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CONTINUOUS IMPROVEMENT IN JUST IN TIME MANUFACTURING (JIT), A SYSTEMATIC LITERATURE REVIEW

Kruthi Chikkaballapur Balaji, Poorvika Gopal
Researchers, Department of Industrial Engineering and Management, JSS campus, JSS Academy of Technical Education, Uttarahalli-Kengeri Road, Bangalore - 560060, Affiliated to Visvesvaraya Technological University, Belagavi, Karnataka,
India

Dr. Rashmi S
Assistant Professor Department of Industrial Engineering and Management, JSS campus, JSS Academy of Technical Education, Uttarahalli-Kengeri Road, Bangalore - 560060, Karnataka, India

Abstract -
Objective: The study's initial goal is to become acquainted with the general Kaizen approach and the elements required for its successful implementation.
Methodology: It is critical to understand the success implementation factors to increase productivity and achieve value for the research that has been conducted in many manufacturing sectors. A systematic literature review (SLR) is conducted to gain a clear understanding of the various literature available in the search results for Continuous Improvements (CI) in Just-in-Time Manufacturing (JIT). To perform the SRL, 87 articles are accumulated from Google Scholar and screened according to the inclusion and exclusion criteria. Another 30 papers have been accepted, with the majority of them focusing on two research areas, namely continuous improvement in the automobile industry and successful implementation metrics. The 30 papers preferred are visualized based on the market, country of origin, variables, and approaches used by the multiple writers.

Conclusion: After conducting a thorough literature survey, it was evident that most authors pointed out the necessity of excellent communication channels, training, and education for successful CI adoption in the industries. All the researchers investigated change, employee and team preparation, and commitment to change. One study advocated innovatively using change management tools.

Keywords: JIT, Continuous Improvements, systematic review, Success factors, Kaizen, Manufacturing

I. INTRODUCTION

In the dynamic competitive market, which has highly fluctuating needs and demands organizations must be flexible enough to respond to the swings, just in time. A just-in-time approach prevents excessive production, which occurs when the supply of a product in the market outnumbers demand, resulting in an accumulation of unsold goods, and also helps in coping with an increase in demand for the same product. The JIT production process, which operates on a demand-pull basis, is completely under the control of the manufacturer, hence avoiding any sorts of losses. Kaizen or continuous improvement is one of the elements of JIT, the best thing about Kaizen is that it never ends, and there is always room for improvement. This provides a large number of opportunities for the company to improve. Hence, it's critical to understand the research and former Kaizen applications in organizations to gain a sense of how to adapt it to current demands.

Genesis of JIT
JIT is a Japanese style of management that has been used in many Japanese industrial organizations since the early 1970s. Taiichi Ohno pioneered and honed it inside Toyota manufacturing operations to address consumer requests with minimal delays. Taiichi Ohno is widely regarded as the "Father of JIT."
The 1973 OPEC (Organization of the Petroleum Exporting Countries) driven oil crisis increased

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industrial costs, produced balance-of-payments issues for all developed nations, and resulted in recession. The Westerners pursued national socioeconomic and political answers while grappling with the rising wages at the corporate level. Likewise, the Japanese were adopting factory management systems that allowed them to function with very low inventories due to a scarcity of natural resources, limited space, and insufficient overseas investors.

Toyota was able to confront the mounting problems of survival by focusing on people, plants, and systems. Toyota acknowledged that JIT would only be effective if every employee in the organization was involved and dedicated to it, if the factory and techniques were set designed for maximum productivity and quality, and if quality and production schedules were precisely timed to meet demand.

What is Just in Time?

Just in Time is a form of managing inventory in which commodities are only obtained from providers, when necessary. This strategy aims mainly to lower the holding costs of inventories and to promote inventory sales. It is only in time that the complete supply chain must be meticulously planned and the use of better software must be carried out to carry out the whole process till it is delivered. The objective of a JIT firm is to supply its clients with items without any inventory and at no cost after no lead time.

JIT is defined as "JIT is creating a flexible atmosphere in which everyone works to remove waste and to simplify processes so that total business performance is continuously improved." (Lea & Parker, 1989) [1]. And about basic elements of Just-in-time, back in the 1950s, Japan focused on increased performance by paying special attention to lowering the amount of money and space available. The Toyota Chairman, Eiji Toyota, gave his workers a directive "to remove the waste," established the groundwork for developments in JIT. Waste was described as "anything else that is indispensable for adding value to the product than minimal amounts of equipment, materials, parts, space and time." Hence, the manufacturing process of JIT is the outcome of the waste disposal requirement. The following elements are the results of the developments led by Eiji Toyota: flexible resources, cellular layout, pull production system, continuous improvement, kanban production control, small-lot production, quick setups, quality at the source, total productive maintenance, uniform production levels supplier networks, etc., Given that our focus is mainly on continuous improvement, we would want to brief you more about the continuous improvements in just in time.

