

ST.MARY'S UNIVERSITY COLLEGE

BUSINESS FACULTY

DEPARTMENT OF MANAGEMENT

**JUST IN TIME OPPORTUNITIES AND CHALLENGES:
THE CASE OF BERHANENA SELAM PRINTING ENTERPRISE
(B.S.P.E.)**

BY

MERON SEIFU

JUNE 2011

SMUC

ADDIS ABABA

ST. MARY'S UNIVERSITY COLLEGE
FACULTY OF BUSINESS
DEPARTMENT OF MANAGEMENT

BY
Meron Seifu

Just In Time Opportunities and Challenges:
The Case of Berhanena Selam Printing Enterprise (B.S.P.E.)

A SENIOR ESSAY SUBMITTED TO
THE DEPARTMENT OF MANAGEMENT, BUSINESS FACULTY
ST. MARY'S UNIVERSITY COLLEGE

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
BACHELOR OF ART IN MANAGEMENT

June, 2011
SMUC
ADDIS ABABA

ST. MARY'S UNIVERSITY COLLEGE

**Just In Time Opportunities and Challenges:
The Case of Berhanena Selam Printing Enterprise (B.S.P.E.)**

BY
Meron Seifu

FACULTY OF BUSINESS
DEPARTMENT OF MANAGEMENT

Approved by the Committee of Examiners

Department Head

Signature

Advisor

Signature

Examiner, External

Signature

Examiner, Internal

Signature

ACKNOWLEDGEMENTS

I would like to express my heartfelt gratitude to my advisor Ato Daniel Meread for his creative guidance, critical comments and suggestion and unreserved encouragement for shaping this paper rights from inception up in until its completion.

I am also indebted to the employees of Berhanena Selam Printing Enterprise; for their cooperation to fill the questionnaire especially Head of supplies management (Ato Fikadu Lemma), for his valuable information and cooperation in all directions. In addition I would like to thanks W/z Saba Yayeh (supplies management department), for her constructive criticism and cooperation.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS	v
LIST OF TABLES	vi
LIST OF FIGURES	vii
CHAPTER ONE	1
INTRODUCTION.....	1
1.1. Background of the Organization	1
1.2. Background of the Study.....	2
1.3. Statement of the Problem.....	3
1.4. Research Questions	4
1.5. Objectives of the Study.....	4
1.6. Significance of the Study	4
1.7. Delimitation of the Study.....	5
1.8. Definition of Terms.....	5
1.9. Research Design and Methodologies.....	5
1.9.1. Research Design.....	5
1.9.2. Population and Sampling Techniques	5
1.9.3. Types of Data Collected.....	6
1.9.4. Techniques of Data Collection.....	6
1.9.5. Data Analysis Technique	6
1.10. Limitation of the Study	6
1.11. Organization of the Study	6
CHAPTER TWO.....	7
REVIEW OF RELATED LITERATURE	7
2.1. What is Just In Time (JIT)?	7
2.2. Objectives of JIT Manufacturing.....	9
2.3. Building Blocks of JIT	10
2.4. Characteristics of JIT System.....	12
2.5. JIT Purchasing	13
2.6. Benefits of JIT system	14
2.7. JIT Interdependencies.....	15
2.8. Key Elements of JIT	15
2.9. Basic Principles	20
2.10. Lean Manufacturing.....	23
CHAPTER THREE.....	25
DATA PRESENTATION, ANALYSIS AND INTERPRETATION.....	25
3.1. General Characteristics of the respondents	25
3.2. Analysis of the major Findings of the Study	28
3.3. Analysis of Interview.....	33
CHAPTER FOUR.....	35
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	35
4.1. Summary.....	35
4.2. Conclusions	36
4.3. Recommendations	37
REFERENCES	
APPENDICES	
A. Questionnaire for Employees [English Version]	
B. Interview Questionnaire for Supplies Management Head	

LIST OF TABLES

	Page
Table 1: Sex and Age composition of employees -----	25
Table 2: Years of service and Education level of employees-----	26
Table 3: Profiles of respondents-----	27
Table 4: The importance of inventory control for the enterprise -----	28
Table 5: Recognize need for purchase Analysis -----	29
Table 6: Major risks associated with the current inventory control system -----	29
Table 7: Storage system activity in B.S.P.E. -----	30
Table 8: Respondents that have knowledge about JIT -----	30
Table 9: Opportunities will created by Just-in-time (JIT) -----	31
Table 10: Challenges will encountered during JIT implementation -----	32
Table 11: General attitude of employees towards JIT -----	32

LIST OF FIGURES

Page

Figure 2.1: Summary of JIT goals and building blocks -----12

Figure 2.2: Traditional supplier network compared to supplier tiers -----22

CHAPTER ONE

INTRODUCTION

1.1. Background of the Organization

Berhanena Selam Printing Enterprise (B.S.P.E.) is the first pioneer printing enterprise in Ethiopia. It was established in 1914 by the crown prince of Ethiopia, 'Leul Alga Worash Ras Teferi Mekonen' (Source: Organization profile).

At the beginning, it was known by the name "Ethiopian Government Regent Ras Teferi Mekonnen Printing press." Then the name changed to "Haile Selassie I Emperor of Ethiopia Printing Press" (Source: Organization profile).

After the February 1974, Ethiopian Revolution (During the Derg regime) in August the printing press become nationalized .In August 1975, B.S.P.E., like other printing Enterprises, started to be managed under the Ethiopian printing corporation.

However, after the arrival of the new regime is under the management of the federal government, a Board of Directors controls the enterprise.

The enterprise has 843 employees (line staff 478 and support staff 365) from this 326 are females and the rest 517 are males. 35 of the employees are store workers. In general, the enterprise is profitable, and its current capital is around 41million birr. In order to maintain its profitability, B.S.P.E. has developed a strategy for the next 5 years.

There are eight types of warehouses in B.S.P.E. classified based on the nature of materials such as raw materials, spare parts, and finished goods.

- Ink and chemical store
- Real paper store
- Ream paper store
- Stationary item store
- Finished goods store
- Spare part store

- Publicans' store
- Scarp paper store

1.2. Background of the Study

Historically, manufacturers built large storage areas and filled them with materials, parts, and supplies that would be needed days, weeks, and even months in the future. This trend has been, however, unproductive and there is a need for an alternate that eliminates waste parts, as they needed.

In 1970's the introduction of the Just- in -time (JIT) philosophy fulfill the demand even above expected. The roots of the JIT system can probably be traced to the Japanese environment owing to a lack of space and natural resources, the Japanese have developed an aversion to waste. The JIT system is much less inventory, low costs and better quality than the traditional approach ,which provide just- in- case (JIC) they are needed.

In JIT production system, raw material and parts are purchased or produced just in time to be used at each stage of the production process.

This approach to inventory management brings considerable cost saving from inventory levels.

JIT system is the pull approach to controlling manufacturing. This pulls system of production management, which characterized the JIT approach result in a smooth flow of production and significantly relived inventory level. The result is considerable cost saving for the manufacturer (Chase, B. and Aquilano, J. pp. 456).

A primary goal of a JIT production system is to reduce or eliminate inventories at every stage of production, from raw materials to finished goods. The JIT philosophy, made famous by Toyota, has been credited with the success of many of the world's leading manufacturers. Effective cost saving has been realized by many companies that has adopted the JIT approach.

Eventhough, JIT system was originally developed in Japan, there nothing culturally inherent in the JIT system that prevents companies anywhere in the world from using it or improving on it. Therefore, this paper tries to describe some concrete results that have been achieved from the JIT system and the implementation approach designed to gain maximum benefit from JIT, by taking the case of Berhanena Selam Printing Enterprise (B.S.P.E). Furthermore, this paper tries to pinpoint the challenges that B.S.P.E. facing if the enterprise applying the system and to increment JIT's merits.

1.3. Statement of the Problem

Firms lose high amount of money due to having high amount of inventory at hand, which brings cost of storage space, security, insurance, and working capital tied up in inventory. Having too low inventory faces ordering cost, which includes clerical cost of preparing purchase order, time spent, and mainly disrupted production when raw materials are unavailable. The conflicting natures of these two types of costs bring in to being a decision problem what to order, how much to order and when to order.

