A STUDY ON INVENTORY CONTROL SYSTEM PRACTICE IN KUANTAN
FOOD PROCESSING SMALL MEDIUM ENTERPRISE (SME)

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ABSTRACT

New era and globalisation world that every challenge mind and our mind has made people rated medium rise by building medium small industry. Business that start on a small scale is a site to a company until market their products in world market. Medium Small Enterprise (SME) is very important in building national economy. Therefore, this thesis discuss research related system inventory management used by company under small medium Enterprise (SME). Objective this thesis is to identify problem which occurred in system inventory management used wear by bakery manually record and produce one management system inventory control use software Microsoft Excel. Decision found, this system successfully produced and can be recycled for inventory management that is more efficient and fast. Apart from that, this system can reduce rate additional cost for paper printing to record inventory and it can also save space. Furthermore, this system can reduce cost stock that is excess.

ABSTRAK

Era pascaperindustrian dan pascaglobalisasi yang serba mencabar akal dan minda kita telah menjadikan rakyat yang bertaraf sederhana bangkit dengan membangunkan industri kecil sederhana. Perniagaan yang bermula secara kecil-kecilan adalah satu tapak untuk sesebuah syarikat sehingga memasarkan produk mereka di pasaran dunia. Industri Kecil Sederhana adalah sangat penting dalam membangunkan ekonomi negara. Oleh itu, tesis ini membincangkan penyelidikan berkaitan sistem pengurusan inventori yang digunakan oleh syarikat di bawah Industri kecil sederhana. Objektif tesis ini adalah untuk mengenalpasti masalah yang berlaku dalam sistem pengurusan inventori yang diguna pakai oleh bakeri secara manual rekod dan menghasilkan satu sistem pengurusan kawalan inventori menggunakan software Microsoft Excel. Keputusan didapati, sistem ini berjaya dihasilkan dan boleh digunapakai untuk pengurusan inventori yang lebih cekap dan pantas. Selain itu, sistem ini dapat mengurangkan kadar kos tambahan bagi percetakan kertas untuk merekod inventori dan ianya juga dapat menjimatkan ruang. Tambahan lagi, sistem ini dapat mengurangkan kadar kos stok yang berlebihan.

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LIST OF ABBREVIATIONS

SME	Small Medium Enterprise
ROP	Reorder Point
MRS	Manufacturing Related Service
IV	Independent Variable
DV	Dependent Variable
BOM	Bill Of Material
MP4	Music Player Version 4
VBA	Visual Basic Application

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

This chapter consists of problem background, problem statement, research objective, research question and scope of research, significance of research, theoretical framework, operational definition and expected result. The focus of this research is on the inventory control system practiced in Kuantan food processing Small Medium Enterprise (SME).

In business world, inventory is one of the most expensive assets of many companies. Good inventory management being crucial that have been recognize by operation managers around the globe. A company can reduce costs by reducing inventory. However, production may stop and customers become dissatisfied when an item being stock out. To meet a balance between inventory investment and customer service is one of the objectives for inventory management. A low-cost strategy cannot be achieved by the company without a good inventory management.

Small Medium Enterprise divided by three sectors which are agriculture, manufacturing and service. These three sectors consists their own definition. Author had been focus on manufacturing because food processing is included in manufacturing sector. Thus, an enterprise with full-time employees not exceeding 150 or with annual sales turnover not exceeding RM25 million are the general definition Small Medium Enterprise in term of manufacturing (include agro-based) and manufacturing related service (MRS). However in term of specifications, a small enterprise in manufacturing (including agro-based) and MRS is an enterprise with full-time employees of between 5 and 50 or with annual sales turnover of between RM250,000 and less than RM10

million. In short, the bakery X has six employees and two employers, the author decided this bakery was suitable as the place for research.

Nowadays, there is more small business open in Kuantan, especially in food processing sector. The good company are come from the good management. But the truly good businesses are come from the good inventory management. In Kuantan area, more company do not have the effective inventory management. Use the manual inventory record system and manual calculation are may lack of the inventory control.

