

OVERVIEW OF THE ESSENCE OF KAIZEN IN IMPLEMENTATION AND IMPROVING PROCESS

¹Oorja M P, ²Sucheta Harish, ³Vani Soudagar, ⁴ Mrs. Nandini B

¹Student, ²Student, ³Student, ⁴Assistant Professor

¹Industrial Engineering and Management, ²Industrial Engineering and Management, ³Industrial Engineering and Management, ⁴Industrial Engineering and Management,

¹RV College of Engineering, Bangalore, India, ²RV College of Engineering, Bangalore, India, ³RV College of Engineering, Bangalore, India, ⁴RV College of Engineering, Bangalore, India.

Abstract: In today's highly competitive and globalized market, companies have come to a concern of saving production cost. For this purpose, one of the way to reduce cost is by avoiding non-value added activities i.e. muda and suggesting Ideas to improvement the work that is carried out. Identifying hidden opportunities in work place by various Kaizen tools and techniques, suggesting an improvement that will eliminate or reduce the muda. Kaizen (Continuous Improvement) is a concept that aim to improve every time through problem identification and solving. This kaizen implementation will lead to innovative performance and help in companies' success and workers development. In order to support required standard, kaizen technique PDCA is used. KE focused on structured improvement, using the approach of "cross-functional team" to improve the target work. Kaizen ergonomic also make assembly work so easier that even young female workers and aged workers may work there to "humanizing" assembly.

Index terms- kaizen, kaizen Events (KE), Kaizen Implementation.

I.INTRODUCTION

Kaizens (continuous improvement) are the series of improvements through detailed field studies of a specific leading factory. The word KAIZEN is a Japanese word involving two concepts: Kai means change and Zen means better, which says changes for betterment. In today's global competitive world, the customer expectation is higher from their purchases. "The Japanese technique of continuous improvement involving everyone, managers and workers. In industry, kaizen relates to identifying and eliminating waste in machinery, labor and production methods" [1]. It is very popular term for improvement in industries, and a tool or methodology for problem solving. The basis of Kaizen is never-ending quest for continuously pinpointing problems and providing solutions. Implementing Kaizen may become easier with a continuous effort of the employees, besides identification of critical factors, which may cause the failure of a kaizen, program is essential to thrive [2]. In addition, it forms an umbrella, which covers various TPS tools and techniques. Kaizen technique is used to solve 'part mismatch problem' in assembly line of automotive industry. A procedure is followed to solve the problem by data collection, root cause analysis, selection of optimized solution, corrective action and documentation. The advantages that is observed after continuous improvement include elimination of major functional problem, quality rejections reduced, removal of rework processes and a considerable cost saving. Kaizen methodologies namely 5S, PDCA, 5 why's, value stream mapping (VSM) [4]. VSM tool is productive and reliable improvement technique which helps to tackle all types of uncertainties in all types of organizations by identifying hidden improvements opportunities [3]. Kaizen events (KE) policy can upgrade the high cross-functional collaboration, this adversely impact on Innovation Performance. Also affects financial performance in terms of savings on maintenance costs [5]. Kaizen is subsystem, which has a significant connection with ergonomics, Kaizen ergonomics lean to evolve in the enterprise, leading to job improvement and in most cases to upgrade the

working conditions of developer, which increases employee satisfaction and company productivity, leading to higher productivity. It is a method based on the cycle SDCA (Standardize, Do, Check and Act) [6]. Kaizens serves to elude harmful “them” and “us” relationship at the shop floor, caused by top-down process. Kaizen ergonomic has made assembly work so easier that even young female workers and aged workers may work there to “humanizing” assembly [7]. Kaizen consider workers of organization should persistently think over improving and maintaining improvement achievements in their own organization [8].

II.LITERATURE REVIEW

2.1 Kaizen

Gemba Kaizen details both top managers and bottom workers improvement and requires relatively little expense. The kaizen philosophy assumes the life’s way it is mainly focused on constant improvement efforts. Kaizen is a continuous improvement it fights for improvement in our daily normal working and personal life. This concept is widely used and exercised in all sphere of life in Japan and other industrially developed countries of the world. Kaizen benefits the performance improvement of the organization in the form muda elimination, machine breakdown reduction, setup time and lead time, balancing the load i.e. yamazumi and human resource development which helps in fundamentals knowledge and fundamental skill improvement [1]. This has a low cost of improvement and is practical approach [2].

2.1.1 Fundamental elements of Kaizen

The foundation elements of Kaizen [1] as given by Imai (1986) are mentioned below:

- i.Teamwork.
- ii.Self-discipline
- iii.Improved morale
- iv.Quality circles
- v.Improvement related suggestions
- vi.Elimination of waste (muda) and inefficiency
- vii.The Kaizen 5S framework for good housekeeping.
- viii.Process standardization

2.1.2 Types of Kaizens

According to Imai (1997), Kaizen may be of following types:

- a. Individual versus Team Kaizen: these are the Kaizens in which the individual employees identifies improvement areas in daily work activities and suggest idea for improvement known as Teian Kaizen.
- b. Day to day versus special event Kaizen: work team identifies the hidden opportunities and find out the root cause to suggest and develop a new kaizen for work place.
- c. Process level versus sub process level Kaizen: at sub process levels the improvement at component level work processes are made and radicle changes for betterment of organization.