Since its establishment in Meskerem 1914, Berhanena Selam Printing Enterprise (B.S.P.E) has undergone enormous structural as well as operational improvements. The major problems that B.S.P.E. facing regarding to inventory management is the way of ordering, receiving and checking of materials against the purchase order. Based on the information getting from the system users those problems leads to obsolescence and wastage and being out of stock.

The JIT system main objective is that avoiding wastage by reducing inventory level, so to exploit the merits of applying JIT B.S.P.E can use the system to improve its inventory management activities. However, the internalization of the JIT concept has its own opportunities and challenges. Therefore, it is necessary to conduct research to study the opportunities and challenges of JIT's implementation.

1.4. Research Questions

The key research questions of this essay deals with the following basic ideas in order to draw a conclusion and strategic recommendation.

1. What major opportunities are creating by applying the JIT system?
2. What major challenges are (B.S.P.E) facing by applying the system?
3. What factors contribute for the successful implementation of JIT?

1.5. Objectives of the Study

General Objective of the study

The general objective of this study is to describe the major opportunities and challenges of the JIT system in the case of B.S.P.E.

Specific Objectives of the study

This study was conducted to accomplish the following specific objectives

- To assess the major opportunities those are creating by applying the JIT system.
- To identify the major challenges B.S.P.E. facing by applying the JIT system.
- To investigate factors that contributes for the successful implementation of JIT.

1.6. Significance of the Study

This study tries to add value by providing knowledge about the Just-in-time (JIT) system and its major contribution to the inventory management system and provide recommendation. Based on the relevant facts gathered from this study, those companies using the traditional approach can get as to the JIT's advantage over the prevailing system they use. Consequently, the opportunities will be incremented while prior know how and preparation is set to the challenges. It serves as a supplementary reference for those who might be interested in doing research on similar topic.

1.7. Delimitation of the Study

Eventhough, JIT goes firms beyond inventory control and encompasses the entire system of production, it is describe in this paper only with its aspects related to the inventory management systems. In addition, due to financial and time constraints this study covers only four departments of the organization such as, Store, Receiving, Finance, and Administration and Human Resource as well as the data analysis, interpretation and the conclusion only on the Berhanena Selam Printing Enterprise (B.S.P.E).

1.8. Definition of Terms

Just- in -time (JIT):- It is a technique used to reducing inventories and the dual objectives are to reduce waste and increase productivity. Its concept is most applicable to manufacturing operation and result in the following supply chain: reduced benefits inventory, increased quality, reduce lead-time, reduce scarp and rework, and reduce equipment down time (Dobler, W. and N. Burt 1996: pp.412).

1.9. Research Design and Method

1.9.1. Research Design

The research method used to achieve the objective of the study, is Descriptive method because the study only tries to describe or narrate the JIT system opportunities and challenges in the case of B.S.P.E.

1.9.2. Population and Sampling Techniques

Target population

The study encompasses the four concerned departments of the organization such as Stores, Receiving, Finance, and Administration and Human resource, accordingly all 160 employees of those departments was considered as the total population for the study.

Sampling

The full lists of the entire population was considered as a basis for a systematic random Sampling Technique .Therefore, out of the total population, 48 (30% of the total population) was considered for the study and the skip interval was 3.

1.9.3. Types of Data Collected

To obtain the necessary information for the study both primary and secondary source of data used. A primary data mainly bring together from questionnaire and personal interview. Secondary data source, such as unpublished annual reports, different related literatures, internet, and other sources.

1.9.4. Techniques of Data Collection

A primary data mainly was collected using questionnaires (that involves open and close ended questions) and Interview was conducted with Supplies Management Head).

1.9.5. Data Analysis Technique

In this study both quantitative and descriptive methods of analysis was carried out, tables are drawn to facilitate the informativeness of the study.

1.10. Limitation of the Study

There is difficulty of finding exemplary companies due to the Just in time (JIT) system low applicability in our country.

1.11. Organization of the Study

This study has four chapters. The first chapter deals with the introduction part, which includes Background of the study, Statement of the problem, Objectives, Significance, and Scope of the study and Methodologies. The second chapter is on the conceptual review of related literature towards JIT. The third chapter is about data analysis and interpretation and the final chapter was signifying Summary, Conclusions, and Recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1. What is Just In Time (JIT)?

As a philosophy, JIT's primarily goal is the elimination of waste in the production system. Anything that does not add value to the product in the system is waste. Rework and scrap are obvious wastes and should be eliminated. Less obvious as a source of waste is inventory. Consider inventory work centers; there is no value added by allowing this inventory to sit there, and therefore it is considered waste. The name JIT epitomizes the concept of reduced inventory; Get the material to the next work center or customer just in time for the next production step. If this is done, the inventory between production stages is reduced. JIT has, as its basics, the concept that the right part should be at the right place at the right time (Narasimhan, L. and Others, 2005: P-451).

It is a technique used to reducing inventories and the dual objectives are to reduce waste and increase productivity. Its concept is most applicable to manufacturing operation and result in the following supply chain: reduced benefits inventory, increased quality, reduce lead-time, reduce scarp and rework, and reduce equipment down time (Dobler, W. and N. Burt, 1996: P-509).

According to William J. Stevenson, the term JIT is used to refer to a production system in which both the movement of goods during production and deliveries from suppliers are carefully timed so that at each step of the process the next (usually small) batch arrives for processing just as the preceding batch is completed –thus the name, just-in-time. The result is a system with no idle items waiting to be processed and no idle workers or equipment waiting for items to process. The just-in-time phenomenon is characteristics of lean production system, which operate with very little “fat” (e.g. excess inventory, extra workers, and wasted space). JIT pertains to the timing of the flow of parts and material through the system, and the timing of services. Companies that employ the JIT approach typically enjoy a competitive advantage over companies that use a more traditional approach; they have lower processing costs, fewer defectives, greater flexibility, and are able to bring new or improved products to the market more quickly. One aspects of JIT

involves production planning and control, which makes JIT one of the two basic approach manufacturing planning and control; the other is material requirement planning.

As K. Shridhara Bhat, JIT encompasses the successful execution of all manufacturing activities required to produce a final product, from design to delivery and including all stages of conversion raw materials onward. The primary elements of JIT are to have only the required inventory when needed to improve quality to zero defects, to reduce lead times by reducing set up times, que-lengths and lots sizes, to incrementally revise operations themselves and to accomplish these things at minimum cost.

In short, JIT means:

- I) Producing the quantity of units that is needed, no more or no less.
- II) Producing them on the date at the time required, not before, not after.

Just in time is a system largely developed to enhance productivity and reduce cost by removing waste from production. The Just in Time system is a way of planning operation that reduces variability of demand, enhances responsiveness of operational resources, and attempts to conduct value-adding operations as possible to the time that value is consumed. The primary goal of JIT is to achieve zero inventories within an organization as well as throughout the entire supply chain. This is achieved by questioning each every aspect of stock at raw materials stores, in-process buffers, etc. This is primarily to find out important causes for unnecessary stock at various points. A detailed analysis of these causes would further breakdown the major causes in to a wide range of reasons for holding excessive stock. "Just-in-time" is not a jargon term or a new concept. It represents a goal. That goal is the ultimate total in elimination of inventory, minimal work- in- progress and is monitored by a constant reduction in so-called working capital. It can be achieved only because of a fundamental change in management thinking and industrial cultural values (Hanna, D. and Newman W, 2002: P-479)

Just in time system is a tool to minimize inventory investment by having only Work in process (WIP) inventory turnover can be increased, which will result in a higher profit margin. This eliminates the need for safety stocks and reduce inventory on hand. However, there must be extensive coordination between the company, supplier, and

shipping company to meet schedules for the production line. If a supplier or shipping company to meet schedules for the production line. If supplier or shipping cannot meet the schedules, the production will halt, as this the case with quantity problems. They summarize JIT as a system for efficiency for production, material, and delivery. JIT has its roots in repetitive manufacturing, which is approximately the same as mass production. Repetitive manufacturing involves the production of standardize discrete products in high volume. Just-in-Time production is based on the logic that nothing will be produced until it is needed. JIT sometimes called "lean production" has become the dominate design approach in modern manufacturing. JIT began in Japan and the person created with the idea is Taiichi Ohno, who was vice president of manufacturing in Japan's Toyota motor company pant. Just -in -Time production requires the production of precisely the necessary units the necessary quantities at the necessary time, with the objective of achieving plus or minus zero performance to schedule. It means that producing one extra piece is just as bad as being one piece short. In fact, anything over the minimum amount necessary is viewed as waste, since effort and material expended for something not needed now cannot be utilized how. Under Just-in-time, the ideal lot size is one piece. The Japanese view the manufacturing process as a giant network of interconnected work centers where the perfect arrangement would be to have each worker complete his or her task and part and pass it directly to the next worker just as that person was ready for another piece.

