalam Yellow Pages Directory. Sejumlah 309 soal selidik telah diedarkan dan 202 soal selidik responden yang lengkap telah dipulangkan; menghasilkan keputusan kadar respon sebanyak 65.37%. Regresi berganda standard telah digunakan untuk mengkaji hubungan di antara faktor-faktor dalaman dengan tahap kesediaan pelaksanaan teknologi hijau di kalangan pembekal industri pembuatan elektronik di Melaka. Hasilnya, kajian ini mencadangkan agar pembekal-pembekal industri pembuatan elektronik di Melaka bersiap sedia untuk menerima perubahan ke arah pelaksanaan teknologi hijau. Penerimaan dan perubahan menyeluruh institusi pembuatan elektrik ke arah pelaksanaan teknologi ini akan tercapai sekiranya semua pemegang saham dalam sektor ini bersedia untuk melaksanakannya.

ASSESSING THE ELECTRONIC MANUFACTURING INDUSTRY SUPPLIERS READINESS TOWARDS GREEN TECHNOLOGY IMPLEMENTATION

ABSTRACT

The effects and consequences of global warming to the earth call for drastic actions to be taken by the international communities. One of the solutions proposed by the Intergovernmental Panel of Climate Change (IPCC) is the introduction of green technologies. This research attempts to establish the state of readiness of electronic manufacturing industry suppliers in adopting green technologies. A survey by using structured questionnaire was conducted on a group of respondents in Melaka. The sample was derived from the list of electronics manufacturing industry suppliers in Yellow Pages Directory. A total of 309 questionnaires were distributed and 202 respondents completed and returned; which resulted in 65.37% response rate. Standard multiple regression was used to investigate the relationship between internal factors and a level of readiness among of electronics manufacturing industry suppliers in implementing green technologies in Melaka. As a result, this study suggested that the electronic manufacturing industry suppliers in Melaka are ready to adopt the change towards green technology implementation. Only after all the stakeholders in manufacturing sectors are ready to implement green technology, will the adoption and institulisation of green technology in the electronic manufacturing industry be a reality.

CHAPTER 1 INTRODUCTION

1.1 Introduction

Electronic industry is a system that involves the production, delivery, storage, distribution and sale of products in order to meet the demand of the product. Electronic manufacturing industry suppliers including all the processes and activity involve in delivering the product to reach the consumer. All production processes, including manufacturing, transportation system that move the product from the manufacture of up to branch distributors and retailers, product storage warehouse, distribution centre where the place of delivery in large quantities are divided in to small quantities to be shipped back to the stores and eventually reach to retailers that sell these products.

Electronic manufacturing industry suppliers are the methodology of arranging actualising, and controlling the operations with the reason to fulfil client necessities as effectively as would be prudent. Electronic manufacturing industry suppliers compasses all development and capacity of crude materials, work-in-methodology stock, and completed merchandise from purpose of-birthplace to purpose of-utilisation.

1.2 Research Background

According to Abu Bakar et al. (2011), "Green Technology" is an activity advancing different sorts of philosophies and materials improvement, from procedures for creating energy to non-lethal cleaning items. There is a steadily

expanding societal push for natural friendly environmental systems to help reduce the effect coming about because of fossil fuel utilisation, landfill and industrial division wastages. Current investigates by industry teams are seeking after and investigating the option for environmentally friendly power energy sources and production. Governments and World Energy Council (WEC) are playing the key parts to create and actualise a wide-size of green technology endeavours that address the issues of society through uncertain routes into the future without harming or reduce natural resources.

The impacts of environmental change, alongside contamination and the consumption of non-renewable characteristic assets, has offered ascent to natural mindfulness (Douglas, 2006). A key worldwide challenge in the 21st century is the means by which to address environmental change and to reduce greenhouse gas emmissions (UN, 2007). Accordingly, arrangements that emphasis on the protection of nature are constantly being created around the world (Brunoro, 2008).