This research is aiming to identify the weaknesses of using manual inventory record and develop a new inventory control system using Microsoft Excel to solve the problem in inventory management of investigated company.

1.2   PROBLEM BACKGROUND

In managing inventory there are also have issue that related with inventory management. Thus, there are four basic issues concerning inventory which are: 1) the costs included in the acquisition cost, 2) the valuation basis used for items in inventory, 3) the frequency with which inventory computations occur, perpetual or periodic and 4) the cost flow assumption used to trace the movement of costs into and out of inventory, which doesn't necessarily represent physical flow of inventory. Relating with this research topic, which is to identify the weaknesses of using manual inventory record system. Base on this issue, the author know that the issue are the lack of inventory management.

Before the research had been conducted, the author had been made an observation between two bakeries that located at Kuantan. The finding from the observation, the author identified that both of these bakery do not have appropriate way in managing their inventory record. The bakery only use bundle of paper and books to record the entire of the inventory. This situation may lack of the bakery in managing their inventory.

Moreover, the author identified that, the bakery just use assuming number to make order from the supplier. They do not have efficient way in managing their inventory. When make assumption, they do not know how much the truly amount to order. The more stock in hand it can cause the high cost if the stock do not sold. If the stock less, it may made the bakery loss the profit and loss the regular customer.

Therefore, the author want help the SME bakery to managing their inventory to be more effective and efficient using Microsoft Excel.

1.3   PROBLEM STATEMENT

A challenge faced by many small business owners is the maintenance of a proper product inventory. Unlike large chains, small businesses rarely have the luxury of abundant storage space, so owners must be vigilant to ensure they don't run out of key items or carry too much inventory. Among problem that have been identified during interview session as follows: 1) entrepreneur just estimate the value of inventory to order from supplier, 2) limited space for small business company and take more place for documentation of inventory stock card, 3) there are error in calculation reorder inventory to supplier which is unbalance need of material, and 4) entrepreneur have limited knowledge about good inventory management.

The manual record system is the cause of the failure inventory management to be effective inventory management. The owner just assume how much to reorder the inventory and does not know the accurate value and time. Small Business Company mostly used a stock card for inventory management record. This may lack of the owner to lose the stock card. They just learn from the elders that do not have knowledge about managing inventory to be more efficient but they only have a little experience about inventory management.

1.4   RESEARCH OBJECTIVES

   i.   To identify the problem or weaknesses of manual inventory record system of SME.

  ii.   To develop Inventory Control system using Microsoft Excel.

1.5   RESEARCH QUESTIONS

   i.   What are the problems or weaknesses of manual inventory record system?

1.6   SCOPE OF RESEARCH

This research will be focus on the inventory management at Bakery X from food processing Small Medium Enterprise in Kuantan. This research had been conducted with interview session and observation to get inventory data. Interview session had been held with the owner of the company and production plan executive from month of June to November 2013. The observation had been conducted to observe the bakery activities such as how much the inventory that will be ordered, when the order is received and how the bakery manage their inventory record.

From the interview author had been identified the problem that occur when use the manual inventory record and get requirement data to develop Inventory Control system using Microsoft Excel. According to research objective which is to identify the problem or weaknesses of using manual inventory record of SME and to develop inventory control system using Microsoft Excel, this research need to observe the stock that use, receive and out from the storage. Besides the author need to know the flow of production plan in the bakery X.

1.7   SIGNIFICANCE OF RESEARCH

This research, is mainly focused on the weaknesses of traditional reorder point system that used by food processing SME. This research will be come out the developing a new Inventory Control system using Microsoft Excel that can be used by the computer for entrepreneur food processing SME. Besides, the Inventory Control system can help the entrepreneur to be easy in handling their inventory. The automate calculation from Microsoft Excel for replenish stock item will easier for entrepreneur to

make order. Apart from that, entrepreneur does not need the more space for documentation of their inventory record data (stock card).