The idea is to drive all queues to ward zero in order to: Minimize inventory investment shorten production lead times react faster to a changes uncover any quality problems. However, some of JIT concepts are also being used for job lot or batch production, which is inherently non-repetitive in nature and JIT, is spreading to service industries too. When just-in time is used in the context of services, the focus is often on the time needed to provide a service-because speed is often an important order winner for services. Some services do have inventories of some sort, so inventory reduction is another aspect of JIT that can apply to services.

2.2. Objectives of JIT Manufacturing

The ultimate goal or objective of JIT system is a balanced system that is one that achieves a smooth, rapid flow of materials through the system. The idea is to reduce the process time

to as low as possible by making best of the resources. The specific goal or objective is to provide the right quality level at the right place. JIT tries to build only what internal (employees), external customers want, and when they want it.

The supporting goals or objectives of JIT are:

- Produce only the products that customers want
- Produce products only as quickly as customers want to use them.
- Produce products with perfect quality.
- Produce products with features that customers want.
- Produce with no waste of labor, materials and equipment and with zero inventories.

The major focus in JIT is on reduction of wastes. Waste includes:

- Over production
- Waiting time or delays
- Unnecessary handling or transportation
- Unnecessary inventory
- Processing waste (scrap)
- Inefficient work methods (waste of labor effort)
- Defective products (Bhat, K. 2003: P- 636).

2.3. Building Blocks of JIT

According to K. Shridhara Bhat, the design and of operation of a JIT system provide the foundation to achieve the goal or objective of JIT system. The four building blocks of this foundation are:

Product design

Three elements of product design that are key to JIT system are:

- Standard parts
- Modular design and
- Quality

Process design

Seven aspects of process design that are particularly important for JIT systems are:

- Small lots sizes

- Set up time reduction
- Cellular manufacturing
- Limited work in process inventory
- Quality improvement and
- Minimum inventory

Personnel organizational elements

Five elements of organizational elements are:

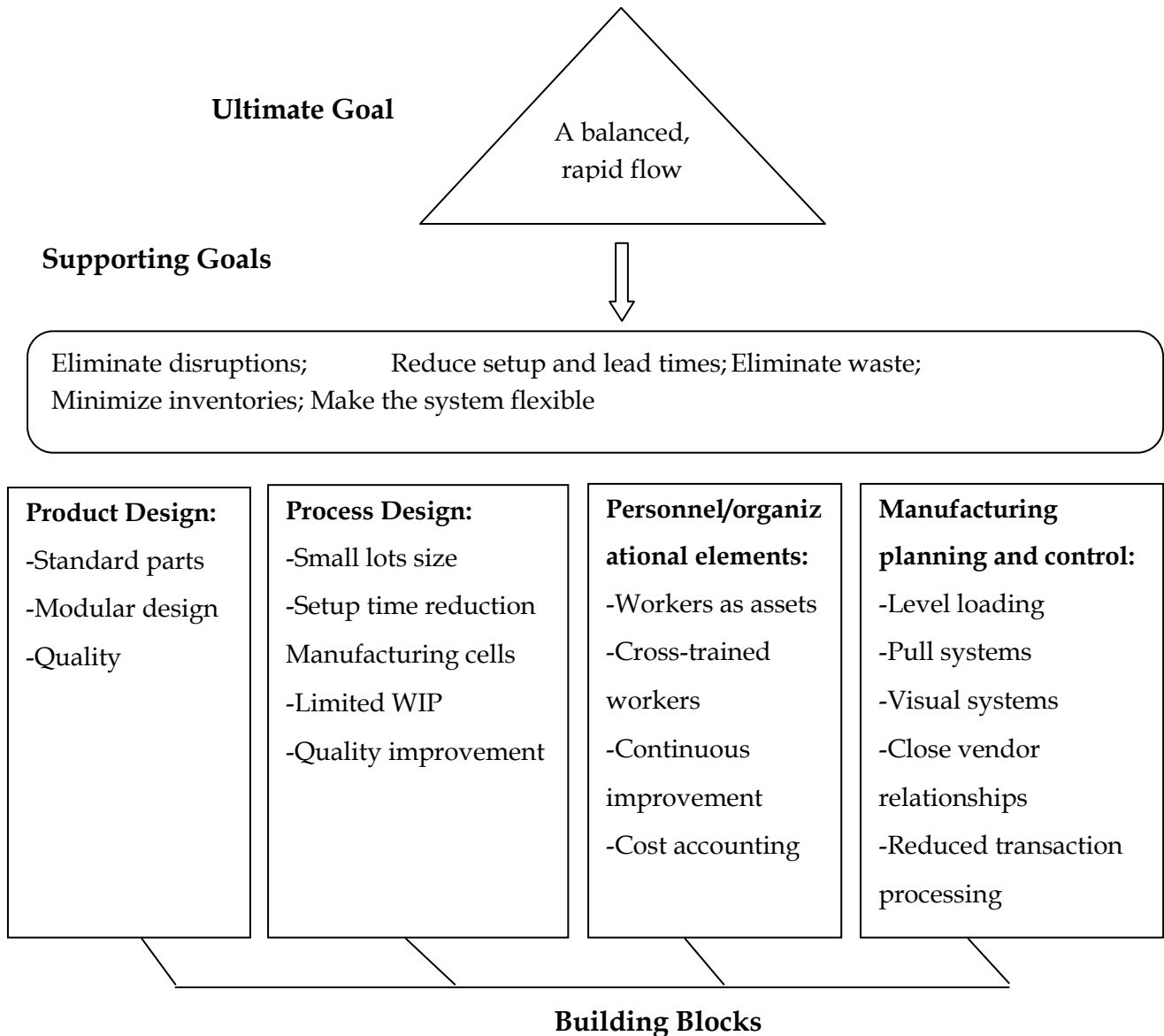
- Worker as asset
- Cross-trained (multi- skilled) workers
- Continuous improvement
- Cost accounting and

Manufacturing Planning and Control

Five elements of manufacturing planning and control are:

- Level loading
- Pull systems
- Visual systems (kanaban)
- Close vendor relationships
- Reduced transaction processing

Figure 2.1: Summary of JIT goals and building blocks



Source: William J. Stevenson, 1999: P-680.

2.4. Characteristics of JIT System

The salient characteristics are:

- Pull method of material flow
- Constantly high quality
- Small lots sizes
- Uniform work station load

- Standard components and work methods
- Close supplier ties
- Flexible workforce
- Line flow strategy
- Automated production
- Total preventive maintenance (Bhat, K, 2003: P-637).

2.5. JIT Purchasing

A popular strategy for implementing JIT is to start the process within a manufacturing facility, reduce inventory, and speed the flow through the plant. At some point, it becomes obvious that those who supply materials to the plant must participate in the process to gain the full advantage. If large batch arrive at the dock only to be moved one by one through the plant, total inventory may not decrease much; the raw material and purchased parts inventory is still large. The quality imperative may not be forced upon suppliers because there still may be defective units in the large batches. Defective units that come out of stockroom are then disruptive to the production process.