In addition of providing an adequate green tchnology implementation, the government are also aware that the global communities have called all nations to integrate the environmental factor in the implementing green technology. As a respond, throughout 10th (2011 – 2015), 11th (2016 – 2020) and 12th (2020 – 2024) and beyond, as a Malaysia Plan the government gave careful consideration on this matter by actualising the needs of green technology in light of ecological protection and conservation. For instance, the 12th Malaysia Plan stated that the needs of green

technology implementation in the electronic industry, such as inculcation of GT in Melaka, Malaysia culture, reduces overall resource consumption while sustaining national economic growth, improvement of Melaka, Malaysia's ranking in environmental ratings. Melaka, Malaysia can be a major producer of GT in the global market, and expansion of international collaborations between local universities and research institutions with GT industries (KETHHA, 2010). These moves are in accordance with the proposal made by the WCED who expressed that the financial productions ought to be dependable to an environmental basic to guarantee the assurance of ecosphere, and a social value basic to decrease human suffering (Berke and Conroy, 2000).

From the discussion above, it can be concluded that the electronic manufacturing industry have a fundamental economic function to play in the Melaka, Malaysia electronic industry. Given the speed of trade globalisation, the advancement in science and technology, and on-going initiatives to improve society, it is essential the electronic manufacturing industry suppliers concept in be fully players as well as customers. It will be appropriate to understand on how the electronic manufacturing industry suppliers will impact on transforming the society towards having a superior personal satisfaction. Usually, the measurements of life hold by individuals are numerous which incorporate training, nourishment, vocation, vitality, environment, well-being, human rights, salary, base, national security, open security, re-creation and asylum (Henderson, 2001).

1.3 Problem Statement

Before this, organisations assumed that consolidating "green" into their business strategy would cost cash, yet they now understand that overlooking negative effects on the earth will be excessive later on (Van der Zee, 2008). The motivation behind making strides toward environmental friendliness is to utilise products and techniques that would not adversely affect the earth through contamination or reduce normal assets (Robinson, 2008). In the event that the utilisation of natural resources is decreased by utilising option sources, it will have positive results, such as, keeping the natural footprint small, decreasing waste and re-utilising materials as much as possible (Dallas, 2008). Moreover, it will show the result that the natural resource will be used efficiently and effectively. Green electronic manufacturing industry suppliers ought to have green dreams, with key arrangements based on long haul goals instead of just short term objectives (Gunningham, Kagan & Thornton, 2003).

Previously, organisations expected that joining "green" into their business strategy would cost money, however they now understand that disregarding negative effects on the earth will be costly later on (Van der Zee, 2008). The Melaka, Malaysia electronic manufacturing industry suppliers had long been mindful towards the issues of environmental protection. Thus, the Melaka, Malaysia electronic manufacturing industry has been asked to receive new methodology to fortify its establishments to face present and future challenges (Robinson, 2008). Clem (2008) includes that practicing green environmental awareness mirrors a social cognizance around saving, propelling the Earth's natural resources, saving and ensuring them for the purpose of civilisation.

The electronic industry player has been challenged to enhance the productivity and quality by implementing sustainable practices. In this scenario, green technology implementation is viewed as the change element that can become the indicator of the electronic manufacturing industry suppliers readiness towards green technology implementation for advanced technological change. In addition, this research has been done on the readiness assessment of electronic manufacturing industry suppliers in Melaka, Malaysia to respond to the change in their operating environment. Thus, this study is to design to fill this knowledge gap.

Previous researchers had highlighted the barriers of sustainable development in the electronic manufacturing industry suppliers (Landman, 1998) listed these barriers as the lack of interest from the electronic industry, lack of training related to sustainable design, higher cost, difficult to obtain financing from the banks for sustainable projects and unavailable information on sustainable methods. In the same Baker (2006) identified that the lack of incentives, unreliable technology, lack of technical expertise and cost factor have become the reasons why the electronic manufacturing industry suppliers players are reluctant to build sustainably. It is important to develop a framework that is specifically tailored to the local scenario because the previously developed frameworks were based on the experience of other countries.

