THE STUDY OF CRITICAL FACTOR THAT AFFECT THE EFFICIENCY OF KANBAN SYSTEM IN PRODUCTION LINE: A STUDY OF PAPER MILL INDUSTRIAL.

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The Study Of Critical Factor That Affect The Efficiency Of Kanban System In Production Line: A Study Of Paper Mill Industrial.

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I hereby declared that this thesis entitled

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is my own research except the citation and except of each which I have mentioned in the references. This thesis has not been accepted for any degree and is not concurrently submitted by candidature of any other degree

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DEDICATION

This thesis is dedicated to my father, who taught me that the best kind of knowledge to have is that which is learned for its own sake. It is also dedicated to my mother, who taught me that even the largest task can be accomplished if it is done one step at a time.

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ABSTRACT

The purpose of this study is to investigate the most critical factor the affect the efficiency of Kanban system in production in paper mail Industrial. Data was collect from companies that implement Kanban system. Questionnaire survey was used to collect the data. The respondent are request to rate for the factor that affect the efficiency of Kanban, that are communication, attitude of employee and optimum number of Kanban. The result of this research will contribute to paper mill industrial that no yet mature in Kanban system like improve the efficiency of the Kanban.

ABSTRAK

Tujuan kajian ini adalah untuk mengkaji faktor yang paling kritikal kesan kecekapan sistem Kanban dalam pengeluaran dalam mel kertas Industrial. Data adalah collect daripada syarikat-syarikat yang melaksanakan sistem Kanban . soal selidik telah digunakan untuk mengumpul data. Responden adalah permintaan untuk mengadar untuk faktor yang mempengaruhi kecekapan Kanban , yang komunikasi, sikap pekerja dan jumlah optimum Kanban . Hasil kajian ini akan menyumbang kepada kilang kertas yang tidak lagi matang dalam Kanban sistem industri seperti meningkatkan kecekapan Kanban .

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List of Symbol

B=Beta

H_0=Null (rejected)

H_1=H one (accepted)

%=Percentage

R=Point of estimate

P=Value

N=Number of respondent

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CHAPTER 1

INTRODUCTION

1.0   Research background

In this century, manufacturing facing a intense global competition, rapid replacement technology and critical number of competitor. According to Jonathan Davies (2004), there are generally two principle production of all company that is Lean principle and also mass production that introduce to solve the problem. Mass production that introduce by Ford motor company, and lean production that introduce by Toyota Production system.

Lean methodology is a system where wastes are defined and removed. Lean systems that can eliminate waste along entire value stream or reduce the waste from manufacturing.   Office   example   7   type   of   waste   are defects   ,overproduction   ,inventories   ,over-processing   ,human motion ,transportation ,and also waiting .Other than that Lean is a concept of how to reduce production cost such as reduce human effort, space of production, capital, and also reduce time of production to maximize the profit .

Lean is principle that support by many tools such as Kanban, JIT ,5s, Gemba, Heijunka, Jidota ,Value Stream mapping, OEE ,Continuous Flow Poka-Yoke and also Takt time.. Among of them Kanban is one of the most popular tool that using by global manufacturing .Kanban is a new technique for managing a software

development process in highly efficient way.(David Peterson,2015) .Kanban developed by Taichi Ohno at Toyota in 1940's.Designed of Kanban first used in supermarket that controlled system where replenishment is needed. Scheduling of Kanban system can be use in manufacturing to improve their production process.

Major of the experts agree with that lean manufacturing is a system that can reduce waste with efficiency .Therefore Lean manufacturing is one of the best principle that can enable the manufacturing gain their competitive advantage to sustain their business .However, lean manufacturing has been implemented successfully in large organizations and very few evidences in small businesses (SMEs) especially in developing country like Malaysia (Achanga,2006).

Kanban is one of the tools in lean manufacturing. Kanban is a way for team and organizations to visualize their work identify and eliminate bottlenecks and achieve dramatic operational improvements in terms of throughput and quality Kanban is very powerful in manufacturing it not only a tools for reduce the waste but also focused on the work that's actively in progress. Once the team complete a work item, they will pluck to next work item off from the top of the backlog. The product owner is free to re-prioritize work in the backlog without disrupting the team, because of any changes outside the work does not impact the team. Even Kanban already introduce in 1940s but it still new in SME in Malaysia.

1.2   Problem statement

There got some typical problem that happen in paper mill industrial which already implement Kanban system but they still face a lot of problem in production line. For an example paper mail industrial always either cannot meet the order from customer or over production and result no place to fit it. Inefficient of Kanban system happen is due to few factors.

Adopting of Kanban which still in early state usually leak of communication between department. However this situation make the manufacturing over produce in large lot size and make the operation not smooth, like no enough space for storage, finish product at production area and make the process slow down. When paper mail industrial cannot meet the order from the customer, they need to pay the penalty according to the contract.