Suppliers are instructed to deliver small batches more frequently than before. If the supplier is local, daily batches may be appropriate. To have a supplier desire to deliver in a JIT manner, a firm should have a requirements schedule that is relatively certain for some period in to the future .suppliers can then schedule their production to match the requirements of the buyer. The benefits of JIT are significant to both the supplier and the buyer. The buyer gets to move the product directly on to the shop floor for immediate use, reducing the amount of stockroom space needed. Quality must be high, and supplier is considered a partner with a firm and may be first to considered for supplying other parts and future contracts. When a supplier takes on the JIT philosophy, a JIT program will exist in that plant. When JIT was first introduced in the United States and firms were asking suppliers to deliver on a daily basis, some supplier did not really undertake JIT. A supplier should undertake JIT throughout an operation so that the benefits can be realized there also. The buyer pays and if the supplier can reduce waste and cost, then the reduced cost can be passed to the buyer through reduced prices.

According to K. Shridhara Bhat, JIT purchasing has the same pull type approach used in JIT manufacturing, applied to purchasing shipment of parts from suppliers. The essentials of JIT purchasing are:

- Supplier-development and supplier relationship
- Long-term relationships with few suppliers (referred to as JIT suppliers)
- Suppliers are rated not based on price, but based on product quality, delivery schedules, reliability of supply and flexibility.
- Suppliers are located near the buying firm
- Shipments are delivered directly to the customer's production line
- Parts are delivered in small size containers
- Delivered material is of near-perfect quality

2.6. Benefits of JIT system

- Inventory levels are drastically reduced and high inventory turnovers (50 to times per year) have been achieved.
- Reduced production cycle time or product throughout time
- Improved product quality and minimum scrap
- Root-cause elimination approach to solve production problem
- Multi-skilled and flexible workforce reduces work idle time, overheads, and fewer-layoffs etc.
- Elimination of unpleasant suppliers
- Reduced customer-related problems
- Near zero defects
- Improved communications
- Lesser work-in-process and finished goods inventory
- Shorter procurement lead times
- Improved employee morale due to high employee involvement and employee empowerment
- Reduced amount of inspection

2.7. JIT Interdependencies

Implementation of JIT is commonly accomplished by reducing batch sizes so that problems are forced in to the open. Quality problems are often the first to surface. With large lots, a few (or even many) defective units cause few problems because they may be placed aside and the next unit used. When the lots size is small, however, defective unit will cause disruption in the production process. This discovery is actually advantageous and allows problems to be solved. This is a basic concept of the implementation process. To insure that production is not disrupted, quality must be extremely high.

Some JIT advocates have argued that a system should be either JIT or MRP, not both. Karmarkar [23], however, argues that JIT and MRP both serve useful purpose in the appropriate settings. In continuous-flow operation, a JIT system alone may work effectively. In repetitive, a batch type of system, then MRP and JIT can work together. MRP can be used for materials coordination, materials planning and purchasing; JIT is used to control the flow on the shop floor (Narasimhan, L. and Others, 2005: P-458).

2.8. Key Elements of JIT

According to Roger G. Schroeder, the requirements for using JIT can be described as key elements of the system. This includes

Reduce lots sizes

Reducing set up times allow economical production of small lots; close cooperation with suppliers is necessary to achieve reductions in order lot sizes for purchased items, since this will require deliveries that are more frequent.

Employment Empowerment

Employee empowerment follows the management adage that no one knows the job better than those who do it. Firms not only train and cross train, but need to take advantage of that investment by enriching jobs. Aided by aggressive cross training and few job classifications firms can engage the mental as well as physical capabilities employees in the challenging task of improving the work place.

JIT philosophy of continue improvement gives employees is managed successfully, companies gain from mutual commitment and respect on the part of both employees and management.

Flexible workforce:

Workers trained to operate several machines to perform maintenance tasks and to perform quality inspections. In general, JIT requires teams of competent empowered who have more responsibility for their own work.

Kanaban production Control system

Kanaban production Control system also called pull production control system, the kanaban production control system uses simple, visual signal to control the movement of materials between work centers as well as the production to new materials to replenish those sent downstream to the next work center.

Kanaban is a Japanese word for card. In their effort to reduce inventory to achieve small lots sizes, the Japanese use systems that pull inventory through work centers and they often use a “card” to signal the need for another container of material-hence the name Kanaban.

Kanaban is a card that is attached to a storage and transport container. It identifies the part number and container capacity, along with other information and is used to provide an easily understood, visual signal that a specific activity is required i.e. the card authorization for the next container of material to be produced.

A Kanaban system is referred to as a pull system, because the kanaban is used to pull parts to the next production stage only when needed while in a push system the station producing the material initiate its movement to the receiving station, assuming that it is needed because it was scheduled for production.

Focused Factory Networks

Instead building a large manufacturing facility that does everything (highly vertically integrated), the Japanese build small plants that are specialized. There are several reasons for doing this. First, it is very difficult to manage a large installation, the bigger it gets, the

more bureaucratic it gets. Second, when a plant is specifically designed for one purpose it can be constructed and operated more economically than its universal counterpart operates. It is comparable to buying a special machine tool to do a critical job instead of trying to adapt a universal tool.

Require supplier quality assurance and implement zero defects quality system

Errors leading to defective items must be eliminated, since there are no buffer excess parts.

Quality at the source

When managers demonstrate a high degree of confidence in people, it is possible to implement a quality concept that the Japanese call Jidoka.

The word means, “stop everything when something goes wrong”. It can be thought of as controlling quality at the source. Instead of using inspectors to find the problems that somebody else may have created, the worker in a JIT production system becomes his or her own inspector.

The best thing to do was to give each person only one part to work on at a time so that under no circumstance would he/she be able to bury problems by working on alternate parts.

Reduce set up costs

Both inventory and the costs of holding it go down as the inventory-reorder quantity and the maximum inventory level drops. However, because inventory requires incurring an order or set up cost that must be applied to the units produced, managers tend to purchase large orders. With large orders, each unit purchased or ordered absorbs only a small part of the set up cost consequently, the way to drive down lots size and reduce average inventory is to reduce set up cost, which in turn lowers the optimum order size.

Group Technology

Most companies process a job and send it from department to department because that is the way our plants are organized. Each machine in those departments is usually staffed by a worker who specializes in that function getting a job through a shop can be long and complicated process because there is a lot of waiting time and moving time involved (Usually between 90% and 95% of the total processing time).

JIT, on the other hand, consider all the operations required to make a part and try to group those machines together. To achieve this people have to be flexible, people must identify with their companies and have a high degree of job security.

Minimized set up times

Just-in time production demands that small lots be run in production. This is impossible to do if machine set ups take hours to take accomplish.

Instead of accepting set up times as fixed numbers, the lot sizes become fixed and we go to work to reduce setup time. The savings in setup time are used to increase the number of lots produced with a corollary reduction in lot sizes. This makes the use of just-in-time production principles feasible, which in turn makes the Kanban control system practical.

Uniform workstation loads

The JIT system works best if the daily load on individual workstations is relatively uniform. Uniform loads can be achieved by assembling the same type and number of units each day, thus creating a uniform daily demand at all workstations.

Automated production

Automation plays a big role in JIT systems and is a key to low cost production. Sakichi Toyoda, the founder of Toyota, once said, "Whenever there is money, invest it into machinery."

Balanced Workflow

JIT requires that the plant layout be designed to ensure balanced workflow with a minimum of work in process. This means that we must conceive of each work station as part of a production line, whether or not a physical line actually exists.

Preventive maintenance is emphasized to ensure that continues a workflow is not interrupted by machine downtime or it is a result of poor quality from malfunctioning equipment. Reduction set in up change over time and lot sizes are interrelated and are key to achieving a smooth flow and JIT success in general. The ultimate goal of JIT from an inventory standpoint is to achieve an economic lot size of one.

Total quality control

Refers to “building in” quality and not “inspecting it in”. It also refers to all plant personnel taking responsibility for maintaining, quality, not just “leaving it to the quality controlling”. When employees assume this responsibility, JIT is permitted to work at its optional level, since only good products are pulled through the system.

JIT systems have many operational benefits. They:-

- Reduce space requirements
- Reduce inventory investment
- Increase equipment utilization
- Increase the productivity of direct labor employees, clerical staff etc. (Ritzman, 2003: P- 740).