1.4 Objectives

In line with the problem statement above, the broad objective for the study to identify the electronic manufacturing industry suppliers at the various levels of some selected commodities:-

- To determine the factors that contributes to the internal organisational readiness for change.
- To analyse the relationship between the internal organisational factors and electronic manufacturing industry suppliers readiness towards green technology implementation.
- To assess the state of readiness to implement green technology among electronic manufacturing industry suppliers in Melaka, Malaysia.
- To propose a checklist for green technology implementation towards electronic manufacturing industry suppliers in Melaka, Malaysia.

1.5 Significance of Research

Due to demand competitive pressures, business today is restructuring them to operate on electronic manufacturing industry suppliers to take advantage of the markets, business and economy. Most electronic manufacturing industry suppliers are becoming so sophisticated that in the future they will spend more time in terms green technology.

A review of the existing frameworks regarding the assessment of readiness for change revealed that none of them was designed to specifically assess the

readiness of individuals or organisations to embrace green technology, not to mention the green technology implementation. In addition, it is essential to develop a readiness assessment method that that can be suited to the Malaysian industrial usage as the country has its own distinctive characteristics that might differ with other countries.

The knowledge areas enlightened by this study are internal factors that could best predict the electronic manufacturing industry suppliers readiness in green technology implementation. From the perspective of practice, the developed framework can be used as an assessment tool to measure the readiness electronic manufacturing industry suppliers in green technology implementation. The framework can directly assist electronic manufacturing industry suppliers in examining their current state of readiness towards green technology implementation.

1.6 Limitations & Scope

This study is interested to investigate complete electronic manufacturing industry suppliers, in which, can be classified under three main variables individual, organisational and electronic suppliers. Based on the preliminary interviews and literature review, these three main variables are identified to be the most important in the chain. With the intention to limit the scope of the study, the research respondents are those electronic manufacturing industry suppliers companies who are registered with yellow pages directory in Melaka, Malaysia. The data collection for this study was conducted in one state, namely, Melaka. Some of others not in this research because due to the time limitation and cost.

1.7 Organisation of the Thesis

Chapter 1: This chapter opens the discussion with presenting introduction to this study. Then, it presents the background information of the thesis, comprising research problems, research objectives to be achieved, research questions to be answered, scope and significance of the research, as well as outline of the thesis.

Chapter 2: This chapter reviews the literatures of green technology implementation. Subsequently, this chapter discussed the concept of green technology that had been applied in the electronic manufacturing industry suppliers. Next, the literatures relating to the green technology are presented. Finally, this thesis presents the global and Malaysian scenario with regards to the green technology implementation. The literatures on the theory of readiness, change management and organisational change are reviewed in this chapter. Then, the factors that influence the readiness and stage of readiness are presented and followed by the conceptual framework that is used in this study. In the last part of the chapter, the developed hypotheses are presented.

Chapter 3: The literatures details of the readiness theory, change management and organisational are applied in this study and presented in this chapter. Then, the factors that influence the readiness and stage of readiness are presented. In the last part of the chapter, the developed hypotheses are presented.

Chapter 4: The details of the research methodology applied in this study are covered in this chapter. It explains the research design, the data collection methods and how the relevant instruments were developed in the present study. Lastly, this chapter discusses all the analytical techniques used in this study.

Chapter 5: Data analysis, research findings, and reliability and validity of the constructs were presented in this chapter. The electronic manufacturing industry suppliers readiness towards the green technology implementation is then discussed. The summary of research findings is covered at the end of this chapter.

Chapter 6: This section finalise the study by relating the discoveries with the examination target and theories of the study. It likewise offers the proposals for the future examination.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter deals the survey of the writing in the contextual areas towards green technology implementation. In the first place, this part talks about the supporting idea of the study that is readiness of organisation. The chapter then reviews of the change management and internal organisational. Next, the key studies in the field of electronic industry background are likewise checked on including history and current advance in the worldwide point of view and Melaka, Malaysia perspective. The parts of green technology implementation are exhibited toward the end of the section. At last, the summary is displayed to finish up the chapter.

