WOLLEGA UNIVERSITY

SCHOOL OF POST GRADUATE STUDIES

THE EFFECT OF KAIZEN PRACTICES ON MICRO AND SMALL ENTERPRISE MANUFACTURING SECTOR OPERATIONAL PERFORMANCE IN GIMBI TOWN

BY

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A THESIS SUBMITTED TO DEPARTMENTS OF MANAGEMENT IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF BUSINESS ADMINISTRATION

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APPROVAL SHEET

This is to certify that this thesis entitled “the effect of kaizen practice on micro and small enterprise manufacturing sector operational performance in Gimbi town” was accepted in partial fulfillment of the requirements for the award of the degree of masters of Business Administration by the school of graduate studies, Wollega University through the College of Business and Economics done by **Lamesa Badasa** is frank work carried out by him under my guidance. The matter embodied in this thesis work has not been submitted earlier for the award of any degree or diploma.

The assistance and help received during this investigation have been accordingly acknowledged. Therefore, I recommend that it can be accepted as fulfilling the MBA research requirements.

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As members of the board of examining of the final M.Sc. research open defense, we certify that we have read and evaluated the research prepared by **Lamesa Badasa** under the title of "the effect of kaizen practice on micro and small enterprise manufacturing sector operational performance in Gimbi town" and recommend that the research be accepted as fulfilling the research requirement for Masters in Business Administration in January 2020.

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Certification of the Final Research

I hereby certify that all the correction and recommendation suggested by the board of examiners are incorporated into the final research submitted entitled with "the effect of kaizen practice on MSE manufacturing sector operational performance in Gimbi town" **by** Lamesa Badasa.

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ACRONOYMS

BPR	Business Process Re-engineering
EKI	Ethiopian kaizen Institute
FDI	Foreign Direct Investment
GDP	Gross domestic production
GRIPS	Graduate Research Institute for policy studies
GTP	Growth and Transformation Plan
JICA	Japan International Cooperation Agency
JIT	Just in Time
JPC	Japans production center
JUSE	Japans Union Scientist &Engineering
LLPI	Leather Products Industry
MOFED	Ministry of Finance and Economic Development
PADC	Plan, Action, Do, Check
QCC	Quality Control Circles
MSE	Micro and Small Enterprise
TPS	Toyota Production System
TQM	Total Quality Management
TVET	Technical and vocational education training
UNIDO	United Nations Industrial Development Organization
OLS	Ordinary least square
VIF	variance inflation factor
Muda	Waste
SDCA	Standardize-Do -Check-Act

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ABSTRACT

The purpose of the study was to investigate the effect of kaizen practice on MSE manufacturing sector operational performance improvements in Gimbi town. It intended to evaluate the level of operational performance and its factors. In order to meet the objective, the researcher has used stratified random sampling techniques and 103 respondents were selected. The five point Likert scale questionnaires and semi structured interview the main data gathering tool. The collected data have been analyzed using descriptive statistics specifically mean, standard deviation and correlation analysis and; inferential statistics namely multiple regression analysis. The correlation coefficient finding has shown that the two explanatory variables (five S and Just in time) have strong and positive relation with operational performance in MSE manufacturing sector in Gimbi town .Results from the regression analysis the R^2 model has shown that all the explanatory variables have significant effect on MSE manufacturing sector operational performance and from the explanatory variables the five S kaizen practice to be the main predictor of MSE operational performance in Gimbi town. So, as to utilize the effective implementation of kaizen in manufacturing sector should work more on waste elimination since it has strong correlation with operational performance improvement.

Keywords: Five S, Just in time, Kaizen practice, Operational performance

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

Worldwide competitiveness a great commitment to the philosophy Japan used kaizen as continuous improvement in Western companies a process of connecting everyone in the organization from top management, managers, supervisors and workers extremely in the minds of both managers and workers that they often do not even appreciate kaizen thinking as a customer-oriented strategy for improvements (Thessaloniki, 2006).

Kaizen composed of two Japanese words; kai= change, Zen =good, go to better, freely translated as "change to the better "or "continuous improvement "kaizen is a way of thinking; acting and also expand in the personal life as an existence philosophy (Darius, 2011). The improvement of the manufacturing operational performance a lot of methods like lean manufacturing, bench marking and business process re-engineering (BPR) have been developed over the year. But kaizen system varies from others tools how they are implemented, the improvement should be achieved and what is to improve (Mary M., 2012). As Dean & Robinson (1991) stated that Kaizen is one of the core strategies for excellence in production, and is considered vital in today's competitive environment and calls for endless effort for improvement involving in the organization.

African manufacturing is not only disadvantages by the technological gap but also lack of knowledge improvement tools like kaizen. Whereas engineering ability may take time to catch up, managerial capacity may be improved more quickly since kaizen tools are developed in a way to be appreciated by all the workers and its fundamental methodology is not very complicated. Kaizen philosophy is more to do everyday practice than techniques. It can realize productivity improvements with little additional investments. Simplicity and cost-effectiveness are the major reason why kaizen is appreciated globally (Ohnoet.al. 2009).

Admasu, (2015) stated that the beginning of kaizen as a management tool in Ethiopia has been started with the assistance of Japan International Cooperation Agency (JICA) in response to the request of the government of Ethiopia to the government of Japan for kaizen technology transfer to Ethiopia. All the concerned stakeholders selected Kaizen as one of the management tools to improve and enhance the managerial capability to implement Growth and Transformation Plan.

The government of Ethiopian, practically encouraged kaizen policy in business firms adopted as an approach and tools of growth and development in July 2009. The purpose of mutual policy between the Japanese government and the Ethiopian government has undertaken in 2009, preparation was made for the accomplishment of the strategy at a pilot project level. After the transfer-ability, adaptability and organizational thinking in the Ethiopian contact with the support of the Japan International Cooperation Agency(JICA), the Ethiopian government has well-known kaizen institute (EKI)in October 2011 under the Ministry of Industry (MOI) to transfer, customize, disseminating, accumulating best practices and crafting Ethiopian kaizen management philosophy (EKI,2001).Today the improvement of the Growth and Transformation Plan kaizen is selected as one of the management tools and improve managerial competence (EKI, 2011)

However manufacturing Industries in Ethiopia are challenging by the problem of high quality, high inventories, long lead time of production, high cost of production, and inability to manage with customers' orders in case of the problem of not using Kaizen methods that will attain high productivity and remarkable quality standards make them more competitive in globalized, international markets (Asayehgn, 2014).

Though Kaizen was implemented in MSEs with the intention of improving their performance, various reports on kaizen practices revealed that MSE have encountered difficulties in implementing kaizen. In order to exploit the advantages MSE get from kaizen, the difficult the MSEs encountered need to be overcome so that the MSE boost their managerial and operational capacities form Kaizen. Hence, the purpose of this study was to investigate the effect of kaizen practices on MSE manufacturing sector operational performance in Gimbi town.

1.2. Statement of the problem

Kaizen is the management and knowledge philosophy that brings continuous, participatory, incremental, and low-budget improvements in quality, productivity, cost, delivery, safety, morale, and environment (Keijiro Otsuka, 2018). Mary, (2012) states that 5S (sorting, set in order, shine, standardize and sustain) kaizen practice described as a beliefs and system for high-quality housekeeping to attain greater order, efficiency and discipline in the workplace and it is a system that aims at reducing waste and optimizing productivity and quality through

maintaining an orderly workplace and using visual cues to realize more consistent operational results.

Mile, (2012) conclude that continuous improvement and innovation management strategy and systems are important predictors of MSE performance. JIT production system completely affects the Italian manufacturing firm's performance in a particular that of its production (Elsa &Andrea 2013). Kaizen was thought to be a successful strategy for improving Tanzania selected MSE performance and participants articulated desire to benefit from it (Bwemelo, 2014).

Introduced kaizen technologies in the companies have the benefit of reduction of cost, reduction of production cost, improved quality, and reduced lead time, improve customer satisfaction and have partially achieved three out of five (5S) kaizen steps. The research findings Nesria (2012) indicated that implementation of kaizen policy was found to increase labor productivity by reducing on average of 50%, time wastage for searching tools; improved defects ratio which ranged from 50% to 70%; and improved lead time in range of 16% to 90% in Kadisco industry. (Asayehgn, 2014)

Kaizen is significant to raise productivity and recommendable to use in manufacturing especially in MSE sector. MSE create the most key sector of the Ethiopian economy. They generate job opportunities for many of individuals, their work is strongly customer orientated, sources of innovation and entrepreneurial spirit; and they create competition and are the seed for enterprises of the future. Enterprises are supposed to have a primary role in poverty reduction, employment generation as well as economic development like Ethiopia (Adere, 2018)

The Kaizen has been effectively implemented in different manufacturing industries in some countries regardless of business sectors. Practicing the Kaizen concept for continuous improvement has been an attractive choice and significantly helps to increase quality, improve level of efficiency, and reduce waste and production cost for business excellence W.G. Macpherson *et.al*, (2015)

In Ethiopia the promotion of MSEs is one of the most strategic direction perused for the generation of employment opportunity and poverty reduction but the share of manufacturing

MSEs in GDP has declined .Therefore, to achieve the setting target the manufacturing Enterprise have been resorted to adoption of methodologies that improving operational performance kaizen must be selected for implementation of continuous improvements.

However, there are many scientific studies about kaizen practices particularly in the manufacturing sector of MSE but there is no more scientific studies that focus on the relationship between kaizen practice and MSE operational performance in the study area that shows the extent of kaizen practice improve the operational performance of MSE. Thus the performances of manufacturing sector those adopted kaizen are not evaluated and the effects of kaizen practice are not indicated. So this is the major gap which initiates the researcher for this study. Therefore, this study was designed to investigate the effects of kaizen practices on MSE manufacturing sector operational performance in Gimbi town.

1.3. Research Questions

The study seeks to answer the following research questions.

1. What is the extent of 5S kaizen practice on MSE Manufacturing sector operational performance in Gimbi town?
2. What is the extent of Just in Time (JIT) kaizen practices on MSE Manufacturing sector in Gimbi town?
3. What is the relationship between kaizen practices and operational performance on MSE Manufacturing sector in Gimbi town?
4. What are the major challenges of kaizen implementation on MSE manufacturing sector in Gimbi town?

1.3. Objective of the Study

1.3.1. General Objective

The general objective of the study was to investigate the effect of kaizen practice on MSE manufacturing sector Operational performance in Gimbi town.

1.3.2. Specific Objectives

The specific objective of the study:

- To examine the extent of five S (5S) kaizen practice on MSE Manufacturing sector operational performance in Gimbi town.

- To investigate the level of Just in Time (JIT) kaizen practices on MSE manufacturing sectors in Gimbi town.
- To examine the relationship between kaizen practices and operational performance on MSE manufacturing sector of Gimbi town.
- To identify the major challenges that affect kaizen implementation on MSE Manufacturing sector in Gimbi town.

1.5. Hypothesis of the study

This study will tested the following two alternate hypotheses:

Alternative Hypothesis: Kaizen practices five S (5S) and just in time (JIT) do have a statistically significant effect on operational performance on MSE manufacturing sector in Gimbi town.

Null Hypothesis: Kaizen practices five S (5S) and just in time (JIT) do not have a statistically significant effect on operational performance on MSE manufacturing sector in Gimbi town.

1.6. Significant of the study

This study is intended to come up with data on implementation of kaizen on MSE in the study area. The findings of this study provide the necessary information for MSE owners and kaizen operators who engaged in manufacturing sector, to fill information gap among manufacturing sector of Gimbi town and to encourage mainly researchers, educators to improve the practices of kaizen implementation and the study also significant for the researcher to get new insight for future study.