JIT inventory tactics

- Use a pull system to move inventory
- Reduce lot size
- Develop just in time delivery systems with suppliers
- Deliver directly to point of use
- Reduce setup time
- Use group technology

JIT scheduling tactics

- Communicate schedules to supplier
- Make level schedules

- Freeze part of the schedules
- Perform to schedule
- Seek one-piece-make and one-piece-move
- Eliminate waste
- Produce in small lots
- Use Kanaban
- Make each operation produce a perfect part

JIT quality tactics

- Use statistical process control
- Empower employees
- Build fail-safe methods
- Provide immediate feedback

2.9. Basic Principles

As it is clearly indicated the limitation as to the coverage of the study, the main principles included here apply to the inventory control management system. There are:

1. Max-max inventory control

The first pre-condition to just- in- time “Max-max” inventory control. In order to realize just in time, it is necessary to introduce “max-max” inventory control, also known as the “sell-one, buy-one” concept. This means that each time a part is sold (which is a stock item according to that particular stock policy); at the same time a stock replenishment order for this part is placed for the quantity sold. By replenishing every stock item sold as soon as possible, the complete logistic chain runs at the pace of the real end-user demand. By implementing JIT, waste and inefficiency in the logistics chain are avoided.

2. Heijunk-Ordering Stability

The second pre-condition to just in time be order stability (“Heijunka”).Heijunka means that stable level of ordering is obtained, resulting in a stable flow of parts throughout the logistics chain, allowing standardized and consequently efficient operations. In order to obtain a stable ordering pattern, the following activities are necessary.

i. Separation of actual and created demand

Actual demand refers to demand for parts which will be used by customers immediately. Actual demand has little fluctuation, because orders for immediate needs are frequent and small in size. Internal orders and external sales in the form of frequent stock replenishment orders are the main forms of actual demand.

Created demand refers to orders for parts which will not be used or sold immediately. It is necessary to base demand history on only actual demand. This requires creating methods to systematically identify and remove created demand from demand history.

ii. Irregular control

Both manufactures and distributors need on irregularity control system to prevent sudden large “irregular” orders from depleting stock of a specific part, because this can Jeopardize sup pliability of normal (actual demand) to the service demanders.

The purposes of irregularity check are to:-

- Maximize customer satisfaction by ensuring that parts are available
- Find the reason for the large order (created demand) so that the customer measure can be taken.

3. Strictly defined stocking policy

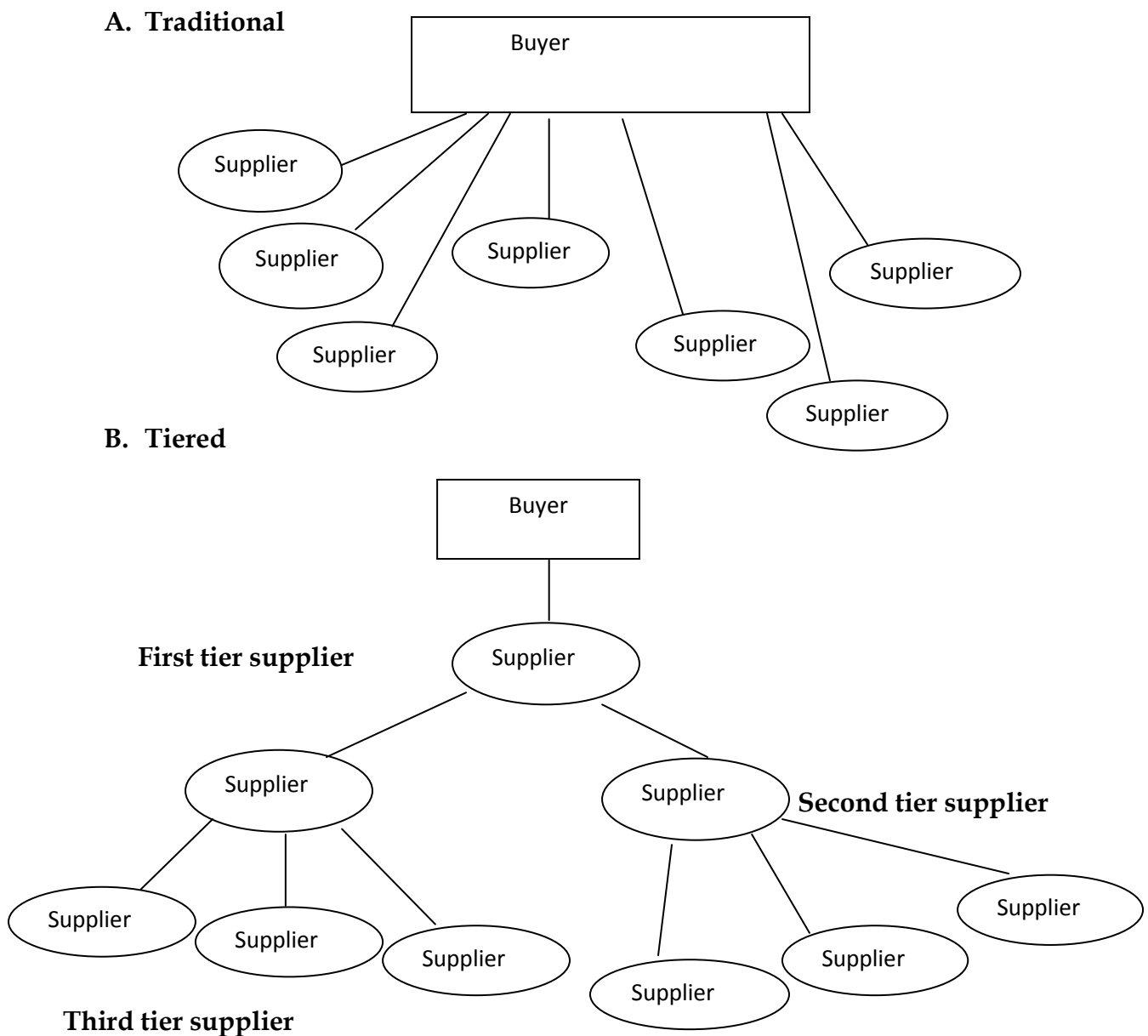
A strictly defined stocking policy should be established which allows the inventory control operation to reach its service rate targets for inner and outer sales. The stacking policy should be established based on a predetermined logic, not on “feeling”. It is necessary for supply policy to reflect the needs of the users i.e. the necessary parts should be stocked so that they are available for immediate supply. Moreover, the stocking policy should enable to reach the target service rates for inner and outer sales. First, it must be created based on strict guidelines for stock phase-in and phase-out. Phase-in and phase-out criteria should be based on demand history for non stock items. This requires strict monitoring and control or order information, lost sales information and cancellation by customers due to parts unavailability. Secondly, it is necessary to consider customer profile. For example, a dealer who has a proportion of counter sales may need to keep more lines in stock than a dealer who has no counter sales, customer type should be reorder at the time of sale and this data

can then be used to periodically refine the stocking policy. Finally, the stock depth should be such that it covers the order cycle, the lead-time and additionally some safety stock on a part group basis. Since maximum inventory position (MIP) is used to calculate stock replenishment order quantity, it is necessary to recalculate MIP frequently.

Converting to a JIT system

The success of JIT system in Japan has attracted keen interest among U.S manufacturers. A number of well-known firms have converted a portion of their operations to JIT systems.

Figure 2.2: Traditional supplier network compared to supplier tiers



Source: William J. Stevenson, 1999: P-679.

2.10. Lean Manufacturing

Lean manufacturing, which is often called Just-in-Time (JIT) or agile manufacturing, is an operating strategy that seeks to maximize operational effectiveness by creating value in the eyes of the end customers. The focus is not on a department, area, or process, but on the optimization of the entire

value stream, which is the series of processes between receipt of customer order and delivery of finished product.

Steps of Lean Manufacturing

The steps of lean manufacturing are as listed below

- Precisely specify value by a specific product
- Identify the value stream for each product
- Make the value flow without interceptions
- Let the customer pull value from the producer
- Pursue perfection

Components of Lean Manufacturing

The components of lean manufacturing are listed below.