Most of the SME manufacturing in Malaysia are using PUSH-type batch manufacturing. By using this method the inventories of the product will keep in large quantity. Company that choosing this method because of more products produced, the lower of the production cost. This situation not actually good because of many of the product left unsold and need to save in warehouse .The more inventory produced , the more hidden cost that apply to the process, that include of transportation cost and storage cost is needed. Other than the extra cost that charged there is also hidden another risk, the finish good might be obsolete ,damage or stolen .Another problem of SME manufacturing is lose their competitive advantage compare to multinational manufacturing. Multinational manufacturing has higher technology and more mature operation system compare to SME.

1.3   Research Question

Regarding to this research, to see what are the critical factor that affect the efficiency of Kanban system

1.   What are the benefits of Kanban System in production line.

2.   What are the factors that affect the efficiency of Kanban system.

3.   What is the critical factor that affect the efficiency of Kanban system

1.4   Research Objective

The objective of this research is to understanding how adaption of Kanban system to increase efficiency in production line

1   To identify the benefit of Kanban system in production line .

2   To investigate the factor the affect the efficiency of Kanban system.

3   To evaluate the critical factor that affect the efficiency in Kanban system..

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1.5   Scope and limitation of the study

On this research, the scope of study is about to investigate the factor that increase the efficiency of Kanban in production line on paper mill industrial. Therefore to reduce the scope of study, the researcher find the various paper mail industrial. There is only 2 industrial paper mill in Malaysia that are YCS paper mill industrial that located in Krubong,Melaka and the another one is Muda Paper Mills industrial that located in Kajang, Selangor.

This study is not cover the east Malaysia because the researcher does not have any transport to make research in east Malaysia . To carry out this study the number of industrial is one of the biggest limitation for the researcher, this happen because there is only 2 paper mill industrial in west Malaysia

1.6   Significant to study

Implementing Lean and Kanban system in companies may dramatically enhance performance, leading to a breakthrough that saves time, improves quality, lowers costs ,reduces inventory and lead times, and gives increased revenue. Large organizations in other industries have achieved significant productivity improvements for decades through Lean methods, and a number of production have experienced less waste and reduced inventory as a result of Lean Manufacturing (Cost & Rothenberg, 2004) .Lean Manufacturing can also assure a continuous improvement of performance. Implement of Kanban system in paper mill industrial not only can reduce the cost ,it also can meet the demand of the market.One of the

important role of Kanban is the contribution of Malaysian economy. Kanban system can reduce the cost of manufacturing and maintain the quality that can benefit to all of the consumer. The research focuses exclusively on the production of paper mail industrial and will not take any part of the organizations beyond this into consideration.

1.7 Key Assumption

To answer the research question , the researcher assume that all of the respondent to be honest during answer the questionnaire. The cooperation from the respondent is very grateful and to collect the validity of data. Lastly ,this research is hopefully very practical and useful to all paper mail industrial.

CHAPTER 2

LITERATURE REVIEW

2.1   Introduction

On this section will described the theories of article can also theoretical framework. According to Wallace and Wray literature review is not just a series book and journal article but it is summarize what it about. In this chapter, the researcher will elaborate the research strategy. Literature review consist of lean manufacturing, Kanban system, Factor that affect efficiency of Kanban System,Lean in SME, and last one is theoretical framework.

2.2   Lean manufacturing

Lean mean slim, other word in industry is without waste. In lean manufacturing the waste is classified to 7 types, that are over-production waste, processing waste, transport waste, waiting-time waste, inventory waste, motion waste,

and last one is defects. The objective of lean manufacturing reduce waste in human effort and the limit of inventory, reach the market on time and managing manufacturing stocks that are highly responsive to customer while the production a good quality and meet to economical manner(bhim et al ,2010).

The concept of lean thinking (LT) original from Toyota Production System(TPS) that determined the value of any process and remove th non value added activities or step in the production line(Antony,2011). Lean manufacturing focuses on focuses on efficiency that produce by follow the order Just-in-time (JIT) with lower cost.

Womack,Jones and Roos describe that Toyota Production System is a process that focused in management to approach the aim of increase the customer value by reducing the waste and continuous improving process. Other than that, lean thinking also can be simply as correct specify and enhance value, identify the main stream value ,make the process flow become smooth and the production is based on customer pull (Womack and Jones,2003).

Today the lean production is not only remain popular in manufacturing but also from operational level to strategic level (hines et al,2014) and to beyond the manufacturing. Understanding of lean manufacturing should not only by technical question but also the existing relationship of the manufacturing and the other area of the firm.(Womack and Jones,1994)shoe manufacturer (Gati-wechler&Torer,2008),the supply chain for personal computer(Ben ,Naim,& Berry,1999). "the lean approach percolates into ever wider circle of operations, it ceases to be about practice and starts to become a part of the fabric of doing business"(Corbett 2007:96)

In this section the researcher explore and contrast lean at the operational level and lean at the strategic level notably in terms of the different types of learning that they presuppose. We then develop our theoretical approaches by drawing on the organizational learning literature, notably the work of Cook and Yanow (1993). Following a reflective discussion of the case, we conclude the paper with the implications of our analysis both for theory and practice. According to (Heize &Render,2005) the company never achieves a low-cost strategy without good inventory management.