Continuous Improvement

Continuous improvement (CI) is a strategy Deming has stated as simply "increasing successful efforts and reducing failures". Kaizen has been characterized by different writers, including Audretsch et al, Imai, and others. According to author Audretsch et al., it is a systematic approach to management aimed at continuous performance improvement through a progressive process of everlasting change. It is described by Berling (2000) [2] as one of the activities that execute processes and procedures that contribute to organizational objectives by utilizing a CI in work processes, workspaces, and work interaction. It was described by Imai, as a method of constant improvement in personal life, family life, social life, and job life. Kaizen in the workplace refers to continuous improvement that involves both management and employees. Brooks also stated in 1993 that "change for the better" will occur. A further definition of CI is the "targeted and ongoing progressive innovation process"[3]. "A systemic approach to management aimed at continuous improvement of performance through a progressive process of unending change" (Audretsch et al., 2011) [4]. Continuous improvements are considered as "one of the activities that execute processes and procedures that contribute to organizing objectives by employing a CI in work processes, workplaces, content and work interaction."(Berling, 2000) [2]. CI is known also as a Kaizen using Japanese terminology (Hayes, 1981) [5].

CI assists improvements through the provision of a range of more complex tools and approaches to identify and minimize sources of inconsistency, waste, and other reduction problems. CI quite broadly as a culture of persistent improvement aimed at eliminating waste throughout an organization's systems and activities. It entails everybody working together to develop without having to spend heavily on cash. In this situation, improvement can occur via evolutionary improvement or drastic changes due to an inventive concept or new technology.

The aforementioned versions of the CI highlight several comprehensive, long-term commitments towards developing the company with the common necessity to understand client expectations. Note that since the 1980s, quality management has been working towards integrating and emphasizing customer demands as part of the change from a focus on internal efficiency and product-related procedures (Gronroos, 2007) [6]. Bhuiyan and Baghel (2005) [7] proclaim that efforts for continuous improvement seek, through integrating all engaged, to develop a culture of continuous improvement. Typically, these improvements are progressive and there are overall more important outcomes from the accumulation of

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individual gains. The organized use of strategies and tools designed to identify and remove waste and to change all processes can make these gains. Continuous strategies to improve started with total quality management (TQM) and are often aimed at incorporating the whole organization in attempts to change. Several new approaches have since been created for continuous improvement based on the idea of the preceding ones. Lean Manufacturing, Six Sigma, and Lean Six Sigma are the most notable of these.

In essence, the changes achieved can provide great advantages even if they are tiny and gradual. Results of proven improvements can be applied in all sectors of the firm as work standards. It is crucial to analyze the impact of CI activities on employee performance. The two are anticipated to increase employee performance by identifying the factors that impact them and eventually increase organizational performance.

II. METHODOLOGY

This section provides an overview of the approach used to perform this study. A Systematic Literature Review (SLR) identifies, selects, and prioritizes high-frequency research to answer clearly defined questions (Dewey. & Drahota 2016) [8]. For a systematic evaluation, a well-defined protocol or approach should be used, with the criteria explicitly outlined before the review. It is a detailed, direct search across multiple archives and research articles that many other academics can replicate and enhance. It entails creating a search algorithm with a specified emphasis or that adequately answers a particular topic. Within known timeframes, the analysis reveals the collection of criticized and written content. All search words, search techniques (such as site names, platforms, and search dates), and limitations must be reviewed. In healthcare, systematic literature reviews have arisen and are connected to evidence-based practice. According to Grant and Booth, "the development of evidence-based practice has resulted in an expanding range of review formats". They contrast 14 study techniques, highlighting the benefits and pitfalls of each review. A systematic literature review is a type of research that tries to solve a specific research topic. Hence, the prime objective of this SLR is to review the literature regarding Continuous Improvement in JIT.

This research is divided into seven stages, as shown in Figure 1. Setting objectives, gathering predetermined papers, conducting a brief review, and shortlisting publications for further in-depth evaluation are the steps involved in the methodology.

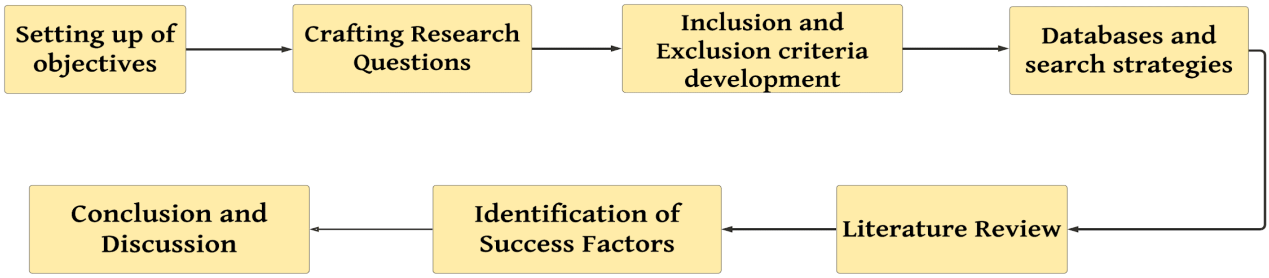

Fig 1: Methodology Framework

III. OBJECTIVES

The objectives of this study are two-fold. The initial goal is to familiarize with the general Kaizen approach and the aspects that are required for its successful implementation.

IV. RESEARCH QUESTIONS

The research questions formulated for this study are as follows:

Q1. What is Kaizen?