2.1.3 Kaizen Techniques under Kaizen Umbrella

The Kaizen umbrella consists of various collections of kaizen tools and techniques (Imai, 1986):

- Customer orientation
- Kanban
- Just-in-time
- Zero defects
- New product development
- Small group activities
- Productivity improvement
- Statistical Quality Control
- Total Quality Control

- QC Circles
- Automation
- Discipline at the workplace
- Total Productive Maintenance
- Cooperative labour /management relations

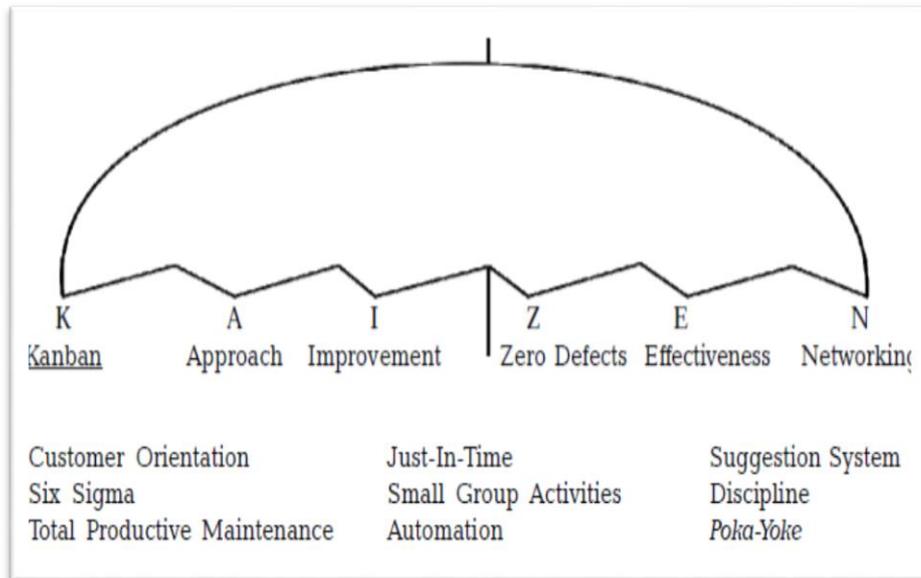


Figure.1.Kaizen Umbrella

2.1.4 Brief description of various kaizen tools and techniques [1]

1. Single Minute Exchange Dies: This technique mainly focuses on the reduction of set-up times. This mainly pertains to changeover of die, unclamping and clamping of work piece/die on the machine.
2. Total Productive Maintenance: TPM is a preventive maintenance system that is used to enhance the equipment efficiency throughout the working life of the machine. Preventive and corrective maintenance initiative must be taken by management and its workers as it empowers them.
3. Kanban: Kanban is basically a box/container designed to hold a Kanban card. The Kanban card is moved from workstation to store based on the daily requirement and it is a green signal for store to send the material to workstation for processing. Work in process inventory was reduced drastically by Toyota motor after introducing Kanban system.
4. 5S Practice: This is basically a housekeeping technique .the 5S represents 5 words in the Japanese language and they are;
 - i. Seiri (sort out): All the irrelevant items at the workplace has to removed or sorted out.
 - ii. Seiton (set in order): The items should be arranged in an orderly manner so that it can be accessed easily.
 - iii. Seiso (Shine): The work place has to be cleaned in such a manner that no dirt is found,
 - iv. Seiketsu (standardize): A standardized work practices should be developed and maintained.
 - v. Shitsuke (sustain): To attain success in 5S, discipline should be inculcated. The progress made in the above four points should be adhered.