1. Standardized Production
2. Continuous improvement (Kaizen) as explained earlier
3. Just-in-Time (JIT) Production
4. Design for Manufacturing(DFM)
5. Poka Yoke (error -proofing)
6. Cellular Manufacturing
7. Single-Minute Exchange Die(SMED)
8. Flexible workforce (Hanna, D. and Newman W,2002:P- 512)

When the company adopted JIT, the sales force toured the production facility to gain confidence in the new approach to planning and control, which was said to be capable of responding to customers' requirement within a day. They saw the refrigerated warehouse that would no longer be needed under the new system. Because store managers no longer

to estimate demand weeks in to the future, sales representatives stopped padding their forecasts. Instead, just two days prior to delivery they submitted their actual orders.

The movement to JIT has had significant impact on the finance and accounting functions as well. During the 1980s, warehouse space requirements were significantly reduced by the adoption of JIT. Prior that time, mortgages backed by warehouse space had been a major component of virtually every private bond fund. Indeed, fund managers associated that sector of the mortgages market with high performance and low risk. With the advent of JIT, the mortgage on those warehouses suddenly became high-risk investments. Today, the declining use of inventory and the ever-present possibility of further reductions in inventory have discouraged many financial managers from investing in warehouse space. As far as accounting is concerned, the process of making payments for purchases and receiving payment for the delivery of product-service bundles has begun to change. Even the question of who owns the inventory has become debatable (Hanna, D. and Newman W, 2002: P-566).

CHAPTER THREE

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

In this section of the paper the student researcher will illustrate the data collected from Berhanena Selam Printing Enterprise (B.S.P.E.) employees through questionnaire, interview, and observation. Questionnaires were distributed to 48 selected employees of Store, Receiving, Finance and Human resource and Administration departments. All distributed questionnaires were filled and return. Interview was conducted with the head of Purchasing and Supplies Management department. In addition, direct observation of different activities in the warehouses has been made. The respondents of the questionnaire and interview are made to be aware of the objective and the nature of study so that they could give genuine, meaningful, and relevant information. As a result, the analysis is made on the valid number of responses.

3.1. General Characteristics of the Respondents

Table 1: Sex and Age composition of employees

Item	Respondent employees	
	Frequency	Percentage (%)
1. Age		
a. 18 - 25	2	4.1%
b. 26 - 33	7	14.6%
c. 34 - 41	12	25%
d. 42 - 49	16	33.3%
e. 50 and above	11	23%
Total	48	100%
2. Sex		
a. Male	28	58%
b. Female	20	42%
Total	48	100%

Source: Primary data, 2011

On the above table, item “1” shows age structure of respondents. From the collected sample 16 (33.3%) of them were within 42-49 years old, 12 (25%) of them were within 34-41 years old, 11(23%) were 50 and above years old, 7 (14.6%) of them were within 26-33 years old, and the rest 2 (4.1%) were within 18-25 years old. Most of sample population age is within the range of 42-49 years old. This implies that the enterprise has many employees with many years of experience. Therefore, it increases the efficiency and effectiveness of the enterprise.

Item “2” of the above table shows sex distribution of respondents, 28 (58%) of the respondents were male and the rest 20 (42%) were female. This implies the sex compositions of the employee of B.S.P.E. are good. This implies that the enterprise gives equal opportunity for male and female employees. Therefore, it increases the goodwill the enterprise.

Table 2: Years of Service and Education level of employees

Item	Respondent employees	
	Frequency	Percentage (%)
1. Years of service		
a. Below 5 years	8	16.7%
b. 5-10 years	7	14.6%
c. 11-16 years	7	14.6%
d. 17-22 years	9	18.7%
e. Above 22 years	17	35.4%
Total	48	100%
2. Educational level		
a. Below grade 12	0	-
b. 12 completed	8	16.7%
c. Diploma	20	41.7%
d. Degree	18	37.5%
e. Masters and above	2	4.1%
Total	48	100%

Source: Primary data, 2011

Item “1” of table 2, shows the years of service of respondents. According to the sample population 8 (16.7%) have below 5 years of service, 7 (14.6%) have 5-10 years of service, 7 (14.6%) have 11-16 years of service, 9 (18.7%) have 17-22 years of service and 17 (35.4 %) have more than 22 years service. The above data infers that B.S.P.E. employees have more work experience, which constitutes above half of them have a work experience of more than 22 years. This implies that, it makes the enterprise more efficient and effective.

Item “2” of table 2, Shows the educational level of the respondents. From the sample 8 (16.7%) were 12 completed, 20 (41.7%) have Diploma, 18(37.5%) have first Degree and 2 (4.1%) have Masters, none of them are below grade 12. This could be because of sampling error, which is caused for not taking the entire population. This table infers very large percentages of the total employees have Diploma and first Degree and few numbers of employees have Masters. In general, Majority of the employee of B.S.P.E. are college graduates. This implies that the enterprise has educated employees and it has its own impact to achieve the objective of the organization.

Table 3: Profiles of respondents

Department	Frequency	Percentage (%)
Store	19	39.6%
Receiving	12	25%
Finance	9	18.7%
Human resource and Administration	8	16.7%
Total	48	

Source: Primary data, 2011

As can be seen from table 3 that most of the respondents 19 (39.6%) were from the store department followed by 12 (25%) of receiving, 9 (18.7%) of finance and 8 (16.7%) of human resource and administration.

3.2. Analysis of Major Findings of the Study

Table 4: The importance of inventory control for the enterprise

Item	Respondent Employees	
	Frequency	Percentage (%)
1. The role of inventory control in achieving overall corporate objectives can be rated as		
a. Very high	24	50%
b. High	14	29%
c. Moderate	9	19%
d. Low	1	2%
e. Very low	-	-
Total	48	100%
2. The performance of the enterprise on inventory control is?		
a. Very good	8	16.7%
b. Good	9	19%
c. Satisfactory	12	25%
d. Low	16	33.3%
e. Very Low	3	6%
Total	48	100%

Source: Primary data, 2011

Item "1" of table 4 shows the importance of inventory control in achieving corporate objectives. From this, 24 (50%) of respondents replied inventory control contribution for achieving corporate objective is very high, 14 (29%) of respondents replied that it has high contribution, 9 (19%) of respondents respond it contribute moderately, 1 (2%) respondent respond it has low contribution. From this there is no respondent replied that it has very low contribution. This implies that the role of the inventory control for achieving corporate objective is high. Therefore, it increases the proper utilization of materials in the enterprise.

Item "2" of table 4 shows the degree of performance of the enterprise on inventory control. From this 8 (16.7%) replied the inventory control performance is very good, 9 (19%) replied it is good, 12 (25%) replied the performance is satisfactory, 16 (33.3%) replied it is low and the rest 3 (6%) replied it is very low. This implies that the performance of B.S.P.E. on inventory control is low. Therefore, it leads the enterprise to materials wastage.

Table 5: Recognize need for purchase Analysis

Item	Respondent Employees	
	Frequency	Percentage (%)
When do you recognize a need for purchase		
▪ Predefine minimum stock level reached	31	64.6%
▪ When you receive materials requirement schedule	15	31.2%
▪ Stock out is occurred	2	4.2%
Total	48	100%

Source: Primary data, 2011

Table 5 shows B.S.P.E. employees use different kinds of purchase need recognition method. From the sample population 31 (64.6%) replied recognition of need is when predefine minimum stock level reached, 15 (31.2%) replied recognition of needs be based on receipt of materials requirement schedule and the rest 2 (4.2%) replied recognition of need is when stock out is occurred. Therefore, it is inferred that need for purchase in B.S.P.E. is recognized when predefine minimum stock level reached.