Q2. What are the impacts of Kaizen in an industry?

Q3. What are the success factors for the implementation of Kaizen?

V. INCLUSION AND EXCLUSION CRITERIA

The influence of the inclusion and exclusion criteria on the external validity of the results can be judged. Determining those decisions demands a thorough awareness of the study field as well as a

comprehension of how each criterion may affect the experiment's accuracy (Patino and Ferreira, 2018) [9]. Inclusion requirements are everything that a thesis needs to present to be included in a review's examination. The exclusion criteria are the elements that would make a study ineligible for inclusion in your review. Dates, how a study was designed, population, outcomes, and so on are examples of these needs. This creation of inclusion and exclusion criteria occurred in two stages: domain criteria and language criteria. The first inclusion criterion excludes published documents, papers, or articles that have not yet been published in journals. The domain is the subsequent criterion that identifies the research's area of emphasis. The articles classified as 'Continuous Improvement' are included in this case. The third criterion is the manuscript's language; any language other than English is ruled out of the study

Table 1: Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Document Type	Published documents	Ongoing, Unpublished, into from or upcoming documents.
Domain	Continuous Improvement In JIT	Other elements of JIT
Language	English	Other than English

VI. DATABASE AND SEARCH STRATEGIES

A total of "30" previously published papers are chosen and retrieved from the internet. 10 articles discussed the notion of continuous improvement, 10 papers dealt with continuous improvement, and another 10 dealt with success factor implementation. Specific search phrases and search strings are given to Google Scholar to locate the documents. Following a review of the paper suggested by the Google Scholar results, the references of that document are checked to see if there are any further publications to review.

Search terms

Just-in-time, Continuous Improvement, Systematic review, Kaizen, Toyota production systems, Elements of JIT, Implementation, Manufacturing, Performance Measurement, success factors are the terms and keywords used to search articles.

Search strings

The following search strings are used to find research papers on Google Scholar:

"Just-in-time" and "Manufacturing"

"Just-in-time" and "Kaizen"

"Just-in-time" and "Implementation"

"Toyota production systems" and "Elements of JIT"

"Toyota production systems" and "Kaizen"

"Continuous Improvement" and "Performance Measurement"

"Systematic review" and "JIT"

"Continuous Improvement" and "Success Factors"

"Performance Measurement" and Success Factors"

"Manufacturing" and "JIT implementation"

"Kaizen implementation" and "Performance Measurement"

Document selection

The papers available for download are divided into two categories: continuous improvement in the automobile sector and continuous improvement effective implementation factors. Papers concentrating on other aspects of JIT, on the other hand, are omitted from the study. Initially, 87 papers on continuous improvement are retrieved, 10 of the 19 screened papers on overview of CI whereas, 10 of the 13 screened CI Successful implementation criteria are obtained. 10 of the 16 screened automobile papers are accepted. The reasons for the remaining 57 publications not being checked and accepted could be:

(i) a lack of accessibility of specific data used by the authors, such as variables, methodologies, or statistical analysis,

(ii) other than JIT manufacturing.

Table 2: Document Selection

Sectors	Initial	Screened	Accepted
An overview of CI	31	19	10
CI in the automotive sector	27	16	10
CI Successful implementation factor	29	13	10
Total	87	48	30

VII. IDENTIFICATION OF SUCCESS FACTORS

Initially, a detailed examination of Continuous improvement and CI in the automotive industry was conducted to discover the success elements for adoption. This section provides an overview of CI, its evolution, and the key parameters for its implementation.

Review on CI:

Barara et al. (2011) [10] conducted a study that looked at the many definitions of Kaizen in the academic literature and then looked at Kaizen research. They look for common ground or potential guiding principles and/or cornerstones in what they refer to as 'Kaizen.' Kaizen is a Japanese word that refers to how people deal with challenges daily. Some regard it as a method to reconcile his values with the values of his environment. As a result, kaizen can be viewed as a principle of "individual spirit" of collaboration and improvement

The Japanese version of Kaizen is almost non-existent, although it is readily applied in other nations. It may take at least three forms: employee-driven improvement efforts, inter-departmental and functional communication, employee discipline, and job standardization to reduce "Muda." Aoki (2008) [11] finds that it is possible to transfer Kaizen to other nations with distinct cultures than Japan, provided that these organizations are successfully implemented outside of Japan. Senior management is responsible for innovation and improvement, while intermediate managers and employees are responsible for maintaining work standards and guaranteeing incremental improvements. The word most often used

in the literature with regard to the Western version of Kaizen is CI, but as some authors point out, it is more frequently used in relation to the Japanese variant.

The Western version of Kaizen is not a fixed idea, but rather one that has evolved through five stages (pre-CI, structured, goal-oriented, proactive, CI capability) The most recent development in the World literature on Kaizen is the possibility of a link between the word and the Lean-Six Sigma methodology. The present research of management theories and teachings on CI as the basis of Kaizen supports a Western worldview, implying that Kaizen is simply "the Japanese CI." The dominance of CI may be explained in part by the fact that English is a more prevalent language in academic settings than Japanese (Carnerud et al., 2018) [12].