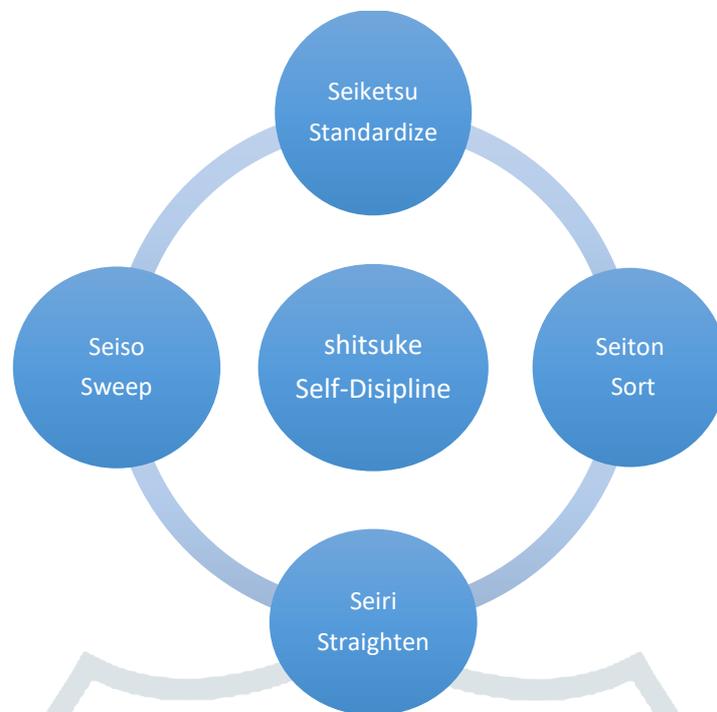


Figure.2. 5S Practice

5. **Poke Yoke/Jidoka:** The purpose of the poke yoke to achieve error proofing of the entire process. It makes sure proper condition exists before the process is performed. This not only prevents defects to occur but it also detects and eliminates the defects in the process. Reliability of the process is ensured.
6. **Standardized Work:** A work where all the activities are properly structured so that it can be done in the most efficient manner is called standardized work. It aims to bring the process by reducing the variation. This helps to eradicate wastages and in turn increases productivity.
7. **Value Stream Mapping:** A value stream map is a flowchart depicting all the activities requires to bring a product from raw material to delivery to the customer. Its main agenda is to identify and eliminate all the wastes in the process.
8. **Takt time:** Takt time is the time taken from the receiving order from customer to handing over the product to customer. This time should minimized through reduction of waste and other unwanted activities in the process.
9. **Standard Operating Procedure:** This focuses on standardizing all the operating procedures for comparing and creating scope for further improvements.
10. **Kaizen Blitz/Kaizen Event:** Kaizen blitz or kaizen event involves cross functional teams for small incremental improvements projects.
11. **7 wastes:** The 7 wastes include transportation, waiting, overproduction, defective parts, inventory, movements and excessive processing.

2.2 Rules of Kaizens[9]

Rule 1: Kaizen is process oriented. Improvisation of the process has to be done for attainment of excellent results. Improvements in manufacturing process can be effectively done when the management initiates the drive to do it. Along with improving the process, other activities and linkages has to be given equal priority as it also contributes equally to the end result. Improvisation can be effectively done with the involvement of the employee. Adequate training should be provided to employees to enhance their skill set.

Rule 2: Continuous improvement and maintain standards. Second rule conglomerates the innovation and the continuous ongoing efforts. Maintaining an improved standard continuously is essential. Small improvements contributes to make a significantly large difference wholly. The management has to continuously check whether the employee is adhering and working within the established standards, to ensure this discipline has to be enforced. PDCA problem solving techniques can be used to support the required standards. This is a simple and has being helping in continuous improvement. To make the

improvements measurable and visible, quality enhancement tools can be looped along with PDCA. Improvements and standardized work on a routine basis should be linked.

Rule 3: People Orientation. Every employee be it management or worker on machine should have dedication and involve completely in the improvement process. For a long run success in the company, management has to instill desires and belief amongst people so as to create successful kaizen.

III.KAIZEN EVENTS

Kaizen Events are the practices that lead to Continuous Improvement and can supports in establishment of innovative performance. These kaizen events benefits both workers and the company performance by improving the work environment. KE focused on a structured improvement project, using the approach of “cross-functional team” to improve the target work area, with specific targets [5]. Kaizen Events are one of the effective tool to alter the work culture, work proceeding, and work experience. There are two types of approaches for kaizen event progress – gradual improvement and other one is improvement based on innovations [8].

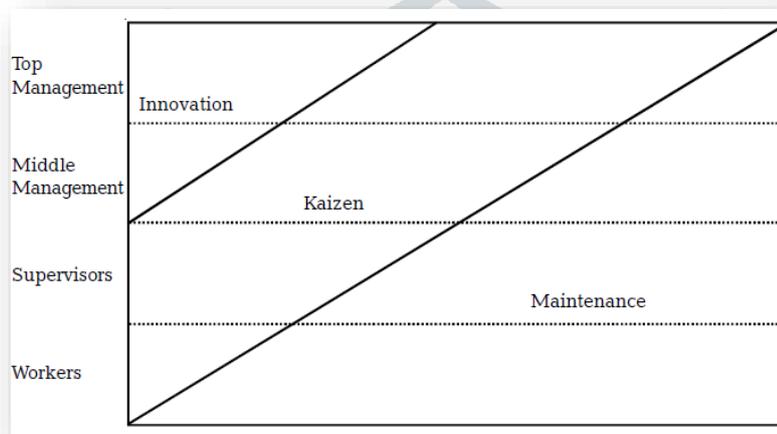


Figure.3. Improvement divided into innovation and kaizen [4]

KE will help to eliminate mudas by the workers with compete sense of responsibility and punctuality that is also a tool for improvement and change. There are various factors that affect kaizen events that are more suitable for automotive industry. Kaizen factors are [5]:

- **Follow-up Activities:** this allows the workers a freedom to make any changes and innovation at work place. This helps to accomplish KE goals.
- **Working Area Impact:** this is a complex phenomenon in the organization that has a potential effects on technical and social system and understand how work can fit into bigger picture.
- **Employee Skill and Effort:** KE improves the knowledge of the employee in managing the organization in more systematic and successful way.