2.2 Theory of Readiness

Organisational readiness for change is a multi-level form, and moreover a multi-faceted one. Specifically, organisational readiness alludes to organisational individuals refers to organisational members commitment to execute organisational change (Weiner et al., 2008; Weiner et al., 2009). This definition stated the conventional languages utilisation the term of readiness, which suggests a condition of being both mentally and behaviourally arranged to make a move (ready and capable). Like Bandura's (Bandura, 1997) idea of objective responsibility, change duty to change refers to organisational members resolved resolve to seek after the game plans included in change execution. The accentuate imparted resolution in light of the fact that executing complex organisational changes includes aggregate activity by numerous individuals, each of whom contributes something to the usage implementation. Since implementation is frequently a group activity, issues emerge

when some are focused on usage yet others cannot take after with new execution. Herscovitch and Meyer (2002) watch that organisational individuals can concentrate on executing an organisational change in light of the fact that they have to esteem the change, in light of the way that they have to such as obligation to realise organisational change.

Like Bandura's (1997) considered total amplexness, change reasonability suggests organisational individuals conferred feelings in their total capacities to arrange and execute the diagrams included in change use. Here yet again, underscore bestowed feelings and total limits in light of the way that execution includes total (or conjoint) movement among related individuals and work units. Organising movement transversely over various individuals and social affairs and progressing progressive learning are incredible instances of total (or conjoint) limits. As Bandura and others note, sufficiency judgments suggest movement capacities; reasonability judgments are not one or the other result trusts (Bandura, 1986 & 2000; Maddux, 1995) nor evaluations of learning, aptitudes, or assets (Bandura, 1986). Change viability is higher when individuals impart a feeling of certainty that on the whole they can execute a complex organisational change.

In the hypothesis introduced here, organisational structures and asset gifts shape availability observations. At the end of the day, organisational individuals look into the organisation's structural resources and shortfalls in planning their change viability judgments. Second, organisational preparation for change is situational; it is

not a general condition of issues. Some organisational peculiarities do appear to make a more responsive setting for development and change (Dopson et al., 2002; Newton et al., 2003 and Pettigrew et al., 1992). Then again, open setting does not make an interpretation of straightforwardly into preparation. The substance of progress matters as much as the setting of progress.

An electronic industry organisation could, for instance, display a culture that values danger taking and experimentation a positive workplace (great electronic industry connections), and a background marked by effective change execution. Yet, notwithstanding this open setting, this organisation could at present show a high preparation to execute electronic industry records, yet a low availability to actualise an open-access planning framework. Responsibility is, to a limited extent, change particular; so excessively are viability judgments. It is conceivable that open setting is an important yet not sufficient condition for availability. For instance, great electronic industry connections may be important for advancing any change regardless of the possibility that it does not promise that electronic suppliers will focus on executing a particular change. The hypothesis proposed here grasps this probability by viewing open organisational setting peculiarities as could be expected under the circumstances determinants of availability as opposed to status itself. Third, the two features of organisational preparation for change responsibility and change viability are adroitly interrelated and, expected, experimentally connected. As Bandura (1997) notes, low levels of trust in one's capacities to execute a game plan can weaken one's inspiration to take part in that strategy. In like manner, as Maddux (1995) notes, trepidation and other negative motivational states can lead one to think

little of or minimise one's judgments of capacity. These cognitive and motivational parts of readiness are relied upon to covary, yet not to covary perfectly. At one great, organisational could be exceptionally certain that they could execute an organisational change effectively, yet demonstrate practically zero inspiration to do as such. The inverse amazing is likewise conceivable, just like all focuses in the between. Organisational readiness is prone to be most astounding when organisational individuals not just need to actualise an organisational change and additionally feel sure that they can do as such.

On the off chance that creating an imparted feeling of status sounds troublesome, that is on account of it most likely is. This may clarify why numerous organisational neglect to create sufficient organisational readiness and, thus, encounter issues or through and through disappointment when executing complex organisational change. Although organisational readiness for change is hard to create, inspiration hypothesis and social cognitive hypothesis recommend a few conditions or circumstances that may advance it.