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Table 3: Summary of CI review

Sl no	Authors	Purpose	Practical Approach	Key Research Findings
1	Barazza et al., (2011) [13]	To examine Kaizen in academic and practitioner literature to gain a better understanding of it and to contribute to its theoretical profile.	Kaizen was used as a search phrase in a literature review. For this, a variety of databases were used, as well as publications produced by both academics and practitioners on the subject. The literature on Kaizen was systematically analyzed and classified.	According to the study's findings, Kaizen is currently represented by three perspectives or umbrellas, each of which includes a set of concepts and procedures. When the three viewpoints are compared, kaizen emerges as a management principle, a component of Total Quality Management, and a philosophy for continuous development.
2	Carnerud et al., (2018) [12]	To show how Kaizen and continuous improvement (CI) have been illustrated in quality management (QM) publications since the 1980s. This study will examine how Kaizen is described, as well as how it is pictured concerning CI.	Using mixed-methods research, the study looks for Kaizen and CI patterns and themes in four scientific publications that cover both QM and OM. The data set goes from 1980 to 2017, which helps to visually illustrate Kaizen's three-decade history.	CI and Kaizen fueled a mid-1990s enthusiasm spike, following which interest levels seemed to decrease. Thus, it seems that after 2010, interest in these areas skyrocketed. It was found that Kaizen is well known by certain management members, but completely disregarded by others. The results indicate that Kaizen's theoretical basis and connection to CI need strengthening and clarification.
3	Garcia et al., (2018) [14]	To direct academics who are researching Kaizen philosophy to the best papers, the most productive writers, and the most important scientific publications related to the subject	To accomplish the goal, a descriptive bibliometric study was conducted analyzing citations from 138 papers in Scopus (Elsevier) from 2006 to 2016. A database to track each of the bibliometric indicators' core variables was created for the document search.	Even though the number of articles published has fallen in both 2014 and 2015, the citation data still indicates that scholarly interest has risen. The papers on the Kaizen philosophy got the most citations in all of these three disciplines. This seems to be the case for the Decision Sciences category.
4	Al-Hyari et al., (2019) [15]	To look at the outcomes of using the Kaizen technique in a caravan repair project in the Zaatari camp on the Jordanian–Syrian border.	This qualitative research employs an exploratory strategy. The data was gathered through interviews and on-site observations with project employees who were knowledgeable about the maintenance project. Quality control and causal effect links are discovered and explained with the use of Kaizen diagramming (fishbone).	According to the findings, the Kaizen technique was cost-effective in both money and time. Furthermore, waste reduction may be done with a number of tools and readily combined with the Kaizen method. The Kaizen approach is a reliable and efficient method for tackling all types of inefficiencies in the caravan repair operation.
5	Garcia et al., (2009) [16]	To examine how Kaizen Events could improve on-the-job efficiency. It takes three to five days for teams to form and then implement change.	The empirical research will consist of a description of the outcomes acquired at 11 automobile component manufacturing companies. Over a 9–12-month period, we followed up on various initiatives in each organization.	It should be emphasized that nearly all of the organizations have already taken steps to improve their procedures, with a noticeable increase in machine efficiency of approximately 18%. Decreased changeover time benefits efficiency since extra machine production time can be obtained if required. Instead of making more changes, the company can use the fact that changeover is faster to make more of them.
6	J Singh and H Singh (2012) [17]	To evaluate the literature and offer an overall picture of continual progress (CI). It is a survey of different CI approaches exhibited by various industrial companies worldwide.	The article summarises a wide range of CI approaches shown by industrial companies worldwide. Additionally, potential ramifications regarding CI techniques in industrial companies have also been addressed.	This article outlines the principles, case studies, and surveys related to the CI technique. The benefits of CI programs for industrial performance enhancement have also been noted.
7	Chen Hua Chung	The goal of this study is to give a	The study's 6 philosophies are Traditional Values, Process-	The Kaizen Tire is a concept that reflects Kaizen's complete

	(2018) [18]	comprehensive philosophical framework for Kaizen.	Oriented Philosophy, Edification, Perfection, and True Mindfulness, Completeness, (and integrates). Furthermore, the Power of One is a one-stop Kaizen shop.	philosophical basis. It shows the broad picture as well as the interconnectivity of the six Kaizen facilitation principles. It also suggests that Kaizen may be utilized as a new philosophical approach for integrating action and cognition.
8	J Singh and H Singh (2015) [19]	To give an insight into the history and current state of continuous improvement research (CI).	Classification of CI thus far has been extremely sparse. The article summarizes different CI deployment methods shown by diverse industrial companies worldwide. CI methods presented by a variety of academics and practitioners are also highlighted.	This article offers an overview of CI, from its origins to the most advanced methods employed in companies today. Classification of CI thus far has been extremely sparse. The article summarizes different CI deployment methods shown by diverse industrial companies worldwide. CI methods presented by a variety of academics and practitioners are also highlighted.
9	Iwao (2018) [20]	To observe continuous improvement in a particular plant over time and the variety and actuality of kaizen in Toyota	Research Kaizen innovations come in a variety of sizes, such as the number of stakeholders, the amount of investment, and the economic consequences. According to the research, kaizen management necessitates organizational design in order to have the most potential impact. Kaizen is supported by Toyota work teams as well as product/process design engineers.	According to existing research, kaizen (continuous improvement) is a collection of modest, discrete and continuous, incremental process improvements implemented by workers/operators and their leaders. According to research performed at one of Toyota Motor Company's major facilities, the Takaoka plant, minor product design modifications are occasionally required.
10	Bond (1999) [21]	To evaluate the function of performance measurement in the process of continuous improvement.	A kaizen continuous improvement programme may be used to enhance a steady process. A significant step-change in performance that radical re-engineering cannot accomplish may be re-engineered by radical restructuring. According to the research, each of these stages has distinct features.	The report was based on an examination of both kaizen and radical process re-engineering projects in a major multinational corporation. The research has practical consequences for anyone who do the kind of work that the University of Aberdeen does. It is said that the process life cycle includes four distinct phases, each with its own set of features.