IV.INDUSTRIES KAIZEN PROGRAM

Rapid technologies development and changing customer orientation are the challenges which company face. Deming’s concept of kaizen as first quality principle through plan-do-check-act (PDCA) cycles. It emphasis on company-wide process of focused and sustained incremental improvement. Incorporation of kaizen into daily normal activities will focus on eliminating wastes, creating standards, and having clean, organized workplace [2]. A successful kaizen comes from its workers and their actions, not from new pieces of equipment and machinery. Top management should be loyal and devoted to the kaizen philosophy to train the employees for the benefits. Workers naturally fear change, especially after changing the routine that they are comfortable, and disturbing old practices and following new practices is challenging to them, which is after and before kaizen implementation process.

If company drive towards success and profitability, becoming a world-class organization, by setting the vision, mission, commits, and dedicates of the company to develop a long-term kaizen program. Following are the processes that kaizen can be implemented [2]:

1. **Kaizen Events:** Many organizations consider KE but still unable to create culture that allows change, and more improvement efforts will support their cultural and financial goals. For conducting kaizen events, top management must devise a long-term strategy and provide the tools necessary for the kaizen teams to be having a final destination. Kaizen events are most effective when everybody works to achieve that vision.
2. **Kaizen Program:** key ingredients that should be considered for kaizen establishment are
 - i. Create and Communicate the Vision.
 - ii. Establish the Kaizen Champion.
 - iii. Communication Boards and Newsletters.
3. **Kaizen Governing Committee:** these are the committee members those are responsible for ensuring the achievement of kaizen teams and helping to erase any obstacles that would impede the improvement efforts.
4. **Kaizen Team Selection:** The key aspects of kaizen is complete participation of all employees from all levels of the organization. Many organizations fail to recognize the importance of utilizing production operators in making decisions. Enthusiastic and dedication to change is essential and should be addressed on the production floor first.
5. **Kaizen Monthly Meeting:** kaizen monthly meeting should be followed in following agendas:
 - Part 1: Discussion of open action items
 - Part 2: Discussion of the last event's results
 - Part 3: Planning upcoming events
6. **Training and Accountability:** Kaizen governing committee should get trained and then they should train the team of employees that they selected for kaizen event
7. **Moving Forward:** Kaizen should be a way to working, and improve continuously upon what kaizen committee has done and the next step.

V.EMPLOYEE SKILL AND TRAINING

Performance employee ideally rely upon factors like employee's appraisal, employer's motivation, satisfaction, recompense, disciplinary and development, job security, organizational structure. Kaizen events can be one platform of knowledge employees in principles, tools and techniques for continuous improvement. The study that was being carried consists of two sections that is in commercial and aerospace manufacturers those who used simulation as a help to improve the KE practices [10]. The simulation process that is carried can be used to helped to KE practice, the simulation model is also developed to support launch other improvement practices, and finding the results with management can be beneficial. Employee training program can be depicted in 5 stages [8]:

1. Investment and culture making to prepare employees psychologically for acceptance and cooperation in project implementation.
2. Kaizen committee team of 15 members they are responsibility of Kaizen implementation.
3. Holding workshop of adornment system and Focus-PDCA with presence of the management, supervisors and members of Kaizen committee
4. Implementation of pilot project in acceptance unit
5. Following the same system to other units and department and
6. Monitoring improvement activities

VI.THE KAIZEN METHODOLOGY

The standard methodology of kaizen can be used in different field like manufacturing, engineering and other supporting processes. The Fig x illustrates how kaizen is practiced. Kaizen helps in making people understand the waste in the processes and eliminate/reduce them and helps them perform the process rapidly. [2]



Figure.4. Methodology for Kaizen Implementation

VII.KAIZEN IMPLEMENTATION

Globalization is increasing in the world economy. Due to this increase in globalization, the competition also increases for the company. Therefore the company needs to focus on improving the performance with respect to cost, quality and delivery. By implementing kaizen we can bring about improvements in terms of cost, flexibility, and productivity and delivery performance.

While implementing kaizen the company focuses on involving the Gemba employees to identify and solve problems related to workplace issues. [11]

7.1 Major guidelines for implementing kaizen

Imai (1986, 1999) [12] highlighted 5 guiding principles for implementation of kaizen.