Since this hypothesis of organisational readiness for change is pitched at the organisational level of investigation, a test of the hypothesis forecasts would oblige a multi-organisation exploration plan in which a set of organisations actualises a typical, or possibly tantamount, complex organisational change. An extensive electronic industry framework actualising Six Sigma or lean assembling on a framework wide premise would give a valuable chance to test the hypothesis. So

excessively would a relationship of group electronic industry consenting to execute a typical multi-part administration project or a gathering of subsidiary strength works on choosing to actualise a typical electronic industry record.

It is imperative to note that organisational readiness for change is conceptualised here as an imparted group property that seems to be, a mental state that organisational individuals hold in like manner (Klein and Kozlowski, 2000). The degree to which this imparted mental state exists in any given circumstance is an experimental issue obliging the examination of inside gathering measurements agreement. On the off chance that sufficient inside gathering understanding exists (organisational individuals concur in their readiness perceptions), then investigation of organisational readiness as an imparted group property can continue. In the event that deficient inside gathering understanding exists (organisational individuals differ in their preparation recognitions), organisational readiness as an imparted group property does not exist. Rather, the examiner should either concentrate on a lower level of examination (group availability) or conceptualise organisational readiness as a design property and speculate about the determinants and results of intra-organisational variability in recognitions of readiness (Klein and Kozlowski, 2000).

Finally, as noted prior, most openly accessible instruments for measuring organisational readiness for change display restricted confirmation of unwavering quality and legitimacy. As two as of late distributed audits show, a large portion of the instruments utilised in associate investigated examination were not grown

methodically utilising hypothesis, nor were they subjected to broad psychometric testing (Weiner et al., 2008 and Holt et al., 2006). There are a couple of instruments have experienced intensive psychometric evaluation. Nonetheless, none of these instruments is suitable for measuring organisational readiness for change as characterised above, either on the grounds that they concentrate on individual readiness instead of organisational readiness, or on the grounds that they treat status as a general condition of undertakings as opposed to something change particular, or on the grounds that they incorporate things that the hypothesis exhibited above considers determinants of status instead of readiness itself (things relating to change valence).

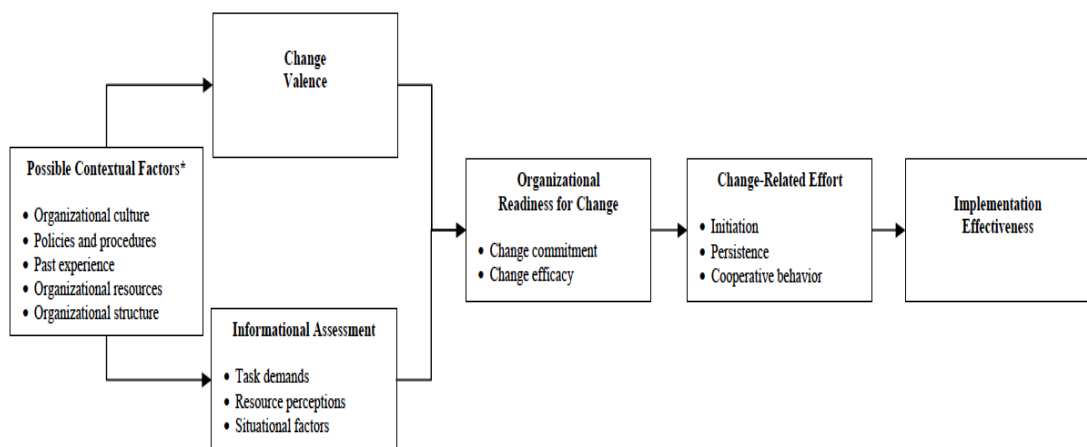


Figure 2.1: Determine & Outcomes of Organisational Readiness for Change

2.3 Change Management

Change management specialists and researchers have talked about other, more extensive logical conditions that influence organisational readiness for change. For instance, some battle that an organisational culture that grasps development, danger taking, and learning backings organisational readiness for change (Jones et al., 2005; Chonko et al., 2002). Others stretch the vitality of adaptable organisational