Kaizen is a management principle, a component of Total Quality Management, and a philosophy for continuous development. The research conducted by Gracia suggests that Kaizen's theoretical foundation and relationship to CI need to be strengthened and clarified. Despite a decrease in the number of papers published in 2014 and 2015, the data obtained reflect a growing interest in the scientific community in its study over the last decade. In Jordan's Zaatari Camp. The primary factor driving companies to embrace continuous improvement (CI) methods such as Kaizen is problem identification. The study will describe two of the most useful methods for detecting issues. The research will look at the "Zaatari Camp." The Norwegian Refugee Council (NRC) is a humanitarian organization that assists Jordanian refugees. The NRC's engineering section discovered that repairing caravans saves more money and time than replacing broken ones with new ones. Repairing a large number of caravans is regarded an innovative effort in Jordan, and it seems to be a construction project.

In Jordan, a caravan repair project has been performed using Kaizen as a CI approach. Interviews and on-site observations with staff involved in the caravan maintenance project were used to gather data. Site visits were conducted between September and December 2018 to collect data. Kaizen will continue to work on the caravan repair project's planning and implementation, as well as research findings based on process observation during implementation and interviews with employees who worked on the caravan maintenance project. Any operations that can be improved by Kaizen will be changed, and those changes will be checked using the PDCA cycle. Kaizen is a revolutionary approach to maintenance that focuses on improving quality and efficiency. The goal of the project was to make caravans more dependable, efficient, and easy to maintain. Validation, education, and integration are the three processes of repairing a caravan. Kaizen is a method of improving a project's caravan quality.

In his research, Chen Hua Chung (2018) [18] proposed the Kaizen Wheel as a symbol of "perfection," which is the ultimate aim of Kaizen. According to Kiyoshi Matsumoto, the wheel indicates both a moving force and a "leading" role. He claims that the Kaizen concept necessitates "destroying" old habits, methods of conducting business, and thinking. According to Mitsumoto, Kaizen is more than simply a "CI"; it is a "TCI," which stands for "constant renovation." The Kaizen Wheel was originally introduced during a seminar hosted by the Japanese Union of Researchers and Technologists in 1950. Many problem-solving ideas, notably Walter A. Shewart's "Specification-Production-Inspection" Cycle, were used to build W. Edward Deming's "scientific method." The Kaizen Wheel will make it easier to utilize the Deming Wheel, PDCA and PDSA Cycles, and other tools to increase their influence and advantages.

Review on Kaizen in Automotive industries:

Kaizen is a continuous improvement method that focuses on quality, technology, procedures, organizational values, profitability, protection, and mentorship. Rather than Toyota, the Toyota Way has been effectively implemented at numerous dealerships and businesses. Toyota Saudi Arabia's Port Installed Option Center (PIOC) follows the kaizen concepts. The PIOC's goal is to become the Toyota Network's top car accessory manufacturing line, using TPS and Toyota Way to meet market demands and achieve business success. In one of the research articles, the Kaizen goal was to adopt TPS in order to prevent the construction of new facilities and the hiring of more personnel.

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Table 4: Summary of kaizen in automotive industries review

