

DEVELOPMENT OF IMPROVEMENT INITIATIVE SELECTION  
FRAMEWORK FOR BUSINESS EXCELLENCE

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*Dedicated to*

*My father, Soib Bin Baidi, whose support*

*My mother, Chumidah Binti Zakaria, whose encourage*

*My Beloved Wife, Syaza Binti Tasnimuddin, whose patience*

*And My Strength, Adam Daniyal Bin Muhammad Erizuwan*

*Lead to achieve my postgraduate studies*

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## ABSTRACT

Usually, the organization could define hundreds of action plan by implementing above improvement initiative. Challenge on the organization nowadays was limited capacity of time, resource and money in order to improve on current business. Thus, selection on the right continuous improvement and deployment the strategy will be important things to achieve organization objective. The objectives of the study were to propose selection continuous improvement initiative framework for organization guidance. Framework was propose based on extensive literature review, linear regression model was used to identify opportunity and Analytical Hierarchy Process (AHP) was used in order to prioritize the initiative. Outcomes of this study to comply with ISO 9001 2015 under Section 9.3 and Section 10.3 requirement. Case study on proposed framework had been perform in Flexible Pipe Manufacturing unit. Finally, the proposed framework was validated through structure survey and the result shows that proposed framework was significant to improve current key performance indicator and meet expectation of the organization.

## ABSTRAK

Kebiasaannya, organisasi mempunyai pilihan untuk menentukan beratus-ratus langkah dengan melaksanakan penambahbaikan. Cabaran pada organisasi pada masa kini adalah kapasiti masa, sumber dan wang yang terhad di dalam usaha untuk meningkatkan produktiviti semasa. Oleh itu, pemilihan dan penambahbaikan yang betul dan penggunaan strategi yang tepat menjadi perkara yang penting untuk mencapai objektif organisasi. Objektif kajian ini adalah untuk mencadangkan rangka kerja pemilihan penambahbaikan yang berkesan untuk sesebuah organisasi. Rangka kerja ini telah dijalankan berdasarkan kajian literatur yang menyeluruh, model regresi linear telah digunakan untuk mengenal pasti peluang dan Proses Analisis Hierarki (AHP) digunakan untuk menyusun inisiatif. Hasil kajian ini adalah bagi mematuhi ISO 9001 2015 dibawah Seksyen 9.3 dan Seksyen 10.3. Kajian kes akan dilaksanakan di unit *Flexible Pipe Manufacturing*. Kemudian, rangka kerja ini telah disahkan melalui kajian struktur dan hasilnya menunjukkan bahawa rangka kerja yang dicadangkan ini memberi kesan penting bagu meningkatkan prestasi organisasi dan memenuhi kehendak organisasi.

## TABLE OF CONTENTS

<b>CHAPTER</b>	<b>TITLE</b>	<b>PAGE</b>
	<b>DECLARATION</b>	iii
	<b>DEDICATION</b>	iv
	<b>ACKNOWLEDGEMENT</b>	v
	<b>ABSTRACT</b>	vi
	<b>ABSTRAK</b>	vii
	<b>TABLE OF CONTENTS</b>	viii
	<b>LIST OF TABLES</b>	xii
	<b>LIST OF FIGURES</b>	xv
	<b>LIST OF SYMBOLS</b>	xvi
<b>1</b>	<b>INTRODUCTION</b>	<b>1</b>
	1.1 Overview of Research	1
	1.2 Problem Background	2
	1.3 Problem Statement	4
	1.4 Objectives of Study	5
	1.5 Scope of Study	5
	1.6 Research Questions	5
	1.7 Significant of Study	6
	1.8 Organization of Report	6

<b>2</b>	<b>LITERATURE REVIEW</b>	<b>8</b>
2.1	Overview	8
2.2	Business Excellence Model	8
2.3	Continuous Improvement	11
2.3.1	Lean	13
2.3.1	Six Sigma	14
2.4	Improvement Initiative Framework	15
2.5	Performance Management	18
2.5.1	Overall Equipment Effectiveness	18
2.5.2	Stock Turnover	19
2.6	Linear Regression Model	20
2.7	Chi Square Statistic Test	21
2.8	Analytical Hierarchy Process	21
2.9	SigmaXL Software	23
2.10	Summary	24
<b>3</b>	<b>METHODOLOGY</b>	<b>25</b>
3.1	Overview	25
3.2	Methodology	25
3.2.1	Understand Organizational Vision & Mission	30
3.2.2	Identify Operation Gaps	31
3.2.2.1	Data Collection	32
3.2.2.2	Analyze The Data	33
3.2.2.3	Regression Result	34
3.2.2.4	Forecast Incoming Year Product Ratio	34
3.2.3	Identify Process Improvement	34
3.2.4	Assess the Initiative	35