strategies and systems and positive organisational climate (great working connections) in advancing organisational readiness (Eby et al., 2000; Kanter, 1984). Still others recommend that positive past involvement with change can encourage organisational readiness (Armenakis et al., 1993). The battle that these more extensive, logical conditions influence organisational readiness through the more proximal conditions portrayed previously. Organisational culture, for instance, could intensify or hose the change valence connected with a particular organisational change, contingent upon whether the change exertion fits or clashes with social qualities. Moreover, organisational arrangements and techniques could emphatically or adversely influence organisational individuals examinations of undertaking requests, asset accessibility, and situational components. Finally, past involvement with change could positive or contrarily influence organisational individuals change valence (whether they think the change truly will convey touted profits) and change adequacy judgments (whether they think the organisation can successfully execute and direction change-related exercises).

What is the deciding consequence of this change-related exertion? Drawing on usage hypothesis, the most proximal result is prone to be viable execution. Emulating Klein and Sorra (1996), usage adequacy alludes to the consistency and nature of organisational individuals starting or early utilisation of another thought, system, process, practice, or innovation. To delineate, when organisational readiness for change is high, electronic manufacturing industry suppliers will all the more skilfully and determinedly make a move to put a green innovation practically speaking and show more reliable, brilliant utilisation of the registry. By

differentiation, when organisational readiness for change is low or non-existent, electronic industry focus suppliers and staff will oppose starting change, put less exertion into implementation, continue on less despite execution difficulties, and show agreeable registry use, best case scenario. Without further intercession, registry utilisation is liable to be irregular, scattered, and uneven.

Change management specialists have underscored the essentialness of building organisational readiness for change and prescribed different systems for making it. Not at all like individual readiness for change, has organisational readiness for change not been liable to broad hypothetical improvement or exact study. In this article, we thoughtfully characterise organisational readiness for change and build up a hypothesis of its determinants and results. The concentrate on the organisational level of examination on the grounds that numerous making a guarantee to approaches to enhancing electronic industry conveyance involve aggregate behaviour change as frameworks upgrade that is, different, synchronous changes in staffing, work process, choice making, correspondence, and prize frameworks.

2.4 Organisational Change

Change is the development far from a present state to a future state (George and Jones, 1996) or for the most part a reaction to some critical risk or opportunity emerging outside of the organisation (Gilgeous, 1997). Today, the business environment is evolving quickly. The progressions in innovation like computerisation and e-business have made a quantum jump in information

correspondence, work forms and the method for working together. With the approaching move to globalisation and liberalisation of business sectors, organisations must be arranged to implement to the fast changes in the business elements. Each organisation must submit to the fluctuating requests and changes in the earth. Changes inside an organisation occur in light of business and monetary occasions and to methodologies of managerial recognition, decision, and activities where administrators see occasions occurring that demonstrated the requirement for change (Pettigrew, 1985).

As indicated by Linstone and Mitroff (1994), there were three elements to be considered in executing change forms, that is the innovative, organisational and individual viewpoints. Despite the fact that individuals are the most critical figure rolling out improvement, then again, they are likewise the most troublesome component to manage (Linstone and Mitroff, 1994). Thusly, dealing with the human piece of the organisation turns into a significant test in taking care of progress techniques in the organisation as it includes qualities, inclination, and mentality to a specific movement. Attitudes, for occasion, are hard to change as individuals are for the most part more agreeable with what they have realised or knew because of stereotyping, alarm of going out on a limb, prejudice to vagueness, and perhaps the need to look after convention (Dunham, 1984; Carnall, 1990).

A change in organisation alludes to any adjustment in exercises or errand (Dawson, 1994). Kanter et al. (1992) characterised change as the procedure of examining the past to evoke the present activities needed for what's to come. Cao et al. (2000) accepted that organisational change demonstrated a differing qualities of the organisation in its surroundings, furthermore the communication of the specialised and human exercises that had interrelated measurements in the organisation.