Sl no	Authors	Purpose	Practical Approach	Key Research Findings
1	Vieiraa et al., (2012) [22]	A Kaizen-based approach is used to optimize performance and enhance working conditions in lean manufacturing automotive systems.	Questionnaires were used to explore whether a lean production approach based on the Toyota production system was used at a vehicle manufacturer in Paraná, Brazil brought in any improvements	Reduced work-life stress and financial savings are related to workplace design. Most of the big car manufacturers are increasing their profits while cutting manufacturing employment. Workers are eager to adopt the lean method, initiative kaizen improves workplace and procedures 82% of respondents favored harmonizing the system ergonomics with the existing approach.
2	Abdulmouti (2015) [23]	To present the results of implementing Kaizen concepts at Toyota Saudi Arabia's Port Installed Options Center.	This study case analyzed the results of an implementation of Kaizen as a case study	Annual savings top $9 million productions increased by 13% per year (from 188000 to 212400 automobiles). A Kanban system with just-in-time production enabled inventory reduction. Quality was present in each step and phase of the products, reducing vehicle damages. For Toyota, every problem ended up being again, and they knew it.
3.	Dias et al., (2019) [24]	To optimize a production line, with the main goal of increasing its production capacity so that it could meet client demands.	Several continuous improvements and lean approaches, including line balance, standard work, visual management, and 5S, were employed in the processes.	The work that was done resulted in a 37 percent increase in production line capacity and a 22 percent rise in the line's overall equipment effectiveness.
4.	Holtskog (2013) [25]	To trace the history of continuous improvement in one of Norway's most major automotive sector clusters, where it has been a long-standing concern.	At the company level, at the team or department level, and a subjective level, a survey with 603 respondents answering 20 questions was undertaken.	More than 600 respondents believe that continuous improvement is a built-in element of their daily work tasks. Also, disparities are depending on the job a person performs in a company. These findings reveal that continuous improvement is far from simple, and it has a cultural foundation that the Lean tradition ignores. Workers' unions are critical to the success of manufacturing floor changes.
5	Darmawan et al., (2018) [26]	The goal of this study was to use the Kaizen approach to lower the main defect rate in the pasting process through eight PDCA cycles.	To help solve the problem, a descriptive exploratory study was utilized. They employed a what-why analysis to find the source of their issues. One of the reasons the problem re-emerged after making modifications is that	Using the eight PDCA Kaizen implementation, manufacturing process issues may be found and removed. identifying the fault source (jamming plate). Using Kaizen-based PDCA for steps 8, PDCA to minimize in-line defects results in a 38% reduction in plate scrap. This business will perform productive maintenance on the pasting machine to keep it in good working order and promote further development.
6	Fonesca and Domingues (2018) [27]	To determine the extent to which Kaizen and other CI approaches are used within Portuguese ISO 9001 certified firms, namely those that have already implemented ISO 9001:2015.	A quantitative study was conducted using an online survey. Of the 309 valid replies, 71 organizations were previously certified to ISO 9001:2015, while 238 were certified to ISO 9001:2008. Five managers in a focus group carefully assessed the results of the statistical study.	The Portuguese ISO 9001 certified companies use Kaizen, Lean, and Six Sigma (SS) approaches. The mean and median adoption rates of customer enhancement strategies are higher than those in the industry that are still accredited. The Kruskal-Wallis test, on the other hand, revealed no significant differences.
7	Prayuda (2020) [28]	To explore the framework for	This was a descriptive qualitative study. observation,	Kaizen-culture application boosts productivity and perceived benefits. Kaizen

		implementing a kaizen culture at PT AGP company.	interrogation, and documentary evidence Reduction, presentation, and conclusion are used in this study. Using Kaizen in employee enrichment.	is being launched company-wide. Kaizen application will improve employees' expectations of personal growth and company value. Every company-wide Kaizen practice is employed by the corporation. Workplace culture develops a kaizen work culture that is more receptive to company reforms. Employee contributions improve quality, lower costs, and reduce delivery time.
8	Pinto et al., (2019) [29]	Works compile a case study on a multinational corporation that was responsible for manufacturing parts for the automotive industry	Compliance with the IATF 16949: 2016 standard and a model were also created for the supervisors of spare parts. These changes brought Lean tools into play to improve procedures and information flows.	Project was successfully performed, and performance measures were adopted, with support data now being gathered and computed automatically on a regular basis, and replacement parts organization was verified to minimize warehouse space and maintain a low inventory level. To arrange the mold exchange operations, the SMED approach was utilized, and the Lean 5S tool was used. The efficiency rate is considerably over 90%.
9	Charles and Chucks (2012) [30]	To analyze the effect of functional and organizational variables on workers' involvement in Kaizen in the South African automotive components industry	This study is solely focused on South African businesses that produce vehicles and components. The study will assist assess Kaizen suggestion system workers' productivity and success. This begins the future research of vehicle participation and empowerment. empowered and engaged workers	In summary, the research has shown that the Kaizen proposal scheme is an essential instrument for managing strategic goals in organizational development. The research also encourages integrating employee suggestion systems within the organization's process, as well as the importance of workers learning how to use Kaizen suggestion tools.
10	Venkataiah and Sagi (2012) [31]	To evaluate the effect of different Kaizen Events and Determinants on long-term growth.	This research improves scholarly understanding of Kaizen event sustainability. Additional discussion topics exist for Kaizen implementation and perceived quality performance in the chosen companies.	Automobile manufacturing companies are acting as a vital component of the growing economy by creating employment for both urban and rural workforce. The study suggests Automobile manufacturing firms must increase the implementation of kaizen events in Indian automobile companies.

Lean manufacturing, according to Vieiraa et al. (2012), is a new way of doing things in based on the production systems capable of delivering efficient operations and durability. Product quality, tardiness, and accidents are lower in businesses that use lean systems and the Kaizen technique than in organizations that do not use the same idea. Work environment is a scientific field that investigates how persons interact with other components of the system. A more ergonomic office design can boost productivity and job quality. Ergonomics aims to provide employees with the greatest working circumstances possible in order to prevent unintentional injury or excessive tiredness and to increase revenue.