1. First is Process and Result principle. To improve a process, first a Plan-do-check-act (PDCA) cycle is carried out where a target performance is set (plan), then the improvement plan is executed (do), then it is seen that the plan is in control (check) and finally the plan is standardized according to the results (act). Second a standardize-do-check-act (SDCA) cycle is used to rule out any abnormality and to properly maintain the implemented work procedure.
2. Second is the Putting Quality First principle. Majorly a process must be improved in terms of quality, cost and delivery (QCD). Quality being usually most important depends the characteristics that the customer want. Cost is looked upon the perspective of the manufacturing company to increase margins and the delivery refers to the company being able to deliver the product depending on the varying demand.
3. Third is the Hard Data versus Hunches and feelings principles. Since kaizen is used to solve problem, it is important to gather relevant data and analyze it and not just rely on hunches and feelings which is important for continuous improvement.
4. Fourth is the Next Process Is Customer principle which means that all individuals within an organization deal with customers internally or externally and the next process is always a customer. Understanding this will help build a commitment to never give defective pieces or incomplete information to the next process.
5. Fifth principle is visual management. This principle being an integral part of kaizen allows problem to be visible and detected in real time so that a corrective action can be taken and in future similar problems

don't arise. Visual management has three purposes which are making problems visible, staying in touch with reality and setting targets.

7.2 A macro view 3 steps framework for implementing kaizen events [20]

- 1) *Open meetings*: In an interactive meeting a kaizen sensei teaches skills improvement courses.
- 2) *Kaizen activities*: The self-improvement teams (SIT) are instructed by kaizen sensei about the skills needed in implementing the improvement activities and then the SITs implement the improvement events.
- 3) *Close meeting*: The improvement plans are presented by the SITs in a kaizen seminar where the top management and kaizen sensei confirm and comment on these plan.

7.3 Factors for successful implementation.

It is important to have a good system present in the company that enables effective communication between top management and the Gemba employees as this will encourage the shop floor employees to tell about the process problems and suggest improvement ideas based on the knowledge they have gained while working on the process. (Womach et al, 2007).[11]

Having a clear and defined corporate strategy, policies and goals are very important to build an environment for enabling a kaizen culture. Having a clear kaizen strategy helps the company allocate enough resources to go ahead with the continuous improvement philosophy.

It is very important to have a kaizen champion in the company for successful implementation of kaizens. By having a kaizen championship with deep understanding and commitment to continuous improvement, the departments can now implement the kaizens more precisely and frequently.

A very important factor for implementation is the structure of the organization. It is seen that companies with horizontal structure and supports high degree of self-discipline and autonomy tends to be more fruitful than other bureaucratic organization. Having cross functional group and problem solving teams like quality circle working together make kaizen implementation more successful. [11]

An input- outcome model can be used to understand the team effectiveness in implementing kaizens as given by J.A.Farris (2009) [13] with five basic factor groups. These groups are kaizen event design antecedents, Organizational and work area antecedents, Kaizen event process factors, Social system outcomes and Technical system outcomes. [13]

A study was done in 2012 [14] on critical factors that affected the successful implementation of kaizens. After factor analysis it showed that training and education of employees was a major factor with a variance of 10.4885 which shows how much of a difference it can make if the employees are made more aware to the kaizen process. The next major factor is the communication process (var. 8.712%) which is followed by the need for proper documentation and evaluation (Var. 8.164%). Other notable critical factors for implementation were workers integration and award, culture for change and improvement, management commitment and customer focus. [14]

VIII.KAIZEN IN TPS [7]

TPS cannot be limited to just in time and jidoka . An efficient method to reduce the production costs, keep up with the production and improve the product quality kaizen is introduced. Kaizens are mainly small group activity such as the quality circles or individuals who make some suggestions for improvement. Wormack, Roos, and Jones (1990) introduced the lean production and treated kaizens by the quality circles to improve the process with the cooperation of shop engineers. Ohno (1990) explains that kaizens are efficient ways to increase the product quality and productivity. Masaaki Imai and Paul Adler (1985) generalizes the notion of kaizens exists in three levels i.e kaizens made by the shop managers and engineers, quality circle and individual worker through a suggestion system. Nummi adler (1998) mentions the bottom up and top down mechanisms in kaizen. Imai (1997) prioritizes the quality improvement kaizen made by the small groups and individual workers, though giving prominence to the compatibility of quality improvement and cost reduction. He also focuses on increase in productivity should be a by-product of

quality improvement, thus reducing repair work and mudas. Alder (1998) does not emphasize on top-down approach as NUMMI is focusing on the bottom-up approach. According to Imai (1986) 50% of supervisory staff's task was to spend for kaizens and if 90% is from the engineers and the staff, the top-down mechanism and their kaizen activities should be understood properly.