In addition, entrepreneur does not take more cost to send the employees for training to use the new system. Compare to company that use the current MRP software in the market place that are higher cost to buy the software and send the employees for training.
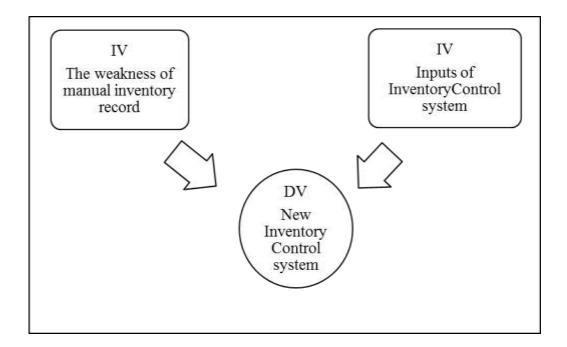
1.8   THEORETICAL FRAMEWORK

Figure 2.1: Theoretical framework`

1.9   OPERATIONAL DEFINITIONS

i.   Master Production Schedule

According to Heizer and Render (2011) believe that master production schedule is a time table that specifies what is to be made Stevenson (2012) postulate in his book, master schedule is one of three primary inputs in MRP, states which end items are to be produced, when these are needed and in what quantities.

ii.   Cumulative Lead Time

Cumulative lead time means that the sum of the lead times that sequential phases of a process require, from ordering of parts or raw materials to completion of final assembly said by Stevenson (2012).

iii.   Order Lead Time

According to Mercado (2008) order lead time is period between placing a replenishment order and the time it is actually received.

iv.   Inventory

Drury (1996) defined inventory as a stock of goods that is maintained by a business in anticipation of some future demand. This definition similarly postulate by Schroeder (2000) who stressed that inventory management has an impact on all business functions, particularly operations, marketing, accounting, and finance.

v.   Inventory Control

Inventory control is a planned approach of determining what and when to order and how much to order and how much to stock so that costs associated with buying and storing are optimal without interrupting production and sales (Scribd, 2013).

vi.   Reorder Point

Heizer and Render (2011) stipulates that reorder point system is the inventory level (point) at which action is taken to replenish the stocked item.

vii.   Dependent Demand

Dependent demand is related and caused by independent demand. It is mutually dependent with each other (Haugen, 1997).

viii.   Finished Good

Finish product that ready to be shipped out to customer (Mercado,2008)

ix.   Inventory Master Record

The inventory master record contains all the relevant information about a part number that is being set up (Mercado,2008)

CHAPTER 2

LITERATURE REVIEW

2.1   INTRODUCTION

This chapter purpose to review of past research efforts that relate with the problem or the weaknesses of using manual record for inventory control system and the inventory control system software in the current market.

This research attempts to fill the gap relating to automate the inventory control system using Microsoft Excel and to find out the weakness of the manual record inventory management. It is also to provide useful information which may permit users to get a better understanding on how to implement the inventory control systems. This had been done by investigating the state of the art of inventory control systems implementation from the point of view of inventory management users within the food production in Kuantan SME's.

2.2   THE WEAKNESSES OR PROBLEM OF INVENTORY CONTROL SYSTEM

Even the smallest businesses need to implement some form of inventory control system to keep an accurate merchandise count, as well as for accounting purposes. Business owners generally have a choice between using a computerized or a manual inventory system. A manual system offers a number of potential advantages and disadvantages.

Joseph (2013) advocates that there are two factor weaknesses of the manual calculation inventory system which are labour-intensive and human error. Labour-intensive can be highly to operate using manual inventory system. They need

continuous monitoring ensure that each transaction explain and that product maintained at a level suitable stocking. It's also more difficult share information inventory during business, because lack computing makes use inventory records process that more troublesome. Time spend monitor inventory levels could be used on activities more productive for the business.

A manual inventory system depends with many in active person, which increases possibility human error. The person may forget to record a transaction or only the wrong count number of items. This decision on additional order need not which increase has inventory costs of company and use valuable storage space. Calculation physical inaccurate can also result in not ordering really a product, meaning business could run out a single item criticality in wrong time.