1.7. Scope of the study

This study was conducted on west Wollega zone specifically Gimbi town on MSE those adopted kaizen In Gimbi town there are 34 metal and wood works in Gimbi and one Polytechnic College that practices the implementation of kaizen selectively on 24 manufacturing enterprise (metal and woodwork) on MSE. Thus the study was dealt to investigate the effects of kaizen practices on operational performance of manufacturing enterprise the research restricted to independent variables which are 5S and, JIT kaizen

1.8. Organization of the paper

This study has five chapters. This chapter defined the problem that the researcher search for investigating and specified how the research has been conducted. It provided an overview of

the problem statement as well as the research hypothesis and objectives. The second chapter was exclusively devoted to reviewing related literature on effect of kaizen practices. The third chapter has discussed a general description of the research strategy implemented and as well as the justification of the methodology. The fourth chapter provided results and discussion for data collection through questionnaires and interview. The fifth chapter presents the summary, conclusions, and recommendations of the result obtained from the study to improve the challenges that are currently facing. Lastly, all materials used in the study namely, reference, appendix of questionnaires' paper and appendix of related data has listed respectively.

CHAPTER TWO

REVIEW OF THE RELATED LITERATURE

2. Introduction

In this chapter, the researcher has reviewed related literature directly related to the topic. It included meaning and concept of kaizen, goal of kaizen, evaluation of kaizen, principle of kaizen from known fact to unknown issues was described.

2.1. Definition and concept of Kaizen

Kaizen was developed in Toyota Company and extensive among other Japans manufacturers as they gained distinction in the international market for high-quality products in the 1980s. Kaizen has been viewed as a key element in Japans management and has been presented as one of the sources of the competitiveness of the Japans manufacturers (Imai), 1986).''

Kaizen is a continuous development of production and quality based on a participatory process concerning the relevant workforce with no requirement for huge investment that the low-cost approach to become well productivity and quality improvement. Kaizen applies not only in the manufacturing sector but also the service sector, public organizations and non-profit organizations (Terfie, 2018). Kaizen has two definitions the broader definition and the narrower definition which means the broader definition of kaizen encompasses various production and quality management tools under the umbrella of kaizen philosophy and the narrower definition is the improvement of the workplace Gemba (Naderi, 2012)

Kaizen teams apply structured process tool and human creativity with a goal of substitution in improving the performance of the work area, process, product, the team workshop needs to be purposely designed to make jobs easier by taking them apart, studying them and making improvements, creating a culture of continual improvements with well-designed outreach program to everyone in the organization (Thessaloniki, 2006).

The method of kaizen is constructed to the western management styles in that kaizen attaches 'important to the work place where actual activities are carried out and the workers in the work place are the center of activities. The owner and the managers are responsible for making decision and providing guidance, the workers key people proposals for improvements and implementation thus adopting a bottom up management style which empowers the workers (Imai1997)

Kaizen implementing package is paying attention on improving productivity, quality, cost reduction, quick delivery, establishing safety and increasing workers moral in order to achieve better customer satisfaction and best use of the success of the enterprises (Tiwari, 2017). Generally, kaizen is low cost come up to productivity improvement because it does not involve large capital investment, exclusive technology or costly study and development since it seeks to use accessible tools and human resource in an additional efficient and less waste full and the key goals of kaizen is to produce the interior capability of the target firm. Thus kaizen mostly suited for enterprise in low-income countries which face financial access problems (Izumi Ohno, 2009).

2.2. Evolution of kaizen

The idea of Kaizen and its actions have been developed and increase in Japan and later to the rest of the world in four different phases.

The primary phase was the integration of Western techniques particularly the American management techniques by Japan's in the early postwar periods. In the 1950's, the world market perceived Japan products as low price and low quality determined by a sense of necessity for industrial catch-up. Consequently, Japan learned American style quality management and modified this to the Japanese context, supported by the Union of Japanese Scientists and Engineers (JUSE) and Japan Productivity Center (JPC). Companies in Japan developed their structure of Kaizen and laid a base for the foundation of Japanese production management system. As a result, kaizen was initially a foreign method which was adopted and used to become a Japanese practice (Desta, 2011)

The second phase was characterized by the diffusion of the concept in the 1970s (during the oil crises era) during Japanese companies, including small and medium-sized companies and resulted in the development of various Quality Control Circles (QCC). The third phase was the regional dispersion of kaizen launch in the mid-1980s, which coincided with the globalization of Japanese business activities. The shift of Japanese companies to East Asia helped the Japanese firms to substitution the quality management system abroad. Furthermore, the Japanese companies assisted their regional associates to learn kaizen philosophy and practices throughout Japanese standard events for procurement and supplies (GRIPS, 2009) The fourth (Current) era, which is now launching since 2001, has been witnessed rising interest in developing regions in East Asia, Latin America, and Africa. The

program promotes not only Kaizen but also trade, investment and economic combination in the developing region including Africa.

Kaizen management philosophy has instant tangible outcome and long term competitiveness in the social and technical aspects of manufacturing and service organizations. The Ethiopian government considering Kaizen short and long term advantages particularly in the manufacturing sector established at Federal level, Kaizen Institute to carry out multinational activities of continuing quality and productivity improvement and growth of competitive industries.

2.3. Goal of kaizen

Every business should be satisfying customer vision for products and service in terms of quality, cost, and delivery. So, kaizen system strives towards perfection by eliminating the seven wastes /overproduction, waiting, transportation, inventory, over-processing, motion, and production of defects parts (Imai, 1997).

The purpose of kaizen is to produce a workplace with energy and essentially, which respects people, provides them with the will to strive and by doing this, improve their emotion of self-worth. Awareness training sessions for all employees are important aim. To further encourage employee involvement to promote specific kaizen activities and consider distributing monetary or tangible benefits after solution from kaizen activities are implemented. Focus training of associates required for understanding what kaizen and not the essence of kaizen (Imai, 1997).

The objective of kaizen is more inclined to commit, for a good job. Improved retention satisfied and engaged people are more likely to stay; improved competitiveness increases efficiency tend to contribute to lower costs and higher quality products; improved consumer satisfaction coming from higher quality products with fewer faults; improved problem solving looking at processes from solution perspective allows employees to solve problems continuously; Improved teams working together to solve problems helps to build and strengthen existing teams (Getachew,2017).

2.4. Principles of Kaizen

General way of approaching for continuous improvement of a company's process every opinion has a significant role in progress and productivity. It also refers to people's way of

thinking (also called mindset) and it starts on the point for kaizen (shifting for the better) and are surrounded in all tools (Girma, 2016).

2.4.1. Processes involve by gradual improvement rather than radical changes

Kaizen can be implemented by improving each aspect of a process in a step by step approach, while increasingly developing employee skills through training education and increased participation resulting in quality improvement. Quality improvement, employees meet together to discuss the current operations of the company. They decide what things can be changed that will improve the quality of the company and the products (Mekonnin, 2017).

2.4.2. Human resources and Kaizen

Kaizen accomplished in cycle with "Respect for People" not resulting in outcomes such as layoffs. Kaizen has become engaging with many manufacturing companies because the employees are concerned with to perform in team work. They sense that their belief is significant and increases employee morale. Keeping the employees pleased will cause them to be more productive and satisfied with their jobs

2.4.3. Teamwork

Kaizen philosophy is the ability to work in teams. Each branch is measured a team and they will be responsible for making little changes that contact the organization. All employees from the top manager to front line workers should share common values, change objectives, and information. And, should complete their respective role properly, enhancing their capabilities through exercising self-government and creativity. The teams will then report to their manager. The manager takes this information to management and the whole practice of kaizen is evaluated (Girma, 2016)

2.4.4. Discipline

Kaizen to be successful, discipline is compulsory. Management and workers trust in Kaizen thought and attempt toward obtaining the small goals to reach overall success. A strong assurance to discipline and the kaizen method will confirm success for a company.

2.4.5. Continuous improvement

Enhancement must be based on quantitative assessment of process performance the small improvements will lead to superior improvements during the entire company. This is why

kaizen is called a "continuous process improvement" system or a "continual improvement method." Even with the changes, there are still small things employees can do to change the way they work. There are easy things you can do to help your employees work faster and become more efficient. All employees should have a firm belief that the workplace must raise a desire for continuous improvement Kaizen stress product or service quality is better and monitored on a continuous foundation (Mokennen, 2017).

2.5. Kaizen Techniques

There is huge number of connected and overlapping techniques and practices that belongs to kaizen methodology. They include 5s, Total preventive maintenance(TPM), (JIT) system, suggestion system, kaizen costing, Quality control circles (QCC), Total Quality Management(TQM), Toyota production system(TPS), Kanban system was the goal of kaizen production without waste by improving standard activity and practice (Naderi, 2012) .This study focus on 5s and just in time /JIT/ system from considered the major distinct techniques (practices) /Imai.1986 and Thessaloniki,2006) because these two kaizen techniques are more practice in small and micro-enterprise

2.6. The Pillars in Kaizen

Kaizen management philosophies and practices, the three pillars of kaizen are housekeeping, waste elimination and standardization as stated as, the management and employees must work together to accomplish the requirements for each category. To be ensured achievement on activities on those three pillars and factors have also to be taken into account. Those are: Visual management, the role of the supervisor, and the importance of training and creating a learning organization (Imai, 1986).

2.6.1. Housekeeping 5'S

Housekeeping is a process of administering the work place, known as “Gemba” in Japanese, for improvement purposes. Other author indicates that Imai (1997) introduce the word “Gemba”, which means “real place”, where value is added to the products or services before passing them to next process where they are formed. So, for suitable housekeeping, the 5s framework is used.

2.6.1.1. The Concept of 5'S System

The fundamental techniques of 5S which permit the increase of efficiency and productivity while ensuring satisfying organizational climate. 5S not a list of action items, but is an

integrated concept of actions, condition and culture. 5S is not only a system for keeping house; it is an integrated approach for productivity improvement. 5S is a whole a culture which increases production, improves quality, reduces cost, makes delivery on time, improves safety and improves morale. This leads employees to waste time and motivation searching, waiting, reworking or just basic giving up. A 5S a visual workplace eliminates questions, generating significant improvements in productivity, quality, customer satisfaction, safety and more the TQM of company (BOCA, 2011) Structured program of 5s is achieved total organization, cleanliness, and standardization in the workplace. and explained that any organization whether manufacturing or service industry should start Kaizen activities through implementing the basic three pillars which include the five steps of housekeeping(5S's), standardization and Muda elimination(Genobz ,2010)

2.6.1.1. Sorting

The elimination of unnecessary items through the appropriate sorting it can be well-known the materials, tools, equipment and necessary information for realization the tasks This step is to sort out what is necessary to be offered within workplace and eliminate all avoidable tools and parts. Only essential items remain in the production areas. This sorting process keeps the works pace in a logical order and reduces risks (Maiseyenka, 2016)

2.6.1.2. Set in Order

Straightening purposely customizes your workstation and surrounding area to meet your work area needs. Arrange remaining items so they are simple to select, use, and return to their proper location. Hence it helps to use time and material effectively and efficiently in proper ways. It focuses on efficient storage and location methods. In simplest terms a place for everything in its place.

2.6.1.3. Shine cleanliness

Its emphasis is on the removal of dirt, and dust. It focuses on cleaning up the place now that all the disorder and waste has been removed. Obviously one benefit of this step is to make the workplace cleaner and brighter where everyone will enjoy working.

2.6.1.4. Standardize (Order)

Order and control to be established for worked out and implemented standards in the structure of procedures and directions permit to keep the order on the work places. Standards

should be very communicative, clear and easy to understand. Standardize to be recognized for Worked out and implemented standards in the form of procedures and instructions permit to keep the order on the workplaces. Regarding this during preparation and improving, it should be involved all participants of the process on the given workplace, it means direct workers. The group knows the best specificity of its own (Gurway, M.Shubhangi . P., 2016).

2.6.1.5. Sustain/Discipline

Sustaining is the end result of how well we have performed the previous four S's Imai (1986). The design Sustain is implementing the 5S will require from workers the compact self-discipline associated with implementing and obeying the rules of regularity in cleaning and sorting. It leads to raising the consciousness of staff, and decreasing the number of non-conforming products and processes, improvements in the internal communication, and through improvement in the human relations. It is also important to appreciate the need of executing the routine inspections of usage the 5S rule. This inspection is executed by helping of so called Check List and created on its basis the radar graph of the 5S, which serves in estimation of the workplace. The inspection of realization of the 5S rule is executed once months by chosen team implementing the 5S rule the control team (Shubhangi, M. & Gurway, P., 2016).