After successfully implementing it, Raufoss Automobile is a Norwegian business that employ more people than ever before (Halvor Holtskog, 2013) [25]. The primary technique utilized was line balancing, which included levelling the weights across stations on the manufacturing line and thereby decreasing the line's cycle time. This effort improved line efficiency, reduced waste, and increased flexibility by creating continuous integration with three, four, and five workers. Five businesses were polled to find out how their workers felt about continuous improvement. Leaders at all levels of the company were much more enthusiastic about the continuing improvement effort than the operators. White-collar employees, on the other hand, mistook it for a top-down strategy, which contradicts what Toyota officials have stated.

The goal of kaizen culture is "quality, cost, and delivery (quality, price, delivery) -QCD" The main concern of the company is the quality of its employees. The parent company monitors each work process and applies work standards. It was found that the company had suboptimal use of the idea of a verbal suggestion system by reporting to the direct supervisor. Kaizen's TQC / TQM is carried out by the quality section (Prayuda, 2020) [28]. The industrial sector has an important role in determining the competitiveness of nations in the world.

Review on Success Factor Implementation:

This section answers the last and final research question framed in the detail, by reviewing 5 published papers. The published papers were picked from the period 2015 onwards, to get the advanced information and understanding of this concept.

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Table 5: Implementation of Success Factors Summary

Sl no	Authors	Purpose	Practical Approach	Key Research Findings
1	Janjic et al., (2019) [32]	To outline the major success criteria for kaizen implementation, as well as the major advantages of its use, in businesses in emerging countries.	The study employs factor analysis. A questionnaire was then designed based on the objectives and methodology of data collection. The collected data was analyzed and conclusions were made.	Critical success factors were found to be initiating and reviewing alterations, systems, employee support, establishing an appropriate assessment method, and creating an internal communication system. improved company performance is the most significant economic advantage of kaizen implementation.
2	Omotayo et al., (2018) [33]	To identify key performance indicators in lean system construction implemented kaizen Nigeria. Also, to maintain stakeholders' relationships and business management and profit are key, as with all construction firms.	Exploratory factor analysis statistical tests classified the critical factors outlined in the research survey.	The exploratory factor analysis tests showed that construction management function (CMF), operational efficiency (OE), construction business ethics (CBE), and construction cost management were the key success variables (CCM). With opinions on the quality measures that drive kaizen, kaizen may be applied in Nigerian construction companies. This research backs up the use of kaizen initiatives for cost and time savings.
3	Hailu et al., (2017) [34]	To discover crucial success elements and design and implement sustained kaizen practices	The study utilized numerous materials and procedures. 20 outcomes, theoretical models, and 10 hypotheses are employed in the research. Regression is applied to the data gathered	This experiment proved that the eight critical parameters affect success indicators. They are: education and training are referred to as Manufacturing process control is related to personnel performance and production costs. Effective communication is dependent on planning. Therefore, the Ethiopian researcher developed a model for long-term Kaizen in the shoe industry.
4	Maroof and Mahumud (2015) [35]	To examines some of the elements that contribute to the effective implementation of Kaizen in small and medium businesses, as well as the problems they face.	The study conducts a systematic literature review to briefly understand the implementation factors.	Kaizen implementation has been linked to the presence of a Kaizen champion, good information management, and employee empowerment. Change resistance, engagement difficulties, lack of understanding of the company's strategic plan, and inability to handle continuous improvement were some of the Kaizen adoption challenges identified in the study.

5	Aleu et al., (2018) [36]	To locate the Critical Success Factors (CSFs) that are closely linked to CIP success in hospitals	Any CIP leaders/facilitators from hospitals that performed at least one CIP in the previous two years were surveyed retrospectively.	The 116 responses generated three primary conclusions. 47 out of 53 CSFs were rated as critically significant in hospitals' CIP performance (4 or higher on a six-point scale). Moreover, the CSFs used in this study and other studies to achieve CIP effectiveness differ. Lastly, the type of CIP impacts 16 of the 53 CSFs for hospital CIP success.
6	García et l., (2012) [37]	The goal of this study is to discover certain dependencies between necessary actions linked to human factors in the kaizen implementation process and the benefits received, demonstrating the impact of variables.	A literature review was conducted initially to identify components, through which quantitative analysis was conducted on the data obtained from it.	Education, commitment, and motivation are all critical for kaizen project communication. Employee motivation in a kaizen implementation process requires management commitment. For workers to be satisfied, communication and motivation are essential. Worker satisfaction and clear communication are critical to success in kaizen implementation. Without worker satisfaction and efficiency, clients will not have a great experience.
7	Glover et al., (2011) [38]	To determine the factors that have the most impact on employee attitudes and commitment to Kaizen activities in the workplace.	The construct validity of all multi-item survey measures was investigated using exploratory factor analysis (EFA).	Adapting adjustments was revealed to be the most powerful predictor of work area enthusiasm and engagement. The performance appraisal was also proven to be a good, predictive factor of Kaizen attitudes. The discovery about production system modifications is consistent with prior studies in this area.
8	Farris et al (2009) [39]	To discover the collection of input and process variables that contribute to employee attitudes and problem-solving skills in Kaizen events	Organizational kaizen events are focused on work area change and staff development. Anecdotal design recommendations abound, but there is little scientific data to back up the findings.	This research has assessed the impact of input and process variables on human resource outcomes for 51 company events. More attention has been shown in kaizen events since the 1990s, but more research has still to be done. The operations management and industrial engineering research community must help businesses discover and comprehend this phenomenon.