Attitudes can be hard to change once they have been found out (Dunham, 1984). This is on account of there can be imperviousness to change from inside. Dawson (1994) additionally noted that imperviousness to organisational change may come about because of one or a mix of variables, such as, substantive change in employment, decrease in financial security, mental dangers, interruption of social game plans, and bringing down of status. In any case, it cannot be denied that the disposition to change by people may vary. Some are more impervious to change while others are more responsive to change. As indicated by Elizur and Guttman (1976), there are three sorts of people's or bunch reaction to organisational change: emotional, cognitive and instrumental. Emotional reaction refers to the inclination of being connected to fulfilment or restless about change. Cognitive reactions are feelings identifying with convenience and need and about information needed to handle change, while instrumental reactions allude to moves officially made or which will be taken to handle the change. Dunham et al. (1989) likewise proposed that there are three sorts of mentality to change: emotional, cognitive and behavioural. The emotional segment comprises of the emotions an individual has to a

disposition object, which includes assessment and feeling, and is frequently communicated as like or aversion for the state of mind article. The cognitive segment of a mentality comprises of the data an individual have around an individual or thing which is in light of what an individual accepts is valid. The behavioural inclination concerns the way an individual plans to carry on to a demeanour object.

A few studies had given bits of knowledge on the effect of inside and outside components like organisational age, size, and idleness/force on an organisation's adequacy in reacting to natural (interior/outer) changes (Meyer et al., 1990; Kelly and Amburgey, 1991; Haveman, 1992; Fox-Wolfgramm et al., 1998). Different studies had concentrated on the connection between a result or paradigm variables (like receptivity, safety, responsibility, criticism or stress) and the achievement or disappointment of organisational change. Iverson (1996) found that a workers acknowledgement of organisational change increments with organisational responsibility, a concordant mechanical relations atmosphere, training, occupation inspiration, fulfilment and security. The worker acknowledgement diminishes with union participation, part clash, residency and ecological open door. Yousef (2000) found that certain measurements of organisational duty straightforwardly impact certain state of mind to organisational change, and employment fulfilment with specific aspects of occupation specifically and by implication (through distinctive measurements of organisational responsibility) impacts the diverse measurement of mentality to organisational change. Tierney (1999) discovered representatives organisations with their managers and individuals shape their disposition to the organisation. The workers impression of the change atmosphere inside the

organisation is predictable with those of their groups and chiefs. The nature of the organisation with the chief is essential for workers impression of the change atmosphere.

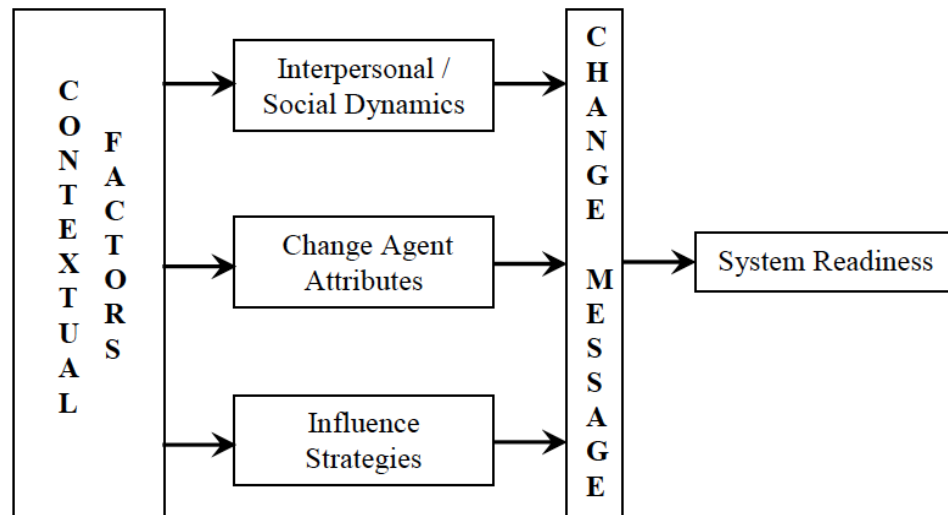


Figure 2.2: Workplace Readiness Factors
 Source: Muir (1996)