2.6.1.6. Benefits of 5’S Implementation

Getachew G., (2017) stated that 5’S kaizen practices benefits in manufacturing firms and organizations implemented the 5’S system with amazing results as spoken by our customers such as help employees obtain self-discipline, Highlighting many kinds of muda in Gemba, Recognizing problems in the first step in eliminating Muda, Pin pointing abnormalities, Reduce waste full motion, Allowing problems to visually identified and hence to solved, Making quality problem visible ,Improving work efficiency and reducing cost of operation.

2.6.2. Concept of Waste (Muda) elimination

The resources at each process people and machines any non-value adding activity is classified as muda in Japan. Muda means waste .Work is a succession of value-adding activities, from raw materials ending to a final product. Muda is any non-value-added task in Kaizen philosophy; the aim is to eliminate the seven types of waste caused by overproduction, waiting, transportation, unnecessary stock, over-processing, motion, and a defective part.

2.6.2.1. Muda of overproduction

Over production arise from fear of a machine's failure, rejects, and employee absenteeism. Unfortunately, trying to get ahead of production can result in tremendous waste, consumption of raw materials before they are needed, wasteful input of manpower and utilities, additions of machinery, increased burdens in interest, additional space to store excess inventory, and added transportation and administrative costs (Thessaloniki, 2006).

2.6.2.2. Muda of Inventory

Final products, semi-finished products, or part supplies kept in inventory do not add any value. Rather, they add cost of operations by occupying space, requiring additional equipment and facilities such as warehouses. Also, the products deteriorate in quality and may even become obsolete overnight when market changes or competitors introduce a new product or customers change their taste and needs. .Excess items stay in inventory and gather dust (no value-added), and their quality deteriorates over time. They are even at risk of damage through fire or disaster. Just-in-time (JIT) production system helps to solve this problem.

2.6.2.3. Muda of defects

Interrupts of production and require rework and a great waste of resources and effort. Rejects will increase inspection work, require additional time to repair, require workers to always stand by to stop the machines, an increase of course paperwork (Adere., 2018).

2.6.2.4. Muda of motion

Motion of any person's not directly related to adding value is unproductive. Workers should avoid walking, lifting or carrying heavy objects that require great physical exertion because it is difficult, risky, and represents non-value added activities. Rearranging the workplace would eliminate unnecessary human movement and eliminate the requirement of another operator to lift the heavy objects. Analysis of operators' or workers leg and hand motions in performing their work will help companies to understand what needs to be done (Thessaloniki, 2006)

2.6.2.5. Muda of Processing

There are many ways that muda can occur in processing. For example, failure to synchronize processes and bottlenecks create muda and can be eliminated by redesigning the assembly lines so, utilizing less input to produce the same output. Input here refers to resources, utilities, and materials (Adere, 2018)

2.6.2.6. Muda of Waiting

Muda of waiting happen when the hands of the operator are idle; when an operator's work is put on hold because of line imbalances, a lack of parts, or machine downtime; or when the operator is simply monitoring a machine as the machine performs a value-adding job. Watching the machine, and waiting for parts to arrive, are both Muda and waste seconds and minutes.

2.6.2.7.Muda of Transportation

Transportation is an essential part of operations, but moving materials or products adds no value. Damage occurs during transport are also wastes.

2.6.3. Standardization

Standardizing means increase standards at which production must be performed. In simple way to think about standards is that production will be done to set qualifications. In Kaizen terminology, managers should implement the standardize-do check-act (SDCA) cycle (Imai, 1997). Standards should be very communicative, clear and simple to understand. Regarding this during preparation and improving, it should be implicated all participants of the process on the given workplace, it means direct workers. The group knows the greatest specificity of its own activities, and process of explanation and after that, practice gives them opportunity of understanding the essence and each aspect of the operation. In the aim of assuring all the easy access, obligatory standards should be found in constant and visible places. It is understood that standards should not be implemented only in the typical operational processes e.g. Production, movement maintenance, storing, but also in the administrative processes, for example: book-keeping, customer service, human resources management, or secretariat service (Shubhangi Gurway, 2016).

Once the standards are in place and are being followed then if there are deviations, the workers know that there is a problem. It is a never-ending process and is better explained and presented by the PDCA cycle (plan means identify aspects and impacts by implementing

goals and objectives do means implement including training and operational control measures-check means assess the measurements and reports results to decision makers and act means decide on changes needed to improve process),

2.7. Effects of kaizen implementation on operational performance in manufacturing sector

Many studies that shows, kaizen accomplishment has positive effects on the operational performance of manufacturing firms. Ohno,(1998) and Liker, (2000) states that Japanese manufacturing techniques illustrated the significance of kaizen improvement of organizational performance. Business performance improvements resulting from kaizen events emerge to vary from moderate improvements (25-50%), to significant improvements (75-100%) Cuscela, (1998) and Sheridan,(1997). Elimination of waste in manufacturing firm through adoption of lean strategies such as kaizen results in a 50% reduction in human efforts, manufacturing space, tool investment and product development time and a 20-50% improvement in quality (Zayko*et.al,* 1997).

Huson and Nanda1995) found that after JIT adoption, firms reduced the labor content in facilities, increased inventory turnover, and enhanced earning. A primary objective of practicing 5S is to maximize the level of workplace health and safety in conjunction with increased productivity. Japans industrial safety and health association (1999) showed that the development and involvement of 5S between 1945and 1998 led to a reduction in the frequency of work incidents.

Osada (1991) states that that among the benefits of implementing 5S in an organization pillar wise are; orderliness /sort and seitan) leads to maximization of efficiency and effectiveness by reducing people's workload and human errors through simplifying processes; cleanliness/ seiso and seiketsu) leads to maximizing effectiveness by contributing to a healthy life, safety and wellbeing as well enhancing simplicity and discipline (shitsuke) contributes positively through training and education to enhance the level of morals which leads to increased quality of life and work standards. Kumar.et.al. (2006) stated that the 5S system helps to increase productivity by reducing idle time in some process and also ensuring the health and safety of some employees in an India MSE. The implementation of 5S provides an organization with a plate form that will little efforts allows the organization to satisfy a range of international standard with minimal cost.5S has been associated with better performance in

many studies of world-class manufacturing (Sakakiet.al.1997; Shah and Ward,2003).In Kenya reports shows that kaizen intervention have often resulted in 50 to 70% [reduction in lead time,50% to 100% increase in productivity,20% to 40%, saving in manufacturing costs,40 to 60%reduction in quality errors, and 50%release of space, as well as a significant improvements in team spirit and morals /Kenya association of manufacturers,2012)

The implementation of kaizen was improving the operational performance of business organization at different levels in Ethiopia, Nesra(2012), conducted that a quantitative study on role of Ethiopian Government in implementing kaizen as a modern management tools for quality and productivity at kadisco chemical industry in Addis Ababa, the result shows that implementation kaizen policy was found to increase labor productivity by reducing on average of 50%, time wastage for searching tools; improved defects ratio which ranged from 50% to 70%; and improved lead time in range of 16% to 90%. The investigator concluded that the implementation of kaizen at Kadisco industry has brought high-quality benefits.

2.7.1Technical System effects

The accomplishment of Kaizen leads to increase quality and greater productivity in the short term increase productivity by 30 % to 50 %, and even 100 percent and more, all without major capital investment. According to Kosandal and Farris (2006), the technical system outcome, targeted during Kaizen implementation includes: Productivity Floor space, Lead time, Set-up time, Part travel time, Percent on time delivery, Work- in – process and throughput and product design. They also suggested the magnitude of improvement on the technical system outcome ranges from 25 percent to 100 percent of improvement, which is also similar with Imai's conclusion.

2.7.2 Social System effects

Kaizen is a humanistic approach, it is based on the belief that every human being can add to improving his workplace, were he spends one-third of his life (Imai, 1986). He further explained the importance of Kaizen strategy for social outcome, stating Kaizen strategy helps business communities, institutions and societies all over the nation. Employee knowledge, skill and attitude, describe employee characteristics that are required to adequately perform desired task .Kosandal& Farris,(2004)

2.8. Just in time Delivery (JIT)

Just in time delivery (JIT) is a production system aimed at eliminating non-value adding activities of all kinds and achieving a lean production system flexible enough to accommodate fluctuations in customer Orders (Shah and Ward, 2003). Just in time includes practices aimed at reducing or eliminating waste along the value streams such as lot size reduction, cycle time reduction, quick changeover and production process reengineering (Shah and Ward, 2003). Just In-Time Delivery (JIT) developed by Kiichiro Toyoda, is a pull system which allows producing and delivering small quantities using such a short lead time. It maintains customer specific needs. JIT‘s ‗make to order‘ method replace the push system, which was representing the tradition of ‗make to sell‘ production

2.8.1 Goals of Just-In-Time Production System

JIT Manufacturing tries to smooth the flow of materials from the suppliers to the customers, thereby increasing the speed of the manufacturing process. The objective of JIT is to change the manufacturing system gradually rather than drastically. JIT can help organization remains competitive by offering consumers higher quality of products than their competitors, it is very important to ensure survival in the market place. These major objectives are suitable for all organizations. But each organization is unique in some way; adjustments of JIT objectives for each form should be made in order to complement the overall production process. JIT production system therefore seeks to achieve the following goals

2.8.2 Benefits of Just-In-Time Production System

The goals of a successful business are continual improvement of customer satisfaction and minimal costs; both overhead and capital. Conventional attitudes toward lot size, production time and inventory can actually increase costs. The JIT philosophy strives to minimize cost and wasted time by producing exactly what is needed when it is needed. With JIT inventory planning, the only inventory is in transit; this results in lower capital costs. Furthermore, JIT production results in tighter bonds between the customer and the supplier because suppliers are considered partners. The underlying concept of JIT inventory is elimination of waste. JIT strives for an ideal lot size, where less is better. The idea is to drive all queues toward zero in order to: minimize inventory investment, shorten production lead times, react faster to demand changes, uncover any quality problems Karlene (1988) has described five major benefits potential of JIT manufacturing system, these benefits are the following

2.8.2.1 REDUCTION IN INVENTORY:

Inventory protects the organization against problems such as uncertain equipment breakdowns, late deliveries, demand fluctuation etc. High inventory creates problems viz., high setup time, quality defects, equipment down time, production planning deficiencies, and etc. There should be a continuous drive from top to bottom to minimize all types of inventories: work-in-process, raw material, finished goods, component parts, and so on. A significant amount of inventory can be reduced the inaccuracies of demand predictions at different points of production flow. Electronic data interchanges can be used implying other JIT techniques to lesson inventories. A forecast can be generated based on daily basis.

2.8.2.2 QUALITY IMPROVEMENT:

JIT systems offer an organization the means to produce more usable products. The quality of product or service reflects the health of organization and its potential for growth. Quality adds value to the products and is a never-ending process to exceed customer expectations now and in the future.

2.8.2.3 INCREASED PRODUCTIVITY:

Increase in periodicity means increasing the volume of production from given resources. Increase in productivity lowers the cost of product. Productivity is the ratio of output to the value of input.

2.8.2.4. INCREASED COMPETITION POSITION:

Develop, produce and sell new products faster than your competitor. Competitive edge can be built-up only if your organization works harder and performs better than your competitors

2.8.2.5 INCREASED PROFIT MARGIN:

Profit is the ultimate measure of the success of an organization. Profit can be increased by boosting the sales of products, increasing the value/quality of the products, and reducing the cost of production by means of increasing productivity.