	3.2.5	Prioritize the Initiative	37
	3.2.6	Manage the Initiative	37
	3.3	Framework Validation	38
	3.4	Summary	39
<b>4</b>		<b>CASE STUDY AND RESULT</b>	<b>40</b>
	4.1	Overview	40
	4.2	Introduction to Company A	40
	4.3	Case Study	42
	4.3.1	Understand Organization Vision and Mission	42
	4.3.2	Identify Operation Gaps	44
	4.3.2.1	Overall Equipment Effectiveness	44
	4.3.2.1.1	OEE Profilling	45
	4.3.2.1.2	OEE Armouring	55
	4.3.2.2	Cost of Non Quality	65
	4.3.3	Identify Process Improvement	69
	4.3.4	Assess the Initiative	72
	4.3.5	Prioritize The Initiative	73
	4.4	Summary	78
<b>5</b>		<b>DISCUSSION</b>	<b>79</b>
	5.1	Overview	79
	5.2	Correlation between Variability and OEE	79
	5.3	Identified Improvement Initiative	81
	5.3.1	Identified Improvement Initiative	81
	5.3.2	Key Performance Indicator Result	82
	5.3.2.1	Overall Equipment Effectiveness	83



5.3.2.2	Cost of Non Quality	84
5.3.2.3	Inventory Turnover	86
5.4	Critical Finding on Framework	87
5.5	Framework Validation	87
5.6	Summary	95
<b>6</b>	<b>CONCLUSION</b>	<b>96</b>
6.1	Conclusion	96
6.2	Future Work	97
	<b>REFERENCES</b>	<b>98</b>

## LIST OF TABLES

TABLE NO.	TITLE	PAGE
1.1	ISO 9001 2015 PDCA	3
2.1	Minitab versus sigma XL comparison	23
3.1	Comparison between previous literature	27
3.2	Detail on proposed framework	29
3.3	Detail KPI and influencing factor	36
3.4	Description on pairwise comparison	38
4.1	Detail OEE result vs product variability in profiling	45
4.2	Profiling result on availability	46
4.3	Availability vs downtime category	47
4.4	Availability vs availability factor	48
4.5	Profiling result in quality	49
4.6	Quality versus quality factor	50
4.7	Quality vs quality factor	51
4.8	Performance versus manufacturing variability	52
4.9	Performance versus setup and running factor	53
4.10	Predicted response calculator on performance vs pipe size	54
4.11	Detail OEE result versus product variability in Armouring	55
4.12	Armouring availability result versus manufacturing variability	56
4.13	Availability versus machine issue	57
4.14	Availability result versus downtime category	58

4.15	Quality versus manufacturing variability	59
4.16	Predicted response on quality result	60
4.17	Armouring performance result versus manufacturing variability	61
4.18	Performance versus setup performance	62
4.19	Predicted response calculator on setup performance versus manufacturing variability	63
4.20	Run performance versus product variability	64
4.21	Predicted response calculator on setup performance versus manufacturing variability	65
4.22	Predicted response calculator on setup performance with run and setup performance	65
4.23	Result of CNQ vs extra consumption for each layer	67
4.24	Correlation between CNQ vs extra consumption for each layer	68
4.25	KPI assessment summary result	69
4.26	Detail of process improvement for OEE	70
4.27	Detail of process improvement for CNQ	71
4.28	Detail of process improvement for Stock Turnover	71
4.29	Quick win initiative selection	73
4.30	Scope on propose improvement	74
4.31	Pairwise criteria and rating	75
4.32	Criteria Pairwise Comparison	75
4.33	Pairwise comparison between duration capitalization and all Initiatives	76
4.34	Pairwise comparison between expected saving and all initiatives	76
4.35	Pairwise comparison between duration execution and all initiatives	77
4.36	Pairwise comparison between operation goal and all initiatives	77

4.37	Confident interval (CI) for each AHP comparison	77
4.38	AHP rating	78
5.1	Correlation between OEE and variability	80
5.2	AHP result	82
5.3	AHP consistency index	82
5.4	OEE Result	83
5.5	CNQ result	85
5.6	Inventory turnover result	86
5.7	Survey Result	88
5.8	Chi Square test involvement versus KPI improvement	92
5.9	Chi Square test involvement versus expectation	94

**LIST OF FIGURES**

<b>FIGURE NO.</b>	<b>TITLE</b>	<b>PAGE</b>
2.1	Baldrige Criteria Performance Excellence	10
2.2	Proposed framework by Muhammad <i>et. al</i> (2010)	17
3.1	Modification methodology	28
3.2	Methodology to identify operation gaps	31
3.3	Steps to analyze data	34
4.1	Company A vision and mission	43
4.2	Distribution on pipe diameter to be produce in 2017	54
5.1	Survey distribution	88
5.2	Involvement versus significant towards KPI ratio	93
5.3	Involvement versus significant towards KPI ratio	94