Table 6: Major risks associated with the current inventory control system

Item	Respondent Employees	
	Frequency	Percentage (%)
Major risks associated with the current inventory control on the warehouse		
a. Deterioration	14	29.2 %
b. Obsolescence	25	52.1 %
c. Breakdown	6	12.5%
d. Theft	3	6.2%
Total	48	100%

Source: Primary data, 2011

Table 6 shows major risks associated with the current inventory control of the enterprise. Accordingly, 14 (29.2%) responded that deterioration is the major risk, 25 (52.1%) responded that obsolescence is the major risk, 6 (12.5%) responded that breakdown is the major risk and the rest 3 (6.2%) responded that theft is the major risk. From this, one can infer that the major risk associated with the current inventory control on the warehouse of B.S.P.E. is obsolescence. This implies that this obsolescence faces the enterprise to different costs.

Table 7: Storage system activity in B.S.P.E.

Item	Respondent Employees	
	Frequency	Percentage (%)
Does the current storage system reduce wastage		
a. Yes	17	35.4%
b. No	31	64.6%
Total	48	100%

Source: Primary data, 2011

Table 7 asks whether the current storage system of the enterprise reduce wastage or not. Accordingly, 17 (35.4%) replied 'yes' the current storage system reduces wastage and the rest 31 (64.6%) replied the current storage system doesn't reduce wastage. From this, one can infer more than half employees think that the current storage system doesn't reduce material wastage. This implies that the current storage system of the enterprise exposed to material wastage. Therefore, the enterprise invest high amount of money due to this wastage.

Table 8: Respondents that have knowledge about JIT

Item	Respondent Employees	
	Frequency	Percentage (%)
Do you have any knowledge about Just-in-time (JIT) system		
a. Yes	46	96%
b. No	2	4%
Total	48	100%

Source: Primary data, 2011

Table 8 asks whether respondents have knowledge about Just-in time system. Accordingly, 46 (96%) of them replied 'yes' I have and the rest 2 (4%) replied that 'No' I haven't. From this, we can infer that almost all respondents have knowledge about Just-in-time system. This implies that the enterprise can implement Just in time by preparing some additional awareness program before implementation.

Table 9: Opportunities will created by Just-in-time (JIT)

Type of Opportunity	Respondent Employees	
	Frequency	Percentage (%)
Reduce workload	16	35%
Increase efficiency (cost minimization)	39	81.2%
Increase effectiveness	21	45.6%
Increase job satisfaction	16	35%
Increase customer satisfaction	20	43.5%
Acquiring various skills	9	19.5%
Reduction of the time it takes to complete a task	23	50%

Source: Primary data, 2011

Table 9 shows opportunities will created by Just-in-time (JIT) system. Accordingly 16 (35%) of them replied JIT reduce work load, 39 (81.2%) of them replied JIT increase efficiency (cost minimization), 21 (45.6%) of them replied JIT increase effectiveness, 16 (35%) of them replied JIT increase job satisfaction, 20 (43.5%) of them replied JIT increase customer satisfaction, 9 (19.5%) of them replied JIT used to acquiring various skills and 23 (50%) of them replied JIT reduce the time it takes to complete a task because it is aid by a computer program. From this, one can infer most of the respondents agree that JIT will enable them to increase their efficiency (cost effectiveness). This implies that the enterprise can get as the JITs advantage over the prevailing system they use.

As a philosophy applied to deliver the right quantity, at the right time, it can be said that applying JIT comes with at least the above opportunities, as identified by this study, in relation to work performance.

Table 10: Challenges encountered during JIT implementation

Types of Challenge	Respondent Employees	
	Frequency	Percentage (%)
Worker Stress	24	52.2%
Uniform workload	11	24%
Multi-dimensional skill acquisition requirement	20	43.5%
Continuous material handling costs	29	63%
System failure	11	24%

Source: Primary data, 2011

Table 10 shows employees response about challenges encounter during JIT implementation. From this 24 (52.2%) of them replied JIT will have worker stress, 11 (24%) of them replied JIT will have uniform workload on individual employees, 20 (43.5%) of them replied JIT will require multi-dimensional skill acquisition, 29 (63%) of them replied JIT will have continuous material handling costs, and 11 (24%) of them replied JIT may got system failure during implementation. This implies that the enterprise may face some challenges during the JIT implementation. Therefore, the enterprise can prepare itself to set those challenges.

Based on responses from employees it can be said that JIT will have some challenges (not problem) that the company and its employees are facing, particularly related to job performance.

Table 11: General attitude of employees towards JIT

Respondents	Frequency	Percentage (%)
with positive attitude	28	58.3%
with negative attitude	6	12.5%
Those who abstained	14	29.2%
Total	48	100%

Source: Primary data, 2011

Table 11 shows general attitude of employees towards JIT. Accordingly, 28 (58.3%) respondents have given a positive answer to the question "Do you have anything to say about JIT?" while, 6 (12.5%) of them give a negative ideas with is generally related to the 'continues adjustment'. The remaining has not given any idea. This implies that the employees of the enterprise are ready to internalize the new system.

3.3. Analysis of Interview

An interview is conducted with the head of supplies management and head of purchasing division.

The major responsibilities of this department are as follows:

- Delivering different kind of raw materials to different production operation.
- Controlling the staff and the set up of materials, the flow up of the work process.
- Preparing minutes of meeting.
- Signing and approving the issues of the requested items.
- Controlling the stores in general and others.

According to the officer of the department, proper management of materials has an impact on the efficiency of the staff and the work process of the enterprise.

- On the accuracy of the work
- On decreasing wastage

The department head disclosed that the major problems of the enterprise associated with inventory management is obsolescence, wastage and being out of stock.

Accordingly, supplies management head the current storage system of the enterprise does not reduce wastage. Because the bureaucracy line is very long and the layout of raw materials is not comfortable as it should have been.

- According to the officer Just-in-time system is very good, but where the system is not yet developed. In the developed countries, this is a norm of the system so, if the enterprise will change the existing system to Just-in-time the efficiency and time consciousness of employees will grow while the country's economy will show some

growth. JIT has opportunities like cost effectiveness, time economy, improve suppliers by shortening order lead-time and developing other sector of the economy and challenges like Shortage of foreign currency, existing bureaucracy in the customs authority have resulted in somehow extended lead-time, and change the existing structure will not be as easy as one thinks.

The officer described the factors that aid successful implementation of JIT can be attributed to:

- Strong relationship between the major suppliers and special training program has been arranged by the enterprise.
- Customer increased demand will initiate for further enhancement.
- Higher satisfaction of employees with their job even in the case where uniform workload is higher and their positive attitude towards JIT.

CHAPTER FOUR

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In this chapter attempt is made to summarize the main findings on the ground of chapter three and forward conclusion and recommendations accordingly.

4.1. Summary

The main objective of this study is to describe the major opportunities and challenges of the JIT system in the case of B.S.P.E. The research method used to achieve the objective of the study, is Descriptive method. The student researcher used Systematic random sampling technique. Out of the total population, 48 (30% of the total population) was considered for the study. Questionnaires were distributed for 48 selected employees of Store, Receiving, Finance and Human resource and Administration departments. All distributed questionnaires were filled and return.

Major findings

On the ground of chapter three data analysis and interpretation, the student researcher put the following findings:-

- The sex composition of the respondents was almost similar and most of the respondents were with many years of experience.
- Majority of the respondents were college graduates and with the necessary educational level.
- Most of the respondents were from store department.
- Respondents believe that the role of inventory control contribution for achieving corporate objective is very high but the performance B.S.P.E. on inventory control is low.
- Majority of the respondents recognize a need for purchase when predefine minimum stock level reached.
- Majority of the respondents says Obsolescence is the major risk of the organization associated with the current inventory control of the B.S.P.E. warehouse.
- More than half of the respondents think that the current storage system of the organization doesn't reduce material wastage.
- Almost all respondents have knowledge about Just-in time system.

- Most of the respondents agree that Just- in-time will enable them to increase their efficiency.
- Respondents believe that even if the JIT have many opportunities the system may encounter some challenges during implementation.
- Majority of the respondents have positive attitude about the Just-in-time system.

4.2. Conclusions

In here, the student researcher try to address what we have from the study with a scope limited mostly to the store, receiving, finance and human resource and administration departments of the B.S.P.E.