2.9. Successful implementation of kaizen

Kaizen approach originated in Japan in response to the oil disaster in the early '70s, it is simple to understand why it developed so much. Also, the kaizen position helps us to explain why Japanese firms are so exploiting new technology, even when they are not its originator. Kaizen-driven firms do not suffer from "not invented here" syndrome. Ideas are not the constrained outcomes of different department, corporate planning, or market research; every new idea is welcome and new 'channels' are deserted. An example of Kaizen effectiveness is

Nissan's experience with welding robots. First introduced in 1973 and within a decade cut work time per unit by 60 % and increased overall production efficiency by 20%. Through a series of Kaizen programs that searched out improvements that cut time by as little as half a second. The programs, initiated within three to six months of one another, formed a staircase that each step was secured before the next to rise Kaizen practices can deliver breakthrough improvements in the range of 40% to 60% the problem most American companies that force for change is taken by middle management and often top management is not involved (Thessaloniki,2006)

2.10. Japanese approach versus the western approach

There is a distinguished theoretical difference between Japans and the Western management approaches. In the particular, kaizen contains many exceptional characteristics to the Japans industrial experience, first, the Japans approach emphasizes small additional changes under existing technology, while the western approach favors innovation based on technological breakthrough (Clark et.al.2009&Imai, 1997). The second Japans approach focuses on human elements and advocates people's process-oriented efforts for improvement, while the western approach is more disposed towards reviewing performance from result based criteria (Imai, 1997).

Kaizen does not essentially call for large investments, such as installing new machine or hiring experts'. Instead, it requires continuous efforts and assurance at all levels of the workforce to reason and practice the use of existing human and capital resources to improve quality and productivity. In a sense, the differences between the Japanese and the western approach are a matter of degrees.

In general, few Japanese managers are little the importance of having the right kind of equipment or conducting research and development, while Western managers cannot be accused of neglecting the workers in factory management. For example, Toyota makes huge efforts for innovation and integrates such efforts with its kaizen activities (clerk, et.al, 2009)
There are several areas of overlap and agreements between the two, and they may often produce similar instruction for investments. Nevertheless, the comparison is still meaningful because they point to different initial actions, priorities and sequences which may result in different overall performance. For developing countries, having two distinct perspectives will be widening the strategy space for enterprise manager and policymaker. One of the frequency

recommended managers tools of Western foundation is business process re-engineering (BPR). BPR differs sharply from kaizen as it aims at a fundamental and dramatic change that leads to breaking through rather than achieving incremental improvements on an everyday basis.

BPR is the "fundamental rethinking and radical redesign of business process to achieve dramatic improvements in a significant measure of performance "Re-engineering is all or nothing proposition with uncertain results, which cannot be accomplished through small and caution steps. BPR usually takes a top-down approach in contrast to kaizen is a participatory bottom-up approach. In implementing BPR, the team of re-engineering assumes central responsibility by representing the functional units being re-engineered &having all other units depends on it (Getachew, 2017).

Another accepted management tool from the west is Bench-marking, whose crucial procedure is gathering information on the number of competing firms or countries occupied in the same activities comparing the performance of targeted domestic firms against the so-called best practice and setting goals for improvements. Kaizen is also different from Benchmarking since the memo is a tool for "identifying, understanding, and adapting outstanding practices and processes from organization anywhere in the world to help your organization improve its performance'' (American productivity& Quality center)

Benchmarking is mostly for identifying one's weakness and setting goals concerning others whereas, Kaizen is functional mainly to find room for improvements internally and realizing this through team efforts. For example in the process of assisting the Ethiopian Government in formulating a master plan for the leather products industry /LLPI), the United Nations Industrial Development Organization(UNIDO) conducted a Benchmarking implement to Ethiopian LLPI against four of the best LLPI performing countries namely, India, specifically West Bengal leather, Vietnam(leather and footwear), china(footwear)and Italy(footwear). This implement analyzed the availability of raw materials, labor costs, the level of human capital, the establishments of background and forward linkage, design capacity, as well as strategies and policy mixes adopted by these four countries (e.g. price, product, and communication). In doing this it intended to generate understanding of the relative strength and weakness of the supply chains in the Ethiopia LLPI in the Global context and design strategies to overcome such constraints and weakness (UNIDO, 2005), while this specific

exercise was undertaken the industry level, it is also possible to conduct bench-marking at the firm level (Ohno.et.al.,2009)

2.11 The knowledge of kaizen in Ethiopia

Japans International Cooperation Agency (JICA's) first kaizen project in sub-Sahara Africa began in Ethiopia. According to GRIPS Development forum and JICA,(2011), the knowledge of national productivity movement in the four countries suggests that Ethiopia may wish to pay particular attention to the following points when its events to distribute and scale-up kaizen through a national movement. First, as the core organization, the EKI must assume a variety of functions such as kaizen promoters, catalyst, mobilize and capacity builder. These include formulation overall policies, plans and programs for kaizen dissemination; providing training of trainers and developing official and standardize training program and material conducting analysis and consulting services through model company projects; create in national awareness on quality and productivity, and establishing instrument formation wide outreach, including micro and small enterprise (MSE) and the future workforce thought technical and vocational education and training(TVET) such functions cannot be realized by the EKI alone.

Second, it is significant to be mindful of the three stages of national movement, awareness, action, and ownership and consider the role of EKI in each stage. Building a national movement is a long term undertaking and must continuous over a decade or more, with evolving stresses. Singapore spent the initial five years increasing productivity, awareness and moved to strategy for how continuously update kaizen knowledge and techniques. One option might be to link the transfer of kaizen technology with foreign direct investment (FDI) attention strategy, finally, the government should commit to supporting the EKI for enough time.

There are practice drawn from Singapore, Burkina Faso, and Botswana the action stage introducing specific programs at the workplace (model company projects managements consultancy programs for local companies). Then, it moved to the ownership stage to support private and public organization to lead the productivity movement. Burkina Faso combined the awareness and action stage by linking Quality Control Circle (QCC) pilots with annual QCC National conventions. Botswana has faced difficulty translating "awareness " into concrete action. Since Ethiopia has already implemented kaizen pilots at model companies

with JICA support; it may be effective to combine awareness with the action stages in the future. Third among the three stages, the ownership stage is important to self- sustain the national movement. However, this is the most difficult stage. Conscious policy efforts are necessary in two aspects.

It is the most sustain core organizations technically and financially especially after the achievement of donor support. Over the medium term, the EKI should have a strategy for how to constantly up to date kaizen knowledge and techniques. One option might be to link the transfer of Kaizen technology with foreign direct investment (FDI) attraction strategy. At the same time, the Japanese case suggests the importance of working with a business connection from early on.

It is necessary to steadily strengthen private sector capability to that companies can develop their systems of kaizen and that capable management consultants can be nurtured and scaled up the country. Awards may be effective to stimulate interests in best practices and motive excellence. Certification and qualification systems may be also useful for retaining capable national experts and developing private management consultants

Lastly, the experiences of Burkina Faso and Botswana suggests, it is necessary to recognize that in those countries where the presence of FDI (for manufacturing in particular) is limited, donor support might play a large role in updating the knowledge and techniques of Kaizen. The situation is different from East Asia, where Japanese companies shifted their production bases in the middle 1980's and assisted their local partners to learn kaizen philosophy and practices.

2.12. Benefits of kaizen implementation in Ethiopia

EKI,(2015) Modern industries within their one-year kaizen implementation in 2014 get outstanding results as a big attitudinal change among the top and middle-level management together with employees which influencing them to approve resistant and having " we can do" feeling which in turn became a stand for the future improvements, organizing their working places, improving organizational structures, identifying and implementing wastes, minimizing value-adding activities and by reducing delivery time most of the companies can be Globally certified, in the companies who are implementing first level kaizen, by eliminating wastes with an average of 50% there is a millions of birr cost-saving and

minimization and enhancing productivity by performing innovations which increasing machine productivity from 25% to 75%.

In general productivity raise with an average of 35% and the defect rate decreased by 30% together with there is an improvement in quality. The successful results obtained from the first level of kaizen implementer already started in Ethiopia especially in exports industries and some of other manufacturing industries can be explained as there is a movement of self-initiation and ownership feelings among employees, being conscious in producing quality products based on customer requirements, increase in productivity and competitiveness in the World market

2.13. Challenges to implementation of kaizen

The critical challenge for manufacturing sectors in Ethiopia and like most of developing economies is the lack of managerial methodologies like Kaizen (Izumi Ohno, etal.2009). Lack of capital and technological capabilities are indeed most important problems in the manufacturing and service sectors, the most feasible and that can be easy and quick to be improved with a little investment and resources is changing the managerial capacity with Kaizen tools (Admasu, 2015). This is why Kaizen becomes an appropriate tool for developing economies.

Andrew P.(2013) states that the learning on the challenges of process improvement in East Africa that with low level of economy, the lack of capital and resources to cover budget required for investment in innovation and technological improvement becomes a challenge to a country and may lead to weakness, outdated, inefficient and ineffective infrastructure, equipment/tools and processes.

The culture section is a key challenge in the achievement of Kaizen factors have led to inflexible, bureaucratic process with too many handoffs, reviews, and approvals have been challenges to Kaizen implementation. When the processes are not well integrated as a result of the culture result in poor quality products and services and long lead time in process unacceptable source specified. The manufacturing companies work is getting gradually more dynamic and complex. To respond to these dynamics processes and decision-making approaches need to be improved to respond effectively to sustain the business both in local and global markets in an increasingly competitive market environment.

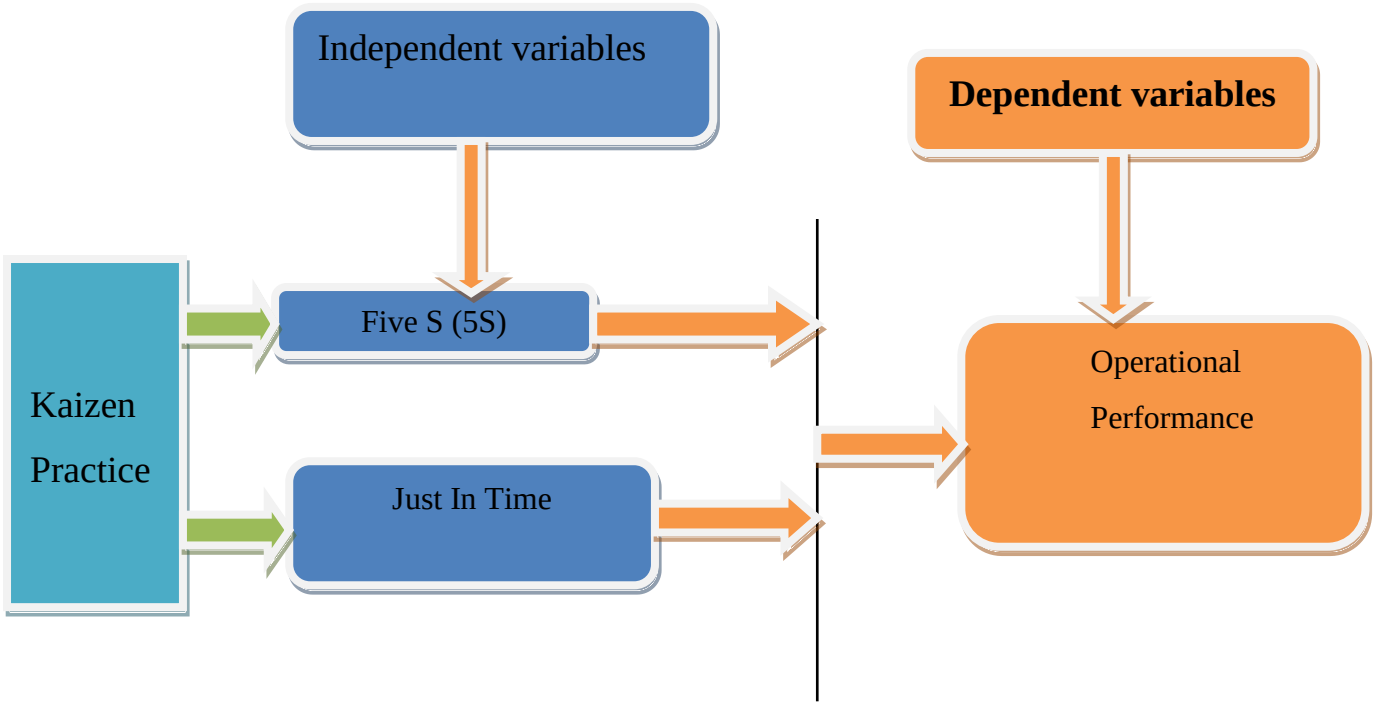
Kaizen in Ethiopia indicated is one of the pilot projects of a company called Kadisco Chemical Industry in Addis Ababa, Ethiopia, the implementation of the Kaizen culture was found to increase labor productivity by reducing, on average of 50%, time wastage for searching tools; improved a defect ratio which ranged from 50% to 70%; and improved lead time in the range of 16% to 90%.Despite positive achievements obtained during ongoing kaizen training project, many challenges in adoption of kaizen were identified .some of the challenges include employee resistance towards continuous improvement due to sudden introduction of change at workplace, lack of innovation among employees due to inability of management to involve in decision making, lack of recognition of hard-working employees, in educate communication .lack of workplace meeting was among the factors that affected kaizen practices in the organization.