IX. KAIZEN COSTING

Kaizen costing is the system used to reduce cost in an already existing manufacturing phase of a product. This system therefore comes after the target costing of the engineering phase. Therefore this system focuses on making improvements in the manufacturing processes of existing produce to reduce the cost. Kaizen costing is a part of overall cost control system used outside the standard costing system. Kaizen costing is used outside standard costing to eliminate the limitations presented by the standard costing and therefore it gives room for focusing on improvement of processes to increase profit. Kaizen costing has two types. [15] The first one deals with the phase when the difference between the target and actual cost is huge after new product is in production for 3 months. The other one refers to the continually implemented activities to reduce difference between actual and target cost every period to achieve allowable cost. Implementing regular kaizen events results in the achievement of target kaizen cost.

Target kaizen cost in this period = Estimated amount of actual cost * target ratio of cost decrease amount to estimated cost.

X. RESEARCH METHODOLOGY

Indian Small-scale industries have implemented kaizen mainly process wise. In our project we first conducted a literature review and visited the industry. The data of the process were collected and then analyzed. After finding out the problems in the analysis stage, Kaizens are proposed for improvement of the process. The kaizen events are then implemented. Data after implementation is collected and analyzed. Finally, the conclusion of kaizen events is made. [9]

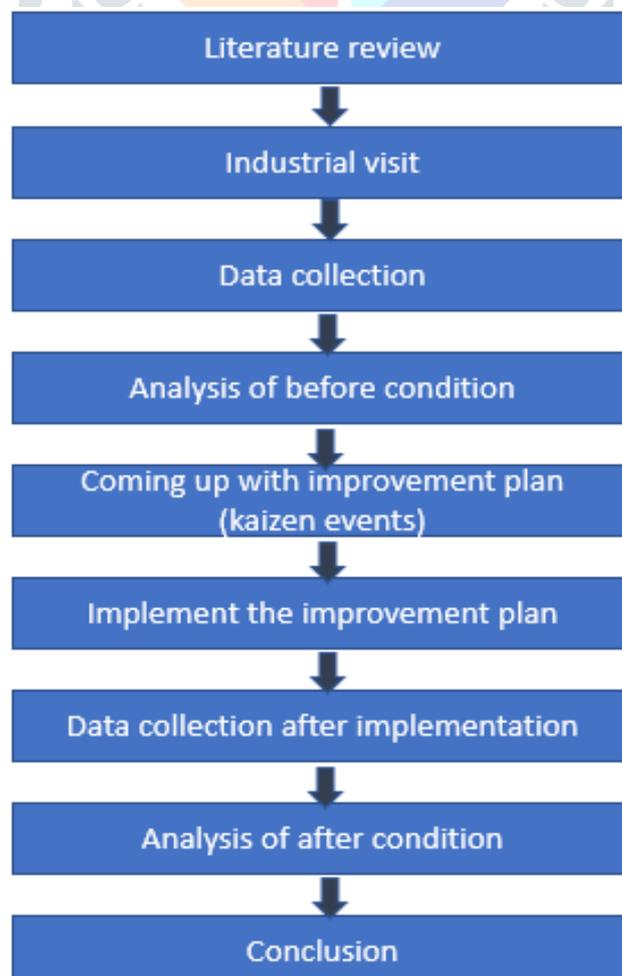


Figure.5. Kaizen Methodology followed in case study

A similar methodology was followed by us in our time in XYZ organization. The XYZ organization mainly supply to companies that follow lean methodology and therefore the company also follows lean methodologies.

After industrial visit we collected data on all the assembly lines. We then selected an assembly line producing inside handles because it had the most demand and the production could not match it, so extra shifts were held regularly.[16]

Inside handle assembly Line:-



Figure.6. KIA inside handle assembly work stations

10.1 Analysis of current condition

We used standard work TPS tools like SOS (Sequence of operation), SWC (Standard work chart) and SWCT (Standard work combination table) [17] to collect data and analyze the assembly line. Following were the findings:

Daily Target= 2640 pieces/day

Takt time = 20 seconds

Table.1. Cycle time and Machine time of all 3 stations in assembly line

Station	Cycle time(seconds)	Machine time(seconds)
Station 1	16	0
Station 2	19	8
Station 3	13	1
Offline Station	5	0

Table.2 – Shows the list of Muda in the assembly line

Muda	Type of Muda	Work table	Quantifiable
Moulding defects carried from previous process	Defects	Work table 1	Avg 90 parts/day Avg 720 seconds/day
Difficulty in removing inside handle from bin.	Motion	Work table 1	1-2 seconds/cycle
Transporting the Empty bins	Transport	Work table 1	8 seconds/ 32 cycles Avg 660 seconds/day
Transporting the Handle and knob bins	Transport	Work table 1	20 runs (each Handle and knob bins) 45 seconds for each run = 1800 seconds/day
Transporting bracket bin	transport	Work table 1	8 runs 45 seconds each = 360 seconds/day
Excessive rotation in the work space due to poor design.	Movement	Work table 1	90 degree rotation each to pick handle and bracket.
Transportation to get springs and grease	Transportation	Work table 2	200 seconds
Man and machine not utilised properly	Waiting	Work table 2	Man idle for 6 seconds Machine idle for 14 seconds
Parts fall off the chute due to short height	Defect	Work table 3	Avg 3 parts/ day
Man waits for the part as his cycle time is lesser	waiting	Work table 3	6 seconds difference between cycle time
Transport to keep the FG bins	Transportation	Work table 3	660 seconds/day