9	Mojica et al., (2014) [40]	To determine the most crucial criteria that will assure Kaizen's benefits.	The goal of Confirmatory Factor Analysis was to validate the links between variables and factors.	The paper stated that management commitment and customer attitude are the most essential aspects in ensuring the Kaizen benefits.
10	Vento et al., (2016) [41]	The purpose of this paper is to examine how managerial commitment and human resource professional development impact Kaizen implementation in Mexican maquiladora manufacturing companies.	423 business enterprises from Tabasco, Baja California, Sinaloa, and Chihuahua utilize a questionnaire in the process. 4 latent variables: two that reflect management commitment and human resource professional development, and two that pertain to benefits.	It was found that managerial commitment leads to better economic and human resource outcomes. the study's primary contribution is the study's determination of dependency measures

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To conduct factor analysis, Janji et al. (2019) [32] employed a questionnaire to collect data from Serbian manufacturing industries. The study discovered that the results of its use fell significantly short of expectations. Keep in mind that engineers are a critical component of a company's success or failure. They argue that emphasizing the involvement of engineers in this process is critical. Engineers connect top management, economics, the complex implementation team, and the workforce.

It is believed that instead of a rigid hierarchy, engineers should aim to build partnerships with workers. The study has a few problems, including limited sample size and the subjectivity of the responders. Its goal is to investigate the feasibility of implementing a CSF for kaizen as a transferable panacea in developing economies' construction industry. Kaizen is a method used by construction companies to estimate the cost of building materials and services while they are being built. Kaizen necessitates a high level of communication and collaboration, as well as a less bureaucratic management style.

To varying degrees, the Peacock shoe manufacturing industry has improved critical success factors. Political stability, contract and QS choices, and supplier material pricing were also mentioned in the report. The research examined 53 CSFs for CIPs, including Lean-Kaizen and Lean Six Sigma projects. Between research papers and this analysis, the researchers discovered significant changes in the role of CSFs in achieving CIP success. The findings are useful for CIP leaders and facilitators in hospitals, but it's also crucial to evaluate some research limitations and how they were resolved to improve research quality are the results founded by Gonzalez-Aleut al., 2018 [36].

Most authors emphasized the importance of good communication channels, as well as training and education, as these two aspects contributed to the successful adoption of CI in the industries. The majority of the ten studies examined focused on change, employee and team readiness, and commitment to change, while one author proposed a novel approach to change by incorporating change management systems.

VIII. CONCLUSION AND DISCUSSION

JIT (just in time) is a Japanese management approach that has been adopted in many Japanese manufacturing companies since the early 1970s. To respond to customer requests with minimal delays, Taiichi Ohno pioneered and perfected it inside Toyota's production operations. Just in Time inventory management is a type of inventory management in which goods are only received from suppliers when they are required. During the 1950s, Japan concentrated on improving performance by reducing the amount of money and space available. Eiji Toyota, the Chairman of Toyota, issued a direction to his employees to "eliminate the waste," laying the framework for JIT improvements.

Kaizen is systematic management using change management tools unique that focus on continual performance improvement. CI is a continuous improvement culture that aims to eliminate waste across an organization's systems and activities. It comprises everyone cooperating to grow without needing to invest a lot of money. The most well-known of them are Lean Manufacturing, Six Sigma, and Lean Six Sigma. The outcomes of proven improvements can be implemented across the board.

A systematic literature review (SLR) is a form of study that attempts to address a specific research question. The primary goal of this SLR is to examine the literature on JIT Continuous Improvement. As indicated in Figure 1, research is divided into seven stages. The articles are organized into two categories: continuous improvement in the automobile sector and effective implementation factors for continuous improvement. Papers that focus on other features of JIT, on the other hand, are left out of the analysis. A total of "19" previously published publications are picked from the internet and retrieved. A thorough investigation of continuous improvement and CI in the automobile industry was carried out to determine the success factors for their deployment. This section presents an overview of CI, as well as its evolution and major implementation characteristics. According to the findings, Kaizen can be transferred to countries with cultures other than Japan's. Kaizen is a management concept that is a part of Total Quality Management.

The major drive driving firms to use continuous improvement (CI) methods like Kaizen is the identification of problems. A caravan repair project

was completed in Jordan utilizing Kaizen as a CI approach. The idea was to improve the dependability and efficiency of caravans. Kaizen is a method of improving quality, technology, procedures, business culture, productivity, safety, and leadership through time. Instead of Toyota, the Toyota Way has been effectively implemented in many dealerships and businesses. Raufoss Automotive is a Norwegian firm with more employees than it has ever had, after the successful implementation of CI (Halvor Holtskog, 2013).

After conducting a thorough literature survey, it was evident that most authors pointed out the necessity of excellent communication channels, training, and education for successful CI adoption in the industries All the researchers investigated change, employee and team preparation, and commitment to change. One study advocated innovatively using change management tools. Future studies can adopt a quantitative analysis like Pareto to identify the vital few critical owing to the successful implementation of CI.

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