Most of the enterprise has strict job description and bureaucratic organizational structure that prevents workers from sharing responsibilities, insufficient education background of workers that they could not understand kaizen tools at work. Environment or observe the established standards, attitude and misconception about kaizen posed some managers supervisors and just the matter of housekeeping lack of management commitments and support (Bwemelo, 2014).

2.14. Conceptual Framework

The main objective of this study was to investigate the effect of kaizen practice on MSE manufacturing sector operational performance in Gimbi town; .The conceptual framework shows the relationship among the component of kaizen techniques that contribute to the effectiveness of the operational performance of MSE. In the related literature the operational performance of MSE in manufacturing sector positively affected by kaizen techniques. However the study focus on 5S, and JIT kaizen system the major considered from the distinct techniques (Thessaloniki, 2006)

Figure 2.1: Conceptual Framework of the Study



Source: Adopted from (Kayashima, 2018), (Chakraborty, 2012), (Tiwari, 2017) & (LubnaRahmanLina, 2019)

CHAPTER THREE
RESEARCH METHODOLOGY

3.1. Introduction

This part described research design, data source and type, population of the study, sampling techniques and sample size, methods of data collected and method of data analyzed in the study

3.2. Description of the study Area

Gimbi is one of the 23 districts of West Wollega zone of Oromia Region state located at a distance of 441km west of Finfine (Addis Ababa) on the way to DambiDollo and Asosa main road. Gimbi is capital city of West Wollega Zone and the capital town of the district. The area bounded in the East West Wollega Zone Dhidessa River, In the west Lalo Asabi District, in the North Benishangul Gumuz regional state ,in the south Haru district, The district is characterized by slightly up and down top-graphic land features.

3.3. Research Design

Research design primarily refers to framework for the analysis of data (Bryman, 2012). In order to explain the relationship between variables the most appropriate approach is explanatory research design, which is helpful in analyzing the nature and extent of relationship that might exist between the research variables/dimensions/constructs by applying various inferential statistical tools (Churchill, 2002). According to (Gujarati, 2004), the multiple linear regression model is a powerful tool for summarizing the nature of relationship between variables and for making predictions of likely values of the dependent variable. It also attempts to test hypotheses on causality of research variables (Kothari, 2004).The types of research design employed for this study was explanatory research design so as to explain the cause effect relation of Five S & Just in Time on MSE operational performance in the study area.

Based up on the nature of the problem explanatory research design was employed. This design was selected because of the potential to explain the effects of kaizen practice on operational performance of MSE in Case of Gimbi Town Administrations. Further, the design also enabled the researcher in predict the relationship, direction and effect of independent variables with the dependent variable. Explanatory research is deeper in the sense that it

describe phenomena and attempts that explain why behavior is the way it is. In other words, it enabled to understand the very nature of what were actually looking at. It is aimed to ascertain if there is a significant association among two or more variables; and also to test hypothesis concerning the current status of the subject under study (Khotari, 2004).

3.4. Target Population

According to Rubin and Babbie, (2001), as cited by (Kenneth, 2012), the study population is the aggregation of element from which the sample is actually selected. It is the aggregation or the totality of all members or units from which information could be obtained. The total numbers of micro and small enterprises (MSE) manufacturing sectors in Gimbi town administration were 34 with population of 150 owners of the enterprise.

3.5. Sample Size Determination

The sample size was determined from the total population of 150 owners of the enterprise are currently working in micro and small enterprises (MSE) manufacturing sectors in Gimbi town administration. According to Taro Yemen's (1970) as cited by (Frank O., and Christine .A., 2016) is used to determine the sample size.

$$n = \left(\frac{N}{1 + Ne^2}\right)$$

Where: n is total sample size of the research from the two stratums, N is total number of owners of MSE manufacturing firm in Gimbi town administration to be sampled (150).

e is the percent of defect or margin of error usually 5%(0.05)

$$n = \left(\frac{N}{1 + Ne^2}\right) = \left(\frac{150}{1 + 150 * .05^2}\right) = 109$$

From the above calculation 109 respondents were selected as sample from the population.

Table 3.1: Sample Size Proportion

No	Population strata	Population	Sample Proportion
1	Owners of the Enterprise	134	109/150*134=97
2	Experts of Polytechnic	16	109/150*16 =12
	Total	150	109

3.6. Sampling Techniques

Sampling is the process or methods of selecting a suitable sample for the purpose of determining parameters or characteristics of the whole population. To carry out a study, one might bear in mind what size the sample should be, and whether the size is statistically justified and lastly what method of sampling is to be used (Adams et, al, 2007). The actual size of owners of the enterprise to be selected from sampled MSE manufacturing sectors was determined by stratified proportional sampling procedures since there were two strata groups in the study. Moreover, the individual respondent from each sampled MSE manufacturing sectors was selected by using simple random sampling. This technique could give equal chance to owners to be included in the research process. Judgment sampling is focus on particular characteristics of a population that are of interest which was best enable to give information in terms of research goals. Those MSE in Gimbi Town are selected based on the researcher's judgment that they will provide access to the desired information (Dattalo, 2008) the total number of micro and small enterprises (MSE) manufacturing sectors in Gimbi town 24 MSE manufacturing sectors was selected by judgment sampling techniques

3.7. Data Source and Type

To conduct the research, the researcher used primary data which was obtained from primary source that was from the operational workers of manufacturing firm of metal and wood work MSE in Gimbi town and the supporter of kaizen in Poly Technical of Gimbi Town

Saunders et al, (2003) said that, primary data are those data that are gathered for a specific purpose or for a specific study. Primary data are more accurate and reliable compared to secondary data. This data were obtained through five point Likert scale questioner to obtain quantitative

In order to achieve the objectives of the study, the researcher used both quantitative and qualitative data nature. Quantitative method is the study involving analysis of data and information that are descriptive in nature and qualified. A quantitative approach is the one in which the investigator primarily uses postpositive claims for developing knowledge, i.e., cause and effect relationship between known variables of interest or surveys inquiry (Creswell, 2009)..

3.8. Method of Data Collections

Based up on the views of (Khotari, 2004), idea of source and methods of data collection five point Likert scale questionnaires and semi structured interview were the methods by which data were collected for analysis. Thus, all possible data were collected by the researcher himself. This helped the researcher to collect data in responsible manner and respondents were got opportunities to get first hand orientation on the objectives of the research to provide true information for the very success of the research. The questionnaire was designed in self administered format to enable the respondents to fill the answers by their own. In this study, semi-structured interview, questionnaires are used to develop search for ideas related to the research objective from respondents..

3.9. Validity and Reliability Test of Instrument

Data collecting instruments were evaluated to ensure the quality of data. Based up on this, test for reliability was tested by using SPSS. To evaluate the extent of a measure to which the results were consistent over time and an accurate representation of the total population under study, the value of Cronbach's alpha, α, was used, which is the most common measure of scale reliability. The Cronbach's alpha, α, coefficient calculate the reliability of items that can lie between 0 and 1. Within the range value of α;<0.60, 0.80-0.90 and >0.90 fall in unacceptably low, high and very high degree of reliability of the items (Field, 2009) respectively. Based up on these notions, pilot test was made by taking 50 respondents randomly from the already selected target. Following this, data were processed by SPSS. The output of the results related to the variables under the study was presented under.

Table 3.2: Reliability Test

No.	Variables	Cronbach's Alpha	Items
1	Five S (5S)	.925	8
2	Just In Time (JIT)	.931	8
3	Operational Performance	.950	9

Source: Survey Data, 2020

SPSS output on reliability statistics to each variable illustrated in table- 3.2 show that two variables; Five S , just in time (JIT) and operational performance having 25 items, alpha value greater than 0.90, which is closer to 1 show that the items are very highly reliable. From the reliability statistics result, one can argue that the adopted items to the study have an

acceptable level of internal reliability, which helps to collect reliable data for the study. In addition, items in the variables can be applicable for similar study by different scholars.

In order to secure the extent to which the instruments are able to reflect the meaningful inferences to the total population, precaution should be taken in to consideration to validate whether the research truly measures the intended results (Field, 2009). Inline of this idea, the researcher made due attention from the beginning up to the end of the research process. Hence; careful adoption of instruments from related literature, reasonable sample size and composition by using sampling techniques that provide relatively larger size, and supporting the coding, analysis and interpretation data by acceptable statistical tools were among the techniques used by the researcher to improve the validity of the instruments. Furthermore, ethical considerations during sampling bureaus and respondents, data coding, analysis and interpretation were made again to strengthen the validity level of the inferences.

3.10. Method of Data Analysis

This study applied multiple regression analysis has applied to test association of variables with each other and the extent of variance in the independent variable as a result of unit change in the independent variables. Statistical package for social science (SPSS version 25) used for the analysis of data because the researcher have advance know how about this version than other versions to process a data and the data were presented by using graphs, charts and tables. The multiple regression model employed in this study is;

$$y = \alpha + \beta 1x1 + \beta 2x2 + e$$

Where;

Y - Y is DV (Operational Performance), α is constant amount or intercept

B1 is coefficient of Five S (5S) (X1)

B_2 is coefficient of Just in Time (X2),

The constant amount or intercept of Y is α

$ß_1$ and $ß_2$, refers to the coefficient of their respective independent variable which measures the change in the mean value of X, per unit change in their respective independent variables.

e= tolerable error term

3.11. Operational Definition of Study Variables

3.11.1. Dependent Variable

Operational performance of MSE is the measurement of the effectiveness of MSE due to improvement in product quality, low inventory level, improvement in overall productivity, reduction in lead time, reduction in processing time, continuous flow of production, improved equipment efficiency, cost improvement, improved maintenance practice enhanced competitiveness and increased sustainable conducive environment (Wardet,1995).

3.11.2. Independent Variables

Kaizen practice is 5S (Sort, Set in order, Shine, Standardize, and Sustain) and JIT (Overproduction, Waiting, Transportation, Unnecessary stock, Over-processing, Motion, and Defective part) techniques or a system which enables continuous and sustainable improvement for MSE.

5s kaizen is method of managing a work place or work flow with the intention of improving efficiency eliminating waste and increasing process consistency.

JIT is a philosophy of manufacturing based on planned eliminating of all wastes inventory, waste of motion and production defects and continuous improvement of productivity.

3.12. Ethical Considerations

Before the research was conducted on the selected Micro and small Enterprise, the researcher informed the respondents about the objective of the study and was consciously considered ethical issues in seeking consent. Avoiding deception, maintaining confidentiality respecting the privacy and protecting the anonymity of all respondents, a researcher was considered these points because the law of ethics on research condemns conducting a research without the consensus of the respondents.

CHAPTER FOUR

RESULTS, DISCUSSIONS AND INTERPRETATIONS

4.1. Introduction

This chapter presents analysis and findings of the study. The data gathered through questionnaire was classified, tabulated and summarized using percentages, frequency means and standard deviations. The data collected from 103 owners of Micro and Small Enterprise in Gimbi town was coded, entered in SPSS version 25 software and the result of the study is presented, analyzed and interpreted. The discussion was begins with the descriptive analysis of demographic information by percentages and frequency followed by effect of kaizen and operational performance by means and standard deviations. Lastly, inferential analysis of operational performance and effect of kaizen implementation operational performance by correlation analysis and regression analysis were under taken in this chapter.

4.2. Background Characteristics of Respondents

The background characteristics of the study such as gender information, educational level, duration of organization on operation and duration of kaizen implemented by the Gimbi town MSE were described using table, frequency and percentage as follows.