10.2 After analyzing the assembly line these were the major issues:

- The non-value added time is huge due to transport.
- Man and machine is not used effectively in station 2.
- Excessive movement in station 1 due to layout.
- Load not balanced properly between the members.

10.3 Improvement plan:

Kaizen Events: To reduce the wastes in the assembly line, several kaizen events were implemented. These kaizen events are:-

- 5 kaizen events were implemented that changed the layout of station 1 to reduce movement and cycle time of the station.
- The inventory storage of raw material and bins was now placed in a rack right next to station 1. This reduced the major non-value added time of transport as the raw materials were right next to the station.
- The length of the chute was increased to reduce defects.
- To balance the workload and to increase the man-machine efficiency, the offline workstation was removed and those operations were added to station 1 and station 2. [18]After the implementation of kaizen events in station 1(which reduced its cycle time), the new set of operations were practiced for an hour for 20 days and then finally implemented.

Table.3 Analysis of assembly line after implementing first 3 sets of kaizen events.

Kaizen	Output
Kaizen 1	Saves 1 second /cycle Increases workability
Kaizen 2	Easy access to the spring boxes
Kaizen 3	Saves 2 seconds/ cycle Eliminates 2 steps Increases workability.
Kaizen 4	Saves 2400 sq. cm space in work envelope
Kaizen 5	Reduces process defect(surface scratches)
Kaizen 6	920 seconds saved in incidental time

- The cycle time of worktable 1 is reduced by 3 seconds.
- 15 minutes of incidental time is reduced per shift.[19]