## LIST OF SYMBOLS

<i>AHP</i>	-	Analytical Hierarchy Process
<i>BE</i>	-	Business Excellence
<i>CI</i>	-	Continuous Improvement
<i>CNQ</i>	-	Cost of Non-Quality
<i>EFQM</i>	-	European Foundation for Quality Management
<i>ISO</i>	-	International Organisation for Standardization
<i>KPI</i>	-	Key Performance Indicator
<i>LSS</i>	-	Lean Six Sigma
<i>MBNQA</i>	-	Malcolm Baldrige National Quality Award
<i>MCMDM</i>	-	Multi-Criteria Decision-Making
<i>OEE</i>	-	Overall Equipment Effectiveness
<i>QM</i>	-	Quality Mangement

## CHAPTER 1

### INTRODUCTION

#### 1.1 Overview of Research

Nowadays, increasing pressure towards continuous improvement and the desire of each organization towards excellence organization will lead towards deployment improvement initiative across the organization. Principle of Business Excellence towards business strategy could play a crucial role in order to secure on prosperous future. Reason of adopting Business Excellence according to Saunder *et. al.* (2008),

- i. Provides rigorous and sensible approach to identify strength and opportunity
- ii. Guides the organization continuous improvement effort
- iii. Coordinate a range of initiative
- iv. Provides an external measure of performance
- v. Allow companies to become world class

Afthonidis and Tsiotras (2014), suggest that implementation and following the main principle of Total Quality Management system is the safest way towards business excellence. Adopting the best practice from a success organization had become a practice nowadays in order to improve current business performance. Example of improvement initiative widely used by organization are Six Sigma, Lean, Business Process Reengineering, ISO9001 or Balance Score Card (Mohammad *et. al.*, 2011).

Usually, the organization could define hundreds of action plan by implementing above improvement initiative. Challenge on the organization nowadays was limited capacity of time, resource and money in order to improve on current business. Thus, selection on the right continuous improvement and deployment the strategy will be important things to achieve organization objective.

## 1.2 Problem Background

Nowadays the selection of the continual improvement initiative becomes a question mark, which currently most of the organization will be rely on top management decision on external consultant to identified the improvement topics without assessing properly on the situation. In order to select on the right continuous improvement initiative, ISO 9001 2015 had provided the guideline to be followed by organization shows in Table 1.1. In Section 9.1 ISO 9001 2015 state that organizations are required to analyze and evaluate appropriate data and information arising from monitoring and measurement activities which had been done during the operation. While in Section 10.3 (Continual Improvement) the organizations are required under the revised to continually improve the suitability, adequacy and effectiveness of their management system. And finally to complete the PDCA cycle in the ISO management, organization required to recheck on the improvement deploy with company direction and objective. Bourne *et. al.* (2015) had summarize from extensive literature review 7 factors which is used to analyze to manage the performance, which one,

- i. The linking to strategic objectives
- ii. The Method of data captured
- iii. Data Analysis
- iv. Interpretation
- v. Provision of information and Communication
- vi. Decision Making
- vii. Taking action



Table 1.1 : ISO 9001 2015 PDCA

PLAN			DO	CHECK	ACT	
4. Context of the organisation	5. Leadership	6. Planning for the QMS	7. Support	9. Performance evaluation	10. Improvement	
	4.1 Understanding the organization and its context	6.1 Actions to address risks and opportunities	7.1 Resources	9.1 Monitoring, measurement, analysis and evaluation	10.1 General	
4.2 Understanding the needs and expectations of interested parties	5.2 Quality policy	6.2 Quality objectives and planning to achieve them	7.2 Competence	9.2 Internal audit	10.2 Nonconformity and corrective action	
	5.3 Organizational roles, responsibilities and authorities	6.3 Planning of changes	7.3 Awareness	9.3 Management review		
4.4 QMS and its processes	5.4 Organizational roles, responsibilities and authorities	6.4 Planning of changes	7.4 Communication	9.4 Management review	10.3 Continual improvement	
						8.1 Operational planning and control
						8.2 Determination of requirements for products and services
	5.5 Organizational roles, responsibilities and authorities	6.5 Planning of changes	7.5 Documented information	8.3 Design and development of products and services	9.5 Management review	10.4 Continual improvement
				8.4 Control of externally provided products and services		
	5.6 Organizational roles, responsibilities and authorities	6.6 Planning of changes	7.6 Documented information	8.5 Production and service provision	9.6 Management review	10.5 Continual improvement
				8.6 Release of products and services		
5.7 Organizational roles, responsibilities and authorities	6.7 Planning of changes	7.7 Documented information	8.7 Control of nonconforming process outputs, products and services	9.7 Management review	10.6 Continual improvement	
			8.8 Control of nonconforming process outputs, products and services			