Table 4.1 Respondent's background

Variables	Category	Frequency	Percent
Gender	Male	61	59.2
	Female	42	40.8
Educational Level	Less than or Equal to Diploma holder	71	68.9
	BA/BSC degree holder	32	31.1
Duration of MSEs	One to Five years	66	64.1
	Six to 10 years	37	35.9
Duration of kaizen	one to three years	91	88.3
	four to six years	12	11.7
N= 103			

Source: Survey Data, 2020

Table 4.1 above presents the general characteristics of respondents. Accordingly, the result of the study showed 61 (59.2%) of respondents were male, where as 42 (40.8%) of them were female respondents.The educational qualification of the study participants showed that, 71 (68.9%) of respondents were less than or equal to diploma holder whereas 32 (31.1%) of respondents were bachelor degree holder.The duration of MSE the study showed that, out of 103 respondents' 66 (64.1%) of them have one to five year service of MSE, while 37 (35.9%)

of them have six to ten year work experience. At the end the result of the table above showed that, 91 (88.3%) of them have being used kaizen since 2018 and 12 (11.8%) of them have being used kaizen since 2015. Generally, the result of general characteristics listed in the table 4.1 above indicated that most of the participants of this study were male, less than or equal to diploma holder, one to five years old MSE, and have being used kaizen since 2018.

4.3. Descriptive Analysis of Study Variable

The study participants' level of agreement about kaizen practices and the operational performance of MSE in Gimbi town were undertaken. The study participants were asked using five point Likert scale to indicate their level of agreement with scale such as 1= strongly disagree, 2= Disagree, 3=Neutral, 4= Agree, and 5= strongly agree. The mean value of the response computed based on Likert scale indicated the average agreement of respondents. According to the measurement of midpoint (3) on the five-point Likert scale , mean score below midpoint (3) is disagree; mean score above midpoint (3) is agree and the mean score equal to midpoint (3) is neutral. Respondents indicated their level of agreement on each of the five level of agreement of variables under studied. The following table 4.2, 4.3, 4.4, 4.5, and 4.6 were presented with mean and standard deviation for the effect of kaizen practice on operational performance of MSE in the study area

4.3.1. 5s Kaizen Practice

In this part, the researcher has prepared eight items to know the existing practices of 5s Kaizen Practice in MSE of Gimbi town. Table 4.2 shows the means and standard deviation responses to these questions.

Table 4.2: 5s Kaizen Practice Result

No	**5s Kaizen Practice**	Mean	SD
1	In our enterprise, we remove unnecessary items from the workplace.	4.57	.60
2	In our enterprise, we keep only those items necessary for current production.	4.39	.82
3	In our enterprise, we put necessary items in the right place in order to access them easily.	4.46	.71
4	In our enterprise, we use identification card/symbol for regularly used and returned items.	4.50	.64
5	Our enterprise, products, equipment & tools are properly cleaned.	4.42	.76
6	Our enterprise, products, equipment & tools are ensured whether they are in good operating condition.	4.33	.82
7	In our enterprise, we keep the workplace clean by integrating sort, set-in-order and shine activities as a culture of everyone's regular work.	4.55	.68
8	In our enterprise, we developed self-disciplined habit of maintaining and following the procedures, rules and continue to improve it.	4.46	.71
Over all mean		4.46	
N=103			

Source: Survey, 2020

As presented in Table 4.2, the mean value of 5s Kaizen Practice sub factors mean result differs from 4.57 to 4.33 and it would be described from general to specific as follows.

The mean score for the removals of unnecessary items from their workplace was 4.57; followed by saved the workplace clean by integrating sort, set-in-order and shine activities as a culture of everyone's regular work with mean score 4.55; the use identification card/symbol for regularly used and returned items with mean score 4.50, putting the necessary items in the right place in order to access them easily and developed self-disciplined habit of maintaining and following the procedures, rules and continue to improve it with mean score 4.46, keep only those items necessary for current production with mean score 4.39, in their enterprise products, equipment & tools are ensured whether they are in good operating condition with mean score 4.33 and their enterprise products, equipment & tools are properly cleaned. This implies that the majority of respondents scored higher in the scale level of agreement (agree). The 5s Kaizen Practice (sorting, set in order, shining, standardization and sustainability) with over all mean of 4.46 results shows that good practices in MSE of Gimbi town.

4.3.2. Just In Time (JIT) Implementation

To measure just in time implementation of MSE in Gimbi town, eight items has presented for owners of the enterprise and their response were briefly summarized by mean and standard deviation in table 4.3 below.

Table 4.3 Just In Time (JIT) Implementation

No	**Just In Time (JIT) Implementation**	Mean	SD
1	In our enterprise, producing over production reduced	3.74	1.44
2	In our enterprise, inventory and work in process for almost lowest during production	2.14	1.31
3	In our enterprise reduced unnecessary motion when product is produced.	2.58	1.49
4	In our enterprise, waiting without work is reduced.	2.17	1.15
5	In our Enterprise, new process is designed to increase value adding activities.	2.11	.94
6	In our Enterprise, produce products with minimum lead time.	4.42	.86
7	In our Enterprise there is no defect that results in rework.	3.17	1.38
8	In Our Enterprise there is no unnecessary movement of product ,materials that resulting in wasted time, effort and cost	2.26	.82
Overall mean		2.82	
N=103			

Source: Survey, 2020

As presented in the table above the mean result of JIT of kaizen implementation sub factors have been ranged between 4.42 and 2.11 and it would be discussed as follows:

The highest mean score 4.42 produce products with minimum lead time used in their enterprise, followed by reducing over production in their enterprise with mean score 3.74,produce products without defects that result re work in the enterprise with mean score 3.17. This implies that the majority of respondents scored higher in the scale level of agreement (agree). The just in time implementation practice sub factors result shows good practices in Gimbi town.

In the contrary, the mean result 2.58,2.26, 2.17, 2.14 and 2.11 Reducing unnecessary motion, Minimizing unnecessary movement of product, materials that resulting wasted time, effort and cost, Minimizing waiting without work, Lowering inventory and work in process during production ,and new process designed to increase value adding activities were relatively approaches to low scale in the level of agreement (disagree). From these sub factors

described, it is possible to conclude that these sub factors were poorly practiced in MSE of Gimbi town.

4.3.3. Operational performance of MSE

To measure the operational performance of MSE in Gimbi town, nine items has presented for owners of the enterprise and their response were briefly summarized by mean and standard deviation.

Table 4.4. Operational performance

No	**Operational performance**	Mean	SD
1	After Kaizen implementation, our MSE work environment cleaning is improved.	4.45	.710
2	After Kaizen implementation, our MSE cost of product production is minimized.	2.86	1.744
3	After Kaizen implementation, our MSE competitiveness is enhanced.	2.77	1.705
4	After Kaizen implementation, our MSE cost of material maintenance is reduced.	4.44	.621
5	After Kaizen implementation, our MSE product quality is improved.	2.91	1.579
6	After Kaizen implementation, our MSE customer satisfaction is improved.	4.45	.710
7	After Kaizen implementation, our MSE productivity and profit is improved.	2.81	1.686
8	After Kaizen implementation, our MSE inventory level is reduced.	4.32	.899
9	After Kaizen implementation, our MSE production processing time is reduced.	3.61	1.087
Over all mean		3.62	
N=103			

Source: Survey, 2020

As presented in the table above the mean result of operational performance sub factors have been ranged between 4.45 and 2.77 and it would be discussed as follows:

The highest mean score 4.57 was for the MSE work environment cleaning improvement and the MSE customer satisfaction improvement. This implies that the majority of respondents recorded highest in the level of their agreement (agree).This means the participant were strongly agree on operational performance of MSE in study area. The mean scores 4.44, 4.32, and 3.61 for the reduction of cost of material maintenance; the reduction of inventory level

and reduction of their production processing time respectively. This indicated the results were relatively approaches to high scale in the level of agreement (agree) which shows the existence of good practice with regard to these items in MSE of Gimbi town.

On the contrary, the mean result 2.91, 2.86, 2.81 and 2.77 was for the improvement of MSE product quality after they implement kaizen; the reduction of cost of production after they implement kaizen, improvement of their productivity and profit after they implement kaizen, and enhancement of their competitiveness after they implement kaizen were relatively approaches to low scale in the level of agreement. From these sub factors described, it is possible to conclude that these sub factors were poorly practiced in MSE of Gimbi town.

4.3.4. Challenges of Kaizen Implementation

The challenge of kaizen implementation of MSE in Gimbi town measured by descriptive statistics and seven items presented for owners of MSE and their response were briefly summarized by mean and standard deviation.

Table 4.5. Challenges of Kaizen Implementation

No	**Challenges of Kaizen Implementation**	Mean	SD
1	In our enterprise, sufficient financial resource was allocated for Kaizen implementation.	2.34	1.27
2	In our enterprise, there is management support for Kaizen implementation	2.27	1.28
3	In our enterprise, there is sufficient training for Kaizen implementation	2.62	1.27
4	In our enterprise owners of MSE were highly committed for Kaizen implementation	2.57	1.39
5	In our enterprise there is high workers participation for Kaizen implementation	2.49	1.51
6	In our enterprise there was good communication for Kaizen implementation	2.39	1.33
7	In our enterprise there was well defined organizational structure for Kaizen implementation.	2.14	1.21
Overall mean		2.4	
N=103			

Source: Survey, 2020

As presented in the table above the mean result of challenges of kaizen implementation sub factors have been ranged between 2.62 and 2.14 and it would be discussed as follows: Existence of sufficient training for kaizen implementation in their enterprise" (mean=2.62,SD=1.27), owners of MSE were highly committed for kaizen implementation in their enterprise(Mean=2.57,SD=1.39),high workers participation for kaizen implementation in their enterprise (Mean=2.49,SD=1.51),good communication for kaizen implementation in

their enterprise (Mean=2.39 ,SD=1.33), sufficient financial resource was allocated for kaizen implementation in their enterprise (Mean=2.34,SD=1.27), management support for kaizen implementation in their enterprise (Mean= 2.27 SD=1.28) and there was well defined organizational structure for kaizen implementation in their enterprise (Mean =2.14 SD=1.21). This result shows lower level of agreement about challenges of kaizen implementation.

4.8 Interview Analysis Report

According to the interview from general metal fabrication and furniture making of polytechnic of Gimbi town the implementation of five S in MSE is helpful in organizing and managing the work environment by sorting, set in order, shine, standardization and sustainability. The implementation of Sorting in MSE involves selecting what you need to complete the job and discarding items that are not needed in the work place of MSE. It focuses on removing unnecessary items from the work place and classified the equipments, tools and materials.

From interview report the practices of Set in order specifically customize the working area by arranging the remaining items in order to select, use and return to the proper place .It helps to use time and materials effectively and efficiently in proper way. Shining emphasized on the removal of dust and dirty. It focuses on cleaning up the work place that the disorder and trash materials to make the work place clean and brighter in order to enjoy every one to his work in MSE..Standardization is to maintain high standard place by keeping everything clean and orderly at all times. Sustainability is to train and practice continuously in order to become culture and habit in MSE In MSE of Gimbi town the implementation of five S(sorting, set in order and shining) implemented at good extent in MSE of Gimbi town, while standardization and sustainability need more attention from experts to train and practice in MSE

Concerning the implementation of JIT/Waste elimination, kaizen practices focuses on eliminating waste and loses from the process that do not add value for the MSE.. The wastes that found in MSE were wasteful inputs and man power, utilities that increase additional spaces , inventory which increase additional cost of operations by requiring equipments, defects that require rework and waste of resources and efforts, movement of raw materials, waking here and there without work were the major wastes in MSE of Gimbi town . To conclude just in time kaizen practice the owner of the enterprise should work on uninterrupted operations of hand tools, machine and equipment, flexible utilization of man power and eliminating the defects at source though active participation for common

objectives and goal The implementation of JIT in MSE of Gimbi town practiced at moderate extent that needs more attention for improvements. The implementation of kaizen in MSE faced so many challenges that hinder successful implementation of kaizen such as lack of sufficient financial resource, Management support from MSE office, lack of owners commitments, Lack of communication skill, lack of enough training are the core challenges in MSE .Therefore, continuous training by awareness creation ,resources fulfillment and motivation to implement the intended kaizen particularly in terms of realizing improvements in productivity and delivery.