2.3 INVENTORY CONTROL SYSTEM

2.3.1 Definition of Inventory

Inventory had been defined in many ways. Ballou, 2004 state that the inventories are stockpiles of raw materials, suppliers, components, work in process, and finished goods that appear at numerous points throughout a firm's production and logistics channel. In other hands, Chase, Jacobs and Aquilano, 2004 believe that inventory is the stock of any item or resource used in an organisation. An inventory system is the set of policies and controls that monitor levels of inventory and determine what levels should be maintained, when stock should be replenished, and how large orders should be.

In addition, Kotler, 2000 postulate that inventory management refers to the entire activities involved in developing and managing the inventory levels of raw materials, semi-finished materials (work-in-progress) and finished good so that adequate supplies are available and the costs of over or under stocks are low. Beside,

2.3.2   Inventory Classification Models

Inventory classification models help to allocate time and money in inventory management from one hand and system classifications enables company into accord with various product line and a deal units keep stock to player more. Therefore, Bloomberg, Lemay and Hanna, 2002 had identified two related models classification inventory. These models will be discussed to provide background information on classification inventory.

1.   ABC Analysis

Bloomberg, Lemay and Hanna, 2002 claim that analysis ABC classifies product based on interest. Interest possibly come from cash flow, waiting time, stock out, stock out cost, sales volume, or profit. Once factor fractionation chosen, breakpoint selected for Satu, B, C and so on.

In addition, Ballou, 2004 state that another use always concept 80-20 and a ABC classification is to gather product at a warehouse, or other point stocking, at one limited number category where they are then managed with various levels the existence of stock. Product classification is arbitrary. Point is not all product item must be taken on treatment same logistics. Percentage of 80-20 concepts with a classification product produced give a scheme, based activity on sales, to determine product which would receive various logistics treatment level.

2.   Critical Value Analysis

Critical value analysis (CVA) pays more attention to C items. Although it ranks products similarly to ABC, CVA analyses products based on stock out rates. Normally using three to five categories, CVA could evaluate products as follows:

- Top priority: critical item, and no stock outs are permitted.
- High priority: essential item, but limited stock outs are permitted.
- Medium priority: necessary item, but occasional stock out permitted.
- Low priority: desirable item, but stock outs are allowed.
- Lowest priority: needed item, but stock outs are permitted on a wide basis.

Stock out rates is assigned subjectively to each category. Top priority items might have zero stock outs, high priority items a 3 percent stock out rate, medium priority a rate of 6 percent, low priority 10 percent, and lowest priority 15 percent.

2.3.3 Inventory Control System

Inventory control system is the activity that hold availability item to clients. It purchase coordinates, manufacturing and distribution function meet marketing need. This role includes the supply of current sales items, new products, consumables, spare parts, obsolescent items and all other supplies, Wild, 2002. Besides, Wild believe that the purpose of the inventory control function in supporting the business activities is to optimise the following three targets: 1) customer service, 2) inventory costs and 3) operating costs.

Policy is most profitable is not to optimize one of this at the expense of others. Inventory Control has to make value judgement. If there is no profit, company go out of business in short period. If poor customer service, so customer lost and company go out of business in longer term. Remains that finance and marketing aspect is answer: guard stock have a fine judgement make.

In the customer service, it can be considered in several ways, hinge at type of demand. At one service ordinary shop environment will usually is taken as 'stock of former availability'. While at one supply to customer specification, service expected is accurate delivery in time fight against customer asks date.

Inventory costs, it requires a minimum cost I stock. Is should be considered carefully, since that having any stocks in stores for a few months is bad practice. In minimising the stock usually may attending to the major costs which is: very low-value items are not considered a significant problem. The low inventory or the store restricted, the size of the items will also be a major consideration.

Operating cost had become more of an issue for has been placed on inventory management. Operating cost is prime are those associated with operation shops, inventory control, buy and service which related. Logistic development, linking distribution cost with inventory, had increased this fresh bait transportation cost to analysis.