### 1.3 Problem Statement

Matching and alignment between an action plan and organizational focus and context is an important key concern in manufacturing and operation strategy theory (Thawesaengkulthai, 2010). Many organizations collect data but fail to follow the process through to conclusion with adequate analysis and evaluation to draw meaningful conclusions and appropriate action plans to address unfavorable results and trends, or to seize opportunities for improvement. Also, many continuous improvements typically encounter problem which the initiative deploy have no linkage with business objective or customer needs, too large or too high level scope along with unclear problem goal statement. This may lead to failure of continuous improvement deployment at the end, may lead to unachieve organizational objective and wasting money and resource. The ultimate objective of all continuous improvement methodologies is to identify customer and business needs and then to satisfied their needs. The selection of right continuous improvement strategies is a main concern nowadays to ensure the successfully initiative deployment. Thus, selection and deployment of right initiative will be part of the keys for organizational towards the Business Excellence.

The variety of quality management and continuous improvement approach, with the many suggestions proposed potentially will make it difficult for company to choose the most suitable approach (Thawesaengkulthai and Tannock, 2008) Most of the literature has been focused on describing the concept, methodology and tools for continuous improvement and also focus to assess on the strength, weakness and the critical success factor. Current framework available in order to guide the organization to select the right initiative was Thawesaengkulthai and Tannock (2008), Thawesaengkulthai (2010), Mohammad *et. al* (2010), Sanjit and Prasun (2010), Pekuri (2015), and Sandra *et. al* (2016). Previous research had been focus on the specific business area like Pekuri (2015) was focused on the Construction business, Sandra *et. al* (2016) focus on the hospital service while the rest propose on the general framework while there is no framework available on selection initiative framework related with mass customization manufacturing.

#### **1.4 Objectives of Study**

The objectives of this study are:

- i. To propose framework in order to guide organization on selection of Continual Improvement initiative.
- ii. To identified Continual Improvement initiative in Flexible Pipe Manufacturing based on the propose framework.
- iii. To increase on the Key Performance Indicator achievement on Flexible Pipe Manufacturing Unit.

#### **1.5 Scopes of the Study**

The scopes of this study are as follow:

- i. Case study to be conducted in flexible pipe manufacturing.
- ii. Improvement scope will be focused on productivity, quality and safety.
- iii. SigmaXL software is used to analyze the data.
- iv. Result on the achievement will be measured by Q2 2017 result.

#### **1.6 Research Questions**

The research questions of this study are as follow:

- i. What is the available selection initiative framework had been proposed by previous research?
- ii. What type of business environment case study perform from previous study?
- iii. What is the methodology to assess the effectiveness of the framework?

## **1.7 Significant of Study**

The study will help the organization, mainly manufacturing units in order to define the right improvement initiative based on the current operational key performance indicator gaps without relying with external consultant or qualitative decision from top management.

The framework proposed also will be able to help the organization as a guideline in order to comply with ISO 9001 2015 under Section 9.1 (Monitoring, measurement analysis and evaluation) and Section 10.3 (Continual Improvement).

## **1.8 Organization of Report**

This report consists of six chapters, as summarized in the following:

### **i. Chapter 1 Introduction**

Chapter 1 is the introduction of the study. This chapter explains about the research statement, problem statement, objectives of study, scope of study and matters that have relate to the introduction of project.

### **ii. Chapter 2 Literature Review**

Chapter 2 is the literature review of the project and contains topic related to this study. The chapter describe definition, principle and approach that been used during conducting this project. Topics reviewed include Business Excellence Model, Continuous Improvement, Analytical Hierarchy Process (AHP), Available Selection Initiative Framework and Performance Management. This chapter also review on the methodology will be used on the analyze of data which is linear regression model and thematic assessment, and also software used during the analyze phase which is SigmaXL.

**iii. Chapter 3 Research Methodology**

Chapter 3 discusses the extensive literature review from previous research in order to propose a framework. Next discussion is about detail steps on the proposed framework, which is detail steps of using linear regression models to analyze Key Performance Indicator Gaps and also AHP steps to conduct prioritization. Finally, this chapter will briefly explain on the survey deployment and analysis in order to validate effectiveness of the propose framework.

**iv. Chapter 4 Case Study and Result**

This chapter is about the collected information related the proposed framework, and detail analysis perform on each steps in order to identify the continual improvement topics.

**v. Chapter 5 Discussions**

Chapter 5 displays the result and data analysis that assess by the SigmaXL software. This chapter also will discuss on the Key Performance Indicator result as May on Flexible Pipe Manufacturing Unit related with the propose continual improvement. Finally, this chapter will discuss on the effectiveness of the proposed survey which deploy with the organization by using Chi Square Analysis.

**vi. Chapter 6 Conclusion and Future Work**

Chapter 6 consists of a summary of the whole study. Findings of the research are presented in brief. Finally, some future researches are suggested.

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