The improvement of operational performance due to kaizen implementation in MSE of Gimbi town are work environment cleaning improvement, cost of material maintenance reduced, customer satisfaction improvements, lowering inventory level are the major operational performance in MSE of Gimbi town.

4.5. Correlation Analysis

Correlation is a measure of statistical relationship between two or more independent variables occurring together. A positive correlation shows that the extent to which those variables increasing or decreasing in parallel, while a negative correlation indicates the extent to which one variables increasing as another variables decreasing. The coefficient of correlation gives mathematical value for measuring the strength of the linear relationship between two variables. It can take value for measuring from -1 to 1 with +1 represents positive linear relationship.0 represents no linear relationship and -1 represents inverse relationship With an objective of measuring the relationship between kaizen practices and the operational performance of MSE in Gimbi town and the researcher used Pearson correlation analysis

Table 4.6: Correlation Coefficients Result

N=103				
Correlations				
Major Study Variables		OP	(5S)	(JIT)
Operational Performance	Corr.	1	.668**	.596**
	Sig.		.000	.000
Five S (5S)	Corr.	.668**	1	.572**
	Sig.	.000		.000
Just In Time (JIT)	Corr.	.596**	.572**	1
	Sig.	.000	.000	
**. Correlation is significant at the 0.01 level (2-tailed).				

Source: Survey, 2020

The Pearson's correlation coefficientsare used to analyse the strength of relation between dependent and independent variables. According to (Pearson, 1957) ,the correlation coefficients range of value are 0.8 to 1.0, 0.6 to 0.8, 0.4 to 0.6; and 0.2 to .4; and below 0.0 to 0.2 have very strong, strong, moderate, weak and very weak respectively.As it can be seen from table 4.6. Five S has strong and positive relationship with the operational performance of MSE in Gimbi town which accounts for 66.8% and JIT has a moderate and positive relationship with the operational performance of MSE in Gimbi town which accounts 59.6%

4.6. Regression Model Assumption Test

Diagnostic checking is done to test whether the sample is consistent with the above basic assumptions of classical linear regression model. In order to test the consistent of data with OLS mode such as Tolerance, VIF, Scatter plot and Normal P-P plot were used. Consequently, the results for the model assumptions test are presented as follows:

The assumption of normality underlies parametric statistics and does not assert that the observations within a given sample are normally distributed, nor does it assert that the values within the population are normal. This core element of the assumption of normality asserts that the distribution of sample means is normal. Technically, the assumption of normality asserts that the sampling distribution of the mean is normal (Ajay & Micah, 2014);(Siddiqi, 2014). As observed from Normal P-P plot diagram (appendix II) there is more data in the middle or adjacent to the line. Additionally, it appears that about half of the data are above and half of the data are below the mean. Also there are not any unusually large or small numbers at either extreme (known as outliers).

The assumption of scatter plot refers to equal variance of errors across all levels of the independent variables. Hence, the researcher has assumed the errors spread out consistently between the variables. This is evident when the variance around the regression line is the same for all values of the predictor variables. Ideally residuals are randomly scattered around zero (the horizontal line) providing even distribution. The rule of thumb for this method is that the ratio of high to low variance less than 10 is not problematic (Osborne & Waters, 2002). As observed from the scatter plot diagram (appendix III) shows that the residuals are randomly scattered and it implies that there is equality of variance in this observation

Table 4.7: Tolerance and VIF Result

Coefficient			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Just In Time	.561	1.783
	Five S	.733	1.364
a. Dependent Variable: Operational Performance			

Source: Survey Data, 2012/2020

The Variance Inflation Factor (VIF) measures the impact of collinearity among the dependent variables in a multiple regression model on the precision of estimation (Burns & Burns, 2008). Typically a VIF value greater than 10.0 is of concern. Since, the maximum value of VIF is 1.783 and the minimum one is 1.364, multi collinearity is not the problem of this model and inter-correlations are not sufficiently high to cause concern. On the other hand, tolerance below 0.1 indicates a serious problem and below 0.2 indicates a potential problem. The tolerances of the variables range between 0.733 and 0.561.The data satisfied the assumptions of multi collinearity, normality of residuals, and homoscedasticity while no outliers were identified.

4.7. Regression Analysis

In order to make the study complete, regression analysis of independent variables on the operational performance was paramount important as the relationship between dependent and independent variables can successfully be explained with regression analysis. In addition to this, the regression is a powerful tool for summarizing the nature of relationship between variables and for making predictions of likely values of the dependent variable (Bryman & Cramer, 2005).

Table 4.8: Model Summary Result

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.785[a]	.617	.605	.53881
a. Predictors: (Constant), Five S, Just In Time				
b. Dependent Variable: Operational Performance				

Source: Survey, 2020

The model summary Table 4.8; above shows the degree of association that the stated independent variables have with the dependent variable in the study area. As it was shown by R that the stated independent variables (kaizen practice) all together have strong positive relation at a rate of 78.5%.This shows that the better the variables are treated the more operational performance would be MSE in Gimbi town. The R Square indicates the strength of interpretation in OLS model as it was explained by 61.7% variation of operational performance of MSE in Gimbi town but the remaining 38.3% variation of operational performance are caused by other factors that are not included in the study. The adjusted R^2 of 0.605 implies that all the explanatory variables used in the study explain for about 60.5 percent of the variations level of effect of kaizen practice on operational performance of MSEs in manufacturing firms.

Table 4.9: ANOVA Result

ANOVA						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	46.278	3	15.426	53.135	.000[b]
	Residual	28.741	99	.290		
	Total	75.018	102			
a. Dependent Variable: Operational Performance						
b. Predictors: (Constant), Five S, Just In Time						

Source: Survey, 2020

The Analysis of Variance table above showed the model fitness test. The significance level (sig=.000) at F=53.135 proved that, F is large enough to prove the model used and it was suitable for the measuring effects of kaizen practice (five S &JIT) have on operational performance of MSE in Gimbi town.

4.7.1. Regression Coefficients Result

Table 4.10: Regression Coefficients Result

Coefficient						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.131	.053		2.466	.015
	Just In Time	.276	.073	.313	3.762	.000
	Five S	.326	.064	.373	5.132	.000
a. Dependent Variable: Operational Performance						

Source: Survey, 2020

As seen from table 4.11, the two model of kaizen practice under study such as five S(t=5.132, p<0.05) and JIT(t=3.762, p<0.05) significantly contributed for positive prediction of operational performance of MSE in Gimbi town.

To identify the individual contribution of predictor variable, standardized coefficient Beta value of the two model of kaizen practice on operational performance of under study were used. Standardized Coefficient Beta(β) five S (0.373) and JIT (0.313). Hence, five S contributes more than JIT since it has larger standardized coefficient. Consequently, it can be said that five S was more determinant variable that predict operational performance of MSE in the study area.

That means as one unit increase in five S, the level of MSE operational performance increase by 0.373 units; and as one unit increase of JIT, the level of MSE operational performance increase by 0.313 in Gimbi town. Here, the contribution of JIT on MSE operational performance was low compared five S MSE in Gimbi town. As the magnitude of weighted beta, it can be concluded that if all independent variables are ignored, then MSE in Gimbi town itself have the value of .131on operational performance.

As per the regression analysis, the best fit for the data is defined by the following equation:$\mathbf{OP = 0.131 + 0.373(FiveS) + 0.313(JIT) + . = \varepsilon_0}$

Where; OP is operational performance that used as dependent variable of the study and the explanatory variables used in regression analysis includes, JIT is just in time and Five S (set in order, sorting, shine, sustain and standardize) are factor that affects operational performance which are represented in the above regression model.

4.7.2 Hypothesis Analysis and Results

The hypothesis test result is either accepting the hypothesis or rejecting the hypothesis based on the conventional P-values less than 0.05. In hypothesis testing the null hypothesis and alternative hypothesis should be tested on the population parameter of mean .The significance level up on which decision is made regarding the value of null and alternative hypothesis. The findings from regression shows that five S and just in time p value <0.05 result have significantly predict the operational performance MSE in Gimbi town

Thus the two null hypotheses ’Kaizen practices five’s (5s) and just in time (JIT) do not have a statistically significant effect on operational performance of MSE manufacturing sector in Gimbi town.’’ rejected in regression analysis against operational performance of MSE but the two alternative hypotheses ’Kaizen practices five’s (5s) and just in time (JIT) do have a statistically significant effect on operational performance of MSE manufacturing sector in Gimbi town accepted in regression analysis.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the Study

This chapter presents the summary, conclusions and recommendations that are assumed to be useful not only to show the status of kaizen practices but also to improve the challenges of kaizen implementation that are currently facing as part of operational performance of MSE in Gimbi town.

The objective of this study was to investigate the effect of kaizen practice on operational performance in MSE Manufacturing sector in Gimbi town. The data collected from the respondents using five point Likert scale questionnaire was analysed using SPSS 25 version using descriptive statistics such as frequency, percentage mean, standard deviation, correlation and also inferential statistics namely regression analysis. As per the analysis made, the following major findings of the study are summarized as follows:

The background characteristics of respondents have been evaluated from the point of their gender, educational qualification, service duration and length of kaizen implementation in their MSE. Most of the study participants were male, less than or equal to diploma holder, one to three years old MSE and have being used kaizen since 2018. This indicate that the participant have provided reliable data for the study, as a result of their long term experience in the study area.

The independent variables used for this study were (Five S and Just in time) have estimated influence on operational performance of MSE in Gimbi town. The overall descriptive statistics report (overall mean result) of kaizen practice and operational performance have the mean result greater than the average which indicate the good practice of kaizen implementation by MSE in Gimbi town. However, the overall mean result of Just in time practice have the mean result below the average which indicate the poor practice of Just in time by MSE in Gimbi town.

According to descriptive statistics findings, mean value of operational performance sub factors which have below the average mean value were explained as follows;
Improvement of MSE product quality after they implement kaizen; the reduction of cost of production after they implement kaizen, improvement of their productivity and profit after

they implement kaizen, and enhancement of their competitiveness after they implement kaizen. Also, the majority mean value of JIT practice and challenge of kaizen implementation sub factors were below the average value.

The matrix correlation coefficients were generated along with its statistical significance achieved for 103 numbers of respondents by using Pearson correlation Product Moment to assess the strength of relation between the independent and dependent variables. According to the correlation coefficient result,Five S kaizen practice have strong and positive relation with the operational performance of MSE Manufacturing sector in Gimbi town while Just In Time has a moderate and positive relationship with the operational performance of MSE Manufacturing sector in Gimbi town.

The multiple regression results of operational performance of MSEon kaizen practice explanatory variables (Five S and Just in Time) showed that the two explanatory variables significantly explain the variation of operational performance of MSE. The R Square indicates the strength of interpretation in OLS model as it was explained by 61.7% variation of operational performance of MSE in Gimbi town but the remaining 38.3% variation of operational performance are caused by other factors that are not included in the study.

The F statistics in the Ordinary Least Square model effect is 53.135 with probability (F= 0.000) which indicates a good fitness of the predictability of the model used. This indicates that the overall model is highly significant at 1% and that all the independent variables are jointly significant in causing variation in operational performance of MSE

According to the regression coefficient result, the two kaizen model (Five S and Just In Time) significantly predicts operational performance of MSE in Gimbi town. From the study five S kaizen practices was found to be the major predictor of operational performance of MSE

Due to the challenges of kaizen implementing the finding shows that the greatest challenges for implementation of kaizen are lack of sufficient training with mean 2.62, owners of enterprise commitment for implementation of kaizen mean 2.57 workers participation mean 2.49.these were followed by good communication for implementation, sufficient financial resource, Management support and well organizational structure with mean 2.39, 2.34, 2.27, and 2.14 respectively. The average mean value were 2.4

5.2. Conclusions

The study was conducted to investigate effect of kaizen practice on operational performance of MSE in Gimbi town. In connection to the study objectives, the researcher has made detail analysis of kaizen practice with operational performance. Therefore, the following were the major conclusions made by the researcher.