2.4 INTRODUCTION TO MICROSOFT EXCEL

Microsoft Excel is an example of a programme call a "spreadsheet." Spreadsheet used to order data real world, like a check tabular book or a rolodex. Microsoft Excel is available on both PCs and Macs, so what you learn in class today should be applicable to any computer you use. The program may look slightly different depending on the version and computer that you're using, but Microsoft Excel will function in the same basic ways.

2.5 BENEFIT OF USING MICROSOFT EXCEL IN SMALL BUSINESS

In business world, entrepreneur will fairly obvious that Microsoft Excel give benefit either in small business or big business. Microsoft Excel are fairly use that relate with data, chart, financial information and other relating data. There are some benefits if Microsoft Excel will apply in small business.

First, Microsoft Excel will build a great chart claims by Williams (2013). A great chart, are using pie charts, graphs and clustered columns adds meaning to data, which otherwise may just exist as row after row of numbers. Excel also will recommend the related chart that should be use according the X data axis and Y data axis.

Second, it also use for conditional formatting. For example, users can format their spreadsheets using different colour shades, bolds and italics, to differentiate between columns and bring the most important data to the fore. It will give more attract for example during the financial presentation, the user can show the different thing using different colour column.

Third, Microsoft Excel is low cost software. It's suitable for many user to have it and use it. It do not use more cost to go for training to learn about this software compare to others software. Microsoft Excel is more user friendly, that everybody can easily to access with it.

Fourth, Microsoft Excel has more function that can develop more applications. For example, usually more company use Microsoft Excel to develop application for their financial department for record. Thus, the researcher will use the Microsoft Excel

to develop Material Requirement Planning as the application for inventory management in food processing SME.

2.6 INVENTORY MANAGEMENT SOFTWARE

There are several type of inventory management in market world. Most of the inventory management system software are highly cost to buy it. However, there is also free software that can be downloading it from the website. The software is good to use it but, the company should know how to use it. Some of the software are need to know deeply before using it. The software only can be used by other professional and cannot be used by low class business.

One of the most popular software is Wasp Bar Code. This software is commonly used by the big business company such as Hypermarket. There is several type of Wasp Bar Code product. Wasp Inventory Control is the complete inventory tracking system for small businesses. Dramatically increase profitability with an automated, user-friendly approach to inventory management. Inventory Control provides the ability to accurately track inventory, without the expense of a solution typically reserved for large businesses.

Top five free software which are Post Maid, inflow Inventory, ABC Inventory Software, BS1 Enterprise Accounting and Chronos eStock Card Inventory Software. All the software was free and can easily download from the website. However, the entrepreneur of the small business, they do not have the knowledge about the software and how to manage the inventory.

2.7   CONCLUSION

As a conclusion, the advantage of Microsoft Excel can help the entrepreneur to solve their inventory management problem with new application. The weaknesses or the problem of manual record system in inventory record system can be solving using Microsoft Excel.

CHAPTER 3

RESEARCH METHODOLOGY

3.1   INTRODUCTION

This chapter will discuss the detail about the methods or instruments used to conduct the research on the inventory control system practice in Kuantan food processing. This chapter will be discuss the method and step on how to develop the inventory control system using Microsoft Excel.

3.2   DATA COLLECTION METHOD

This research had used primary and secondary data sources to complete research objective. The secondary data will support the primary data that are come from previous research.

3.2.1   Primary Data Sources

Specifically to address the problem in question and conducted by the decision maker, a firm or a university are definition of primary data sources (Curtis). There are several samples of sources for primary data which are: survey, interview and experiments such as taste test. Primary data sources may have some cost and time to collect the data. However, researcher decides to use observation and interview to collect the data. There are some data that required in developing MRP system.

i.   Interview

The owner of the company had been interviewed the owner of the Bakery X. Driscoll (2011) observed that one of the keys to a successful interview is choosing the right person to interview. When choose the right person the interviewee could not be afraid to ask any question to the interviewer. The period of time that had been taken for