2.5 Internal Organisational Factors

According to Saerue and Zhang (2011) an organisation is a complex framework that comprises of numerous divisions including one another. In this way, inner and outside variables can perplexingly affect the organisation. The changing in these variables can likewise trigger inactive issues of an organisation. On the off chance that the issues are collected, the organisation can be driven into a precarious state. Likewise, use internal qualities and outside risks of the authoritative as the essential control variables for both asymmetry and bifurcation sides. Organisational responsiveness is a basic component for accomplishment of any business. It obliges business organisations to comprehend and react to changes in its outer and interior

environment. As a result, organisations are obliged to make an element interior environment. This dynamism is manufactured around trading data and thoughts identifying with business maintainability, advancement, and development. Venture advances like ERP frameworks are getting to be more prominent among contemporary organisations. Usage of these advancements is, accordingly, occupied with cognizant push to create inner capacities, to utilise the same to deliver outside difficulties and to seem to be like other advancing organisations. It is imperative that the organisation consistently assesses itself, to survey how it is going, what are the execution crevices (if at any rate would it be able to support its operations, and by what means if it became both inside and additionally remotely. Being responsive, helps the organisation to view each new innovation venture as an intend to giving an intelligible perspective of organisational data, considering educated choice making, and helping the organisation to evaluate, learn, and develop (Pishdad and Haider, 2013).

2.5.1 Individual Attributes

Social Intelligence has been a living idea for a long while as a branch of Emotional Intelligence and has been utilised as a part of engineering. Its helpfulness in individual connection has discovered a few applications in creating individual viability. A few analysts have extended the idea to organisational improvement (Khan, 2011). Measuring a singular's capability to perform an objective has key ramifications in organisational studies, behavioural examination, business and administration among different regions. This relative potential, which is subject to a horde of components, experience, asset administration, collaboration, and so forth, could shape the singular's execution, inspiration, authority, and likely achievement

(Wigand et al., 2012).

From the studies conducted by many researchers, the organisational member's willingness, beliefs, attitudes and perception are well accepted as an important factor in the organisational change (Tuokko et al., 2007). For instance, organisational member's willingness to change by Wittenstein (2008) and Tuokko (2007) beliefs and attitudes of organisational member towards change by Barrett et al. (2005), and organisational member's perception on organisational change by Nah (2003) and Eby et al. (2000).

2.5.1.(a) Willingness

In our life event of progress is regular while each individual run over a point where he needs to change. On the off chances that experience the conduct of life the first change that happens is the point at which one needs to move from the ward life to wind up autonomous. It takes after that the change is regular. It happens in every one's life furthermore it happens in the organisational connection that willingness can be as a positive behavioural towards organisational change (Ven and Poole, 1995). The change happens in individual life and his response towards that change is identified with response of progress happening in the work environment (Amenakis and Bedeian, 1999).

Although organisational change is not a simple job yet it requires an organisation to have a deeper understanding about right now strategies set up and

distinguishing the afflictions the organisation has been facing while executing the current arrangements and methodology. Organisational change is essential on the grounds that if the organisations do not change their methods as indicated by the distinctive changes happening around in nature, then it is extremely troublesome for an organisation to make due in today's dynamic, testing and consistently evolving environment. Then again, it may oblige an organisation to appropriately prepare their representatives and set them up to effectively actualise the obliged change. Administration must convey their vision to their workers to accomplish their willingness.

2.5.1.(b) Beliefs & Attitudes

Organisational change can be effectively executed when the workers of the organisation are certain that they have essential learning and level of abilities needed to endeavour the endeavours prosperous however in the event that they do not have the obliged capabilities then they will posture safety against such intercessions and are not urged to have dynamic cooperation in the entire methodology (Madsen, 2008).

An empowering situation of an organisation will let the people to work all the more viably and effectively. A backing from the top administration is imperative, on the grounds that these are the individuals who are in charge of giving the correct intends to do the work. The most recent administration styles give more vitality to group building exercises; they urge the representatives to have dynamic contribution in their assignment. This in exchange makes the work force's vibe that they are being