- The current storage system of the organization doesn't reduce material wastage.
- Major opportunities creating by applying the JIT system
 - Increase efficiency (cost minimization)
 - Reduction of the time it takes to complete a task
 - Increase effectiveness
 - Increase customer satisfaction
 - Increase job satisfaction
 - Reduce workload
 - Acquiring various skills
- Challenges facing by applying the JIT system :-
 - Continuous material handling
 - Worker Stress
 - Multi-dimensional skill acquisition requirement
 - Uniform workload
 - System failure
- Factor that contribute for successful implementation of JIT
 - Strong relationship between the major suppliers and special training program has been arranged by the enterprise.
 - Customer increased demand will initiate for further enhancement.
 - Higher satisfaction of employees with their job

- JIT requires maximum utilization of skilled and unskilled labor with IT infrastructure e.g. the use of electronic parts catalogue (EPC) has significantly changed the number of workers required.

4.3. Recommendations

Based on the findings of the study and the conclusion drawn, the student researcher has tried to forward the following recommendations.

- It is recommended that B.S.P.E. should improve the educational level of its employees by giving education opportunities because from the finding the student researcher seen that the educational level of most employees are dominantly Diploma and first Degree holder.
- Accepting local purchases in order to enhance the efficiency of the acquisition procedures for petty and single use items.
- The B.S.P.E. should as much as try to know the interval of time ordering and receipt of goods.
- It is recommended that B.S.P.E. use Just in time to reduce inventory wastage system because the current storage system of the organization exposed to material wastage.
- The organization should aware employees about the concept of the JIT system and gives them training about the new system before implementation.
- The organization should also make available all financial and material resource necessary to overall operation and implementation of JIT.
- The student researcher recommended that the organization should enhance employee participation in order to gear their efforts towards the successful implementation of JIT.
- It is also recommendable to implement JIT that should keep the interest of employees without negatively affecting the organization interest.

REFERENCES

- Bhat, K. (2003). **Production and Materials Management (1sted.)**. New Delhi: Himaliya Publishing House.
- Chase, B. and Aquilano, J. (1992). **Production and Operations Management**. Richard D. Irwin, Inc.
- Dobler, W. and N. Burt (1996). **Purchasing and Materials Management**. New Delhi: McGraw-Hill Book Company.
- Hanna, D. and Newman W. (2002). **Integrated Operations Management: adding value to customers**. New Delhi: Prentice Hall of India.
- Nair, N.G. (2004). **Production and Operations Management**. New Delhi: Tata McGraw Hill publishing company limited.
- Narasimhan, L. and Others (2005). **Production Planning and Inventory Control (2nded.)**. New Delhi: Prentice Hall of India private limited.
- Panneerselvam, R. (2005). **Production and Operations Management**. New Delhi: Prentice Hall India private limited.
- Ritzman, P. (2003). **Operations Management strategy and Analysis**. New Delhi: Prentice Hall of India Plc.
- Stevenson, J. (1999). **Production and Operations Management (6thed.)**. New Delhi: McGraw Hill Book Company.

APPENDICES

A. Questionnaire for Employees [English Version]

Just In Time Opportunities and Challenges: the Case of Berhanena Selam Printing Enterprise (B.S.P.E.)

Addis Ababa, 2011

For Employees Use only

Informed Confidentiality and Consent

I am a prospective graduate of St. Mary's University College from the department of Management. I am conducting a research for the partial fulfillment of my B. A. Degree in management, entitled "Just In Time: The case of Berhanena Selam Printing Enterprise"

The general objective of the research is to describe the major opportunities and challenges of the JIT system in your organization and to suggest recommendations that would help to minimize problems.

Since your honest and timely response is valuable for the success of the research, please try to answer the questions frankly with due attention.

Thank you in advance for your cooperation

Note:

- No need of writing your name since the questionnaire is prepared for academic purpose.
- Please, put a tick mark (✓) in the box or circle choices for your answers
- Discusses briefly open ended questions

Part I: Personal Background of the Respondent

1. Age

- | | |
|--------------------------------------|-----------------------------------|
| <input type="radio"/> 18-25 years | <input type="radio"/> 34-41 years |
| <input type="radio"/> 26-33 years | <input type="radio"/> 42-49 years |
| <input type="radio"/> Above 50 years | |

2. Sex
- Male Female
3. For how many years have you been in this organization?
- Below 5 years 11-16 years
- 5-10 years 17-22 years
- Above 22 years
4. What is your education level?
- Below grade 12 12 completed
- Diploma Degree
- Master and above

Part II: General Information

5. In which department are you working?
- Store Finance
- Receiving Human resource and Administration
- Other, please, specify _____
6. The role of inventory management in achieving overall corporate objective can be rated as
- Very high High
- Moderate Low
- Very low
7. The performance of the enterprise on inventory control is?

- Very good
- Satisfactory
- Very low
- Good
- Low

8. When do you recognize a need for purchase?

- Predefine minimum stock level is reached
- When you receive materials requirement schedule
- When stock out is occurred
- Other (Specify) _____

9. What are the major risks associated with the current inventory control system used by the enterprise?

- Deterioration
- Breakdown
- Other (Specify) _____
- Obsolescence
- Theft

10. Does the current storage system reduce wastage?

- Yes
- No

If No, why _____

11. Do you have any knowledge about Just-in-time (JIT) system?

- Yes
- No

12. If your answer for question 11 is 'Yes' What are the opportunities of implementing Just-in-time (JIT) as compared to the traditional system? (You can tick more than one)

- Reduce workload
- Increase efficiency (cost minimization)

- Increased effectiveness
- Increase job satisfaction
- Increased customer satisfaction
- Acquiring various skills
- Reduction of the time it takes to complete a task
- Other, explain _____

13. What challenges have Just-in-time (JIT's) implementation? (You can tick more than one)

- Worker Stress
- Uniform workload
- Multi-dimensional skill acquisition requirement
- System failure
- Continuous material handling costs
- Other, Specify _____

14. Anything you would like to say about Just-in-time (JIT's) system.

Thank you for your cooperation

B. Interview Questionnaire for Supplies Head Manager

Just In Time Opportunities and Challenges: the Case of Berhanena Selam Printing Enterprise (B.S.P.E.)

Addis Ababa, 2011

For Managers Use only

This interview is prepared to collect primary data on JIT's implementation and its effect on the inventory management functions of the enterprise for the partial fulfillment of BA degree by SMUC student.

In addition, I would like to express the confidentiality of the information and that is required only for conducting study.

1. What are your major responsibility and the responsibility of this store department?
2. What are the impacts of proper management of materials on the enterprise efficiency?
3. What are the majors problems associated with your inventory management practice?
5. Does the current storage system reduce wastage?
6. What do you think about Just-in-time (JIT) system?
7. What are the major opportunities and challenges of the Just-in-time (JIT's) system?
8. What factors do you think contribute for successful implementation of Just-in-time (JIT)?
9. Do you have anything to add, please specify,

.....

.....

.....

.....

.....

..... Just - In - Time (JIT) /..... just in time system

.....

.....

-

- " ✓ "

.

1.

. 18-25 34-41 ... 50

. 26-33 42-49 ...

2. ..

... ..

3.

. 5 11-16 22 ...

. 5-10 17-22 ...

4.

. 12.

12. ... /

5.

.....

..

6.

....

7.

..
 ..

8.

.....

9. ?

.....

10. ?

..

?

11. (just - in - time) ?

..

12. 11 " " (.....)

.....

13. (just - in - time) (.....)

-
-
-
- /

.....

14. (just - in - time) ..

.....

.....

DECLARATION

I, the undersigned, declare that this senior essay is my original work, prepared under the guidance of Ato **Daniel Meroad**. All sources of materials used for the manuscript have been duly acknowledged.

Name: **Meron Seifu**
 Signature: _____
 Place of submissions: St. Mary's University College
 Faculty of Business
 Department of Management
 Addis Ababa
 Date of submission: _____

SUBMISSION APPROVAL SHEET

This Senior Research Paper has been submitted to the Department of Management in partial fulfillment for the requirement of BA Degree in Management with my approval as an advisor.

Name: Daniel Meread

Signature: _____

Date: _____