Analysis by Yamazumi chart

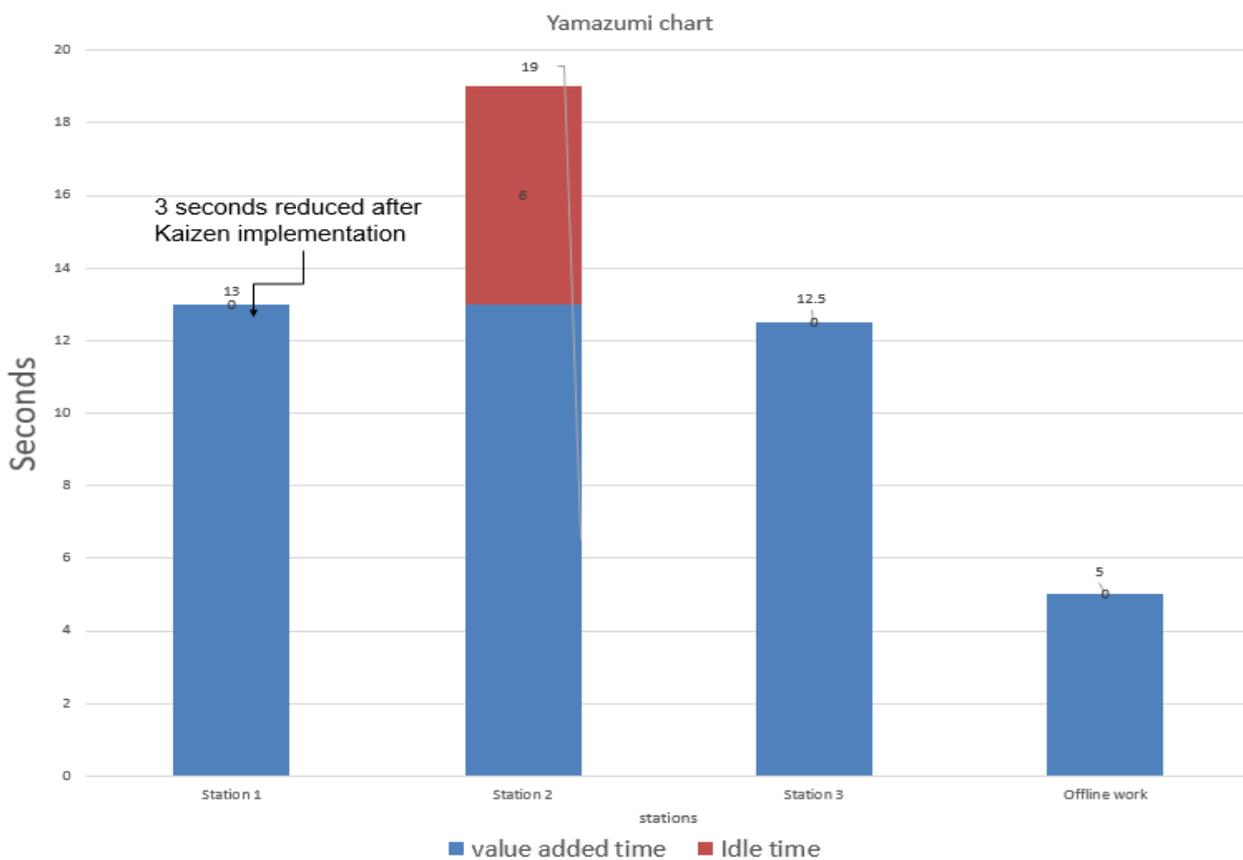


Figure.7.Yamazumi for before condition

- Since the worktable have different cycle time the line is not balanced
- The man is idle for 6 seconds every cycle and therefore is not utilized properly.
- Offline work has one operator assigned to it

Analysis of assembly line after implementation of fourth kaizen event.

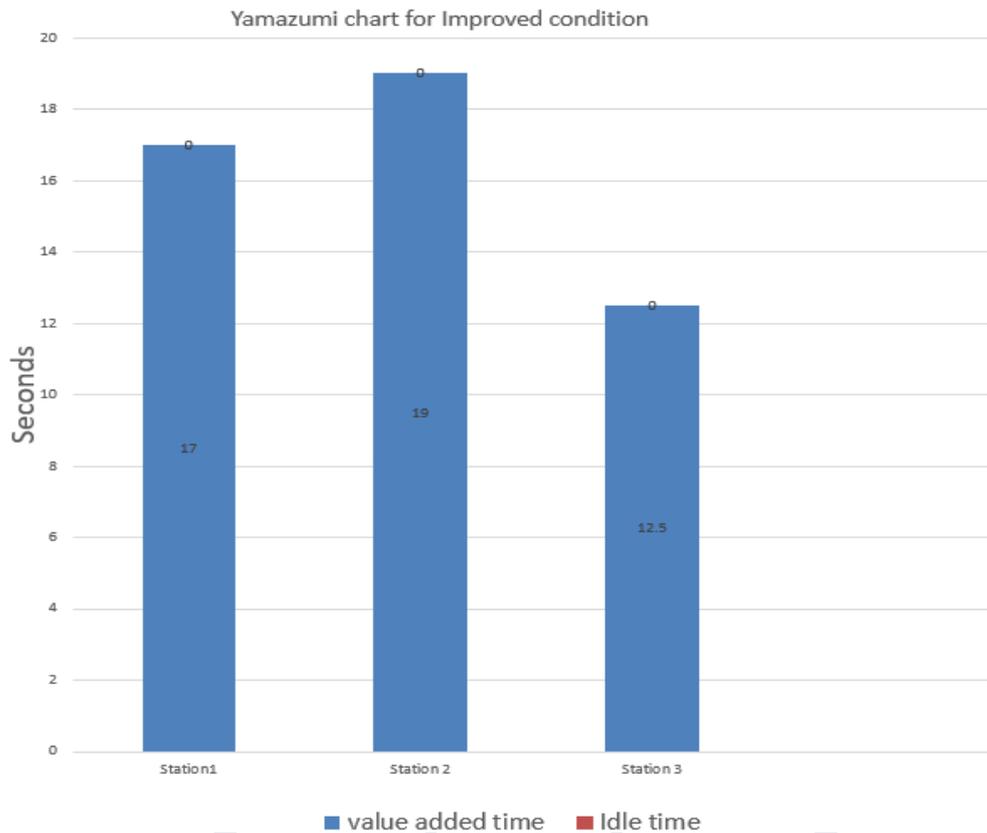


Figure.8. Yamazumi for after condition

Improved condition

- Station 1-Bush is now attached here.(+3 seconds to CT)
- Station 2 – Cap is now attached here while picking new part during machine time.

Outcome

- Line is close to being balanced for station 1 & 2.
- Idle time of Operator 2 is reduced to zero.
- Saves 1 operator by eliminating offline work.
- Therefore saving Rs12000 /month i.e. **Rs 1,44,000/ Year**

XI.CONCLUSION

This review paper is focused on identifying hidden opportunities and non-value added activities that is carried out in assembly lines of automotive industries. These muda are found using various Kaizen tools and techniques. Kaizen events that are carried will benefit both social and company systems and also helps in development of humans' fundamental skill and knowledge. Various kaizen that are practiced will lead to innovative performance.

A case study in which the load between all the 3 stations are balanced, minor Kaizens are implemented due to which cycle time is reduced and one man power is saved. It can be concluded that the Kaizen implementation is provided in a systematic manner with the help of effective data collection and analysis, a set of Kaizen tools and implementations of Kaizen activities.

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