

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.

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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	8. Operation	9. Performance evaluation	10. Improvement
	4.1 Understanding the organization and its context	5.1 Leadership and commitment	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	8.2 Determination of requirements for products and services	9.2 Internal audit	10.2 Nonconformity and corrective action
4.3 Determining the scope of the QMS	5.3 Organizational roles, responsibilities and authorities	6.3 Planning of changes	7.3 Awareness	8.3 Design and development of products and services	9.3 Management review	10.3 Continual improvement
	4.4 QMS and its processes		7.4 Communication	8.4 Control of externally provided products and services		
			7.5 Documented information	8.5 Production and service provision		
				8.6 Release of products and services		
				8.7 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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