The overall descriptive statistics result of kaizen practice and operational performance indicated good practices but the overall descriptive statistics report of Just in time practice by MSE in Gimbi town indicated poor practices. From this result, some sub factor of operational performance have mean value below the average and the majority of JIT practice and challenge of kaizen implementation sub factors has below the average value.

As observed from the result of Just in time practice sub factors such as Reducing unnecessary motion, Minimizing unnecessary movement of product, materials that resulting wasted time, effort and cost, Minimizing waiting without work, Lowering inventory and work in process during production, and new process designed to increase value adding activities have mean value less than average value which showed the existence of poor practice of JIT in MSE of Gimbi town.

The regression coefficient result of the two kaizen model (Five S and Just in Time) are significantly predicts operational performance of MSE in Gimbi town. From these five S kaizen practice is found to be the dominant predictor of operational performance in Gimbi town.

The two null hypotheses ’Kaizen practices five’s (5S) and just in time (JIT) do not have a statistically significant effect on operational performance of MSE manufacturing sector in Gimbi town.rejected in regression analysis against operational performance of MSE but the two alternative hypotheses’Kaizen practices five’s (5S) and just in time (JIT) do have a statistically significant effect on operational performance of MSE manufacturing sector in Gimbi town accepted in regression analysis

5.3. Recommendations

Based on the findings and conclusions of the study, the researcher has forwarded the following recommendations to the MSEof Gimbi town concerning the five s kaizen practices, just in time practice, challenge of kaizen implementation and operational performance of MSE manufacturing sector as follows.

- As per the regression coefficient finding, the two kaizen model (Five S and Just in time) are significantly predicts operational performance of MSE in Gimbi town. But they are not equally predicting the operational performance of MSE. From these five S kaizen practice was found to be the major predictor of operational performance of MSE. Hence, it is advantageous, if the MSE of Gimbi town dominantly and wisely implement five S kaizen practices for the better operational performance, followed by Just in time practice.
- The majority of the study participant below average on Just in time practice sub factors such as Reducing unnecessary motion, Minimizing unnecessary movement of product, materials that resulting wasted time, effort and cost, Minimizing waiting without work, Lowering inventory and work in process during production ,and new process designed to increase value adding activities. Therefore MSE recommended improving just in time practice to its operational performance.
- Descriptive statistics report showed the existence of challenge on kaizen implementation. Therefore, Gimbi town should conduct training on how to improve operational performance and overcome challenges of MSE manufacturing sector.
- Based on the results of the study, additional research is needed to enhance the understanding about the effect of kaizen practice on operational performance of MSE.Because of the scope of the study was limited to MSE in Gimbi town; the participants were only from a single town. Also, it was limited only five S and JIT variables. Therefore, further research is needed to extend sampling to other organization and on the other variables that operational performance MSE.

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Appendix I: Questionnaire for Employee of MSEs in Gimbi Town

WOLLEGA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF MANAGEMENT

Questionnaire to be filled by Respondents

Dear respondents;

This questionnaire is designed to collect data for the study on **"effects of Kaizen Practices on MSE Manufacturing sector Operational Performance in Gimbi Town"** as a part of fulfillment of Master of Business Administration (MBA program). Your enterprise is one of the chosen enterprises for this research. The attached questionnaire is designed to assess the effect of kaizen practice on operational performance. The information you provide honestly has indispensable contribution to the success of the study. Thus, I request you to answer the questions provided in the questionnaire. I assure you that all of your responses and identity are confidential and used only for academic purpose. For all the effort you made to provide the necessary information, I would like to thank you in advance.

General Direction:

- The questionnaire has seven sections.
- Answer each question under each section accordingly.
- No need of writing Name

PART ONE

DEMOGRAPHIC CHARACTERISTICS FOR MSE OWNERS IN GIMBI TOWN

1. Sex of the Participant

A. Male □

B. Female □

2. Indicate your highest educational qualification

A. Less than or equal to diploma□

B.BA/BSC degree holder □

C.MA/MSC degree holder and above □

3. How long you have been working in this enterprise?

A. One to Five years □

B. Six to ten year □

C. above eleven years □

4. How long you have been implemented kaizen in this enterprise?

A. One to three year □

B. Four to six year □

C. Seven & above year □

PART TWO: EFFECTS OF KAIZEN PRACTICES ON MSE MANUFACTURING SECTOR OPERATIONAL PERFORMANCE IN GIMBI TOWN

Below are a number of statements regarding 5s Kaizen implementation Practice in your Mses. Please indicate how much you agree or disagree with each by encircle provided numbers after reading each statement, according to the following scales: Strongly Disagree(1); Disagree (2); Neutral (3); Agree (4); Strongly agree (5).

Please indicate the degree to which you agree with the following statements in each table presented below.

No	**5s Kaizen Practice**	Response				
i	**Sort**	**1**	**2**	**3**	**4**	**5**
1	In our enterprise, we remove unnecessary items from the workplace.					
2	In our enterprise, we keep only those items necessary for current production.					
Ii	**Set In Order**					
3	In our enterprise, we put necessary items in the right place in order to access them easily.					
4	In our enterprise, we use identification card/symbol for regularly used and returned items.					
Iii	**Shine**					
5	Our enterprise, products, equipment & tools are properly cleaned.					
6	Our enterprise, products, equipment & tools are ensured whether they are in good operating condition.					
Iv	**Standardize**					
7	In our enterprise, we keep the workplace clean by integrating sort, set-in-order and shine activities as a culture of everyone's regular work.					
V	**Sustain**					
8	In our enterprise, we developed self-disciplined habit of maintaining and following the procedures, rules and continue to improve it.					

Below are several statements on Just in Time practices and how it influences on MSE Manufacturing sector in Gimbi town. Please indicate the degree to which you agree with each. (Please use Likert scale of 1-5 where; 1= strongly disagree, 2= disagree, 3= neutral, 4= agree and 5= strongly agree).

Please indicate the degree to which you agree with the following statements in each table presented below.

No	**Just In Time (JIT) Implementation**	Response				
		1	**2**	**3**	**4**	**5**
1	Over Production In our enterprise, producing over production reduced					
2	Waste of Inventory In our enterprise, inventory and work in process for almost lowest during production					
3	Waste of Motion In our enterprise reduced unnecessary motion when product is produced.					
4	Waste of Waiting In our enterprise, waiting without work is reduced .					
5	Over Processing In our Enterprise, new process is designed to increase value adding activities.					
6	In our Enterprise, produce products with minimum lead time.					
7	Waste of Defects In our Enterprise there is no defects that results in rework .					
8	Waste of Transport In Our Enterprise there is no unnecessary movement of product ,materials that resulting in wasted time, effort and cost					

Below are a number of statements about your practices regarding operational performance of your MSEs. Please indicate the extent you agree with each statement of operational performance practices in your MSE, according to the given Five point Likert scales as follows Strongly Disagree (1); Disagree (2); Neutral (3); Agree (4); strongly agree (5).

Please indicate the degree to which you agree with the following statements in each table presented below.

No	**Operational Performance**	Response				
		1	2	3	4	5
1	After Kaizen implementation, our MSE work environment cleaning is improved.					
2	After Kaizen implementation, our MSE cost of product production is minimized.					
3	After Kaizen implementation, our MSE competitiveness is enhanced.					
4	After Kaizen implementation, our MSE cost of material maintenance is reduced.					
5	After Kaizen implementation, our MSE product quality is improved.					
6	After Kaizen implementation, our MSE customer satisfaction is improved.					
7	After Kaizen implementation, our MSE productivity and profit is improved.					
8	After Kaizen implementation, our MSE inventory level is reduced.					
9	After Kaizen implementation, our MSE production processing time is reduced.					

Below are a number of statements about the challenges were face while Kaizen implementation in your MSE. Please indicate the extent you agree/dis agree with each statement of Kaizen implementation practices in your MSE, according to the given Five point Likert scales as follows Strongly Disagree (1); Disagree (2); Neutral (3); Agree (4); strongly agree (5).

Please indicate the degree to which you agree with the following statements in each table presented below.

No	**Challenges of Kaizen Implementation**	Response				
		1	**2**	**3**	**4**	**5**
1	In our enterprise, sufficient financial resource was allocated for Kaizen implementation.					
2	In our enterprise, there is management support for Kaizen implementation					
3	In our enterprise, there is sufficient training for Kaizen implementation					
4	In our enterprise owners were highly committed for Kaizen implementation					
5	In our enterprise there is high workers participation for Kaizen implementation					
6	In our enterprise there was good communication for Kaizen implementation					
7	In our enterprise there was well defined organizational structure for Kaizen implementation.					

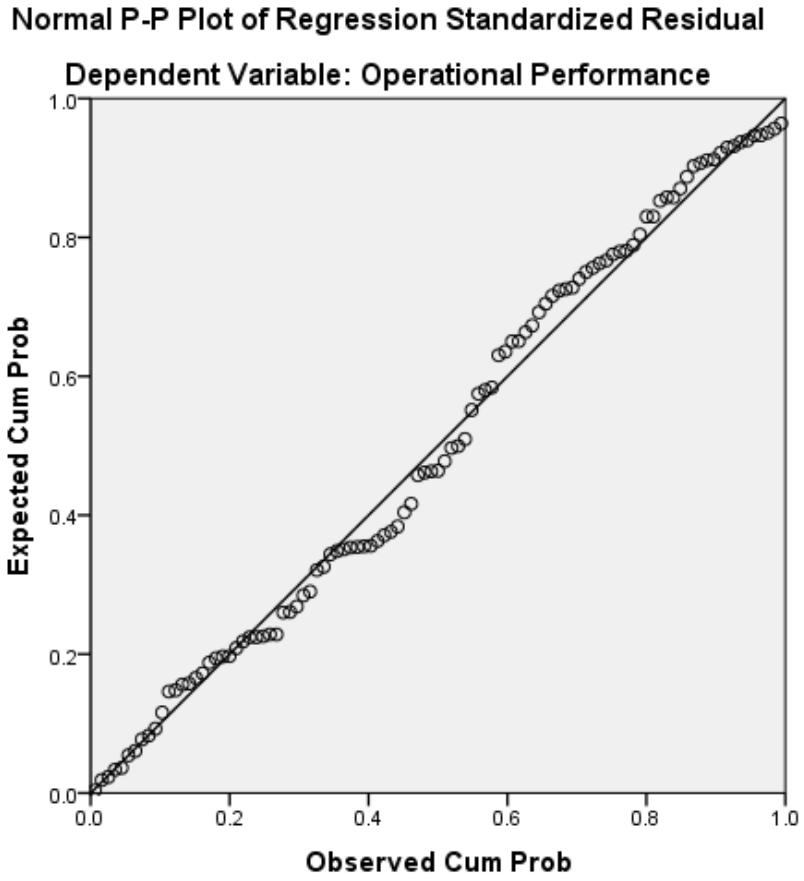
PART THREE: INTERVIEW FOR MANAGERS AND EXPERTS OF POLY TECHNIC IN GIMBI TOWN

The purpose of this interview is to gather data about kaizen practice/implementation and challenges in the application of kaizen program on metal and wood work manufacturing sector in Gimbi town

1. How are 5 s kaizen tools practiced in Micro and Small Enterprise in Gimbi town?
   _____
   _____
   _____
   _____
2. How is JIT/waste elimination practiced in Micro and Small enterprise in Gimbi town?
   _____
   _____
   _____
   _____
3. What types of kaizen principles /techniques have you implemented in Micro and small enterprise?
   _____
   _____
   _____
   _____
4. How do you evaluate/measure the operational performance of micro and small enterprise in Gimbi town
   _____
   _____
   _____
   _____
5. What are the major challenges encountered during kaizen implementation in your enterprise?
   _____
   _____
   _____
   _____

Appendix II: Linearity of P-P of Regression Standardized Residual

Figure 4.1: Linearity of Regression Standardized Residual



Appendix III: Scatter plot of the Standardized Residuals

Figure 4.2: Scatter plot (homoscedasticity) of Regression Standardized Residual

