IMPLEMENTATION OF 5S IN INDUSTRY: A REVIEW

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ABSTRACT:

The paper has several literatures on 5S methodology and Just in Time, which represents a systematic review of the literature. The paper exhibits that how different industries implemented 5S and increased the productivity of their work. Also, the review paper will help those, who want to implement such methodologies in their respective fields. Furthermore, it presents the idea of reducing the accidents and enhances the working efficiency in any industry. The paper also reveals the crucial problems in 5S, starting from maintenance techniques, layouts of 5S and the relationship of 5S with the barriers and success factors in 5S implementation. This study will be helpful to industrialists and researchers both who want to know about 5S.

Keywords: 5S methodology, 5S system, Continuous improvement.

1. INTRODUCTION

The 5s stands for "Sort", "Set in order","Shine", "Sustain" and "Standardized". The 5S is the expanded study of the Toyota Production System, which was developed by Japanese industrial engineers, Taiichi Ohno and Eiji Toyoda in 1995 [24]. Following that, 5S was developed by Sakichi Toyoda (Father of the Japanese industrial revolution) and his son Kiichiro with Taiichi Ohno [42]. In the 16th century, Venice shipbuilders used similar type of concept. In the assembly process of ship making they used quality process production to construct the ship. They completed the process in hours rather than completing in days. Eventually, the concept was transformed into the methodology. By the time, the 5S System has expanded and can be found within Total Productive Maintenance (TPM), the Just-In-Time (JIT) process, and the lean manufacturing [41]. In Later, there were two frameworks given for applying 5s methodology. The former one was given by Osada, and eventual one was introduced by Hiroyuki Hirano. Osada suggested that, keeping discipline in the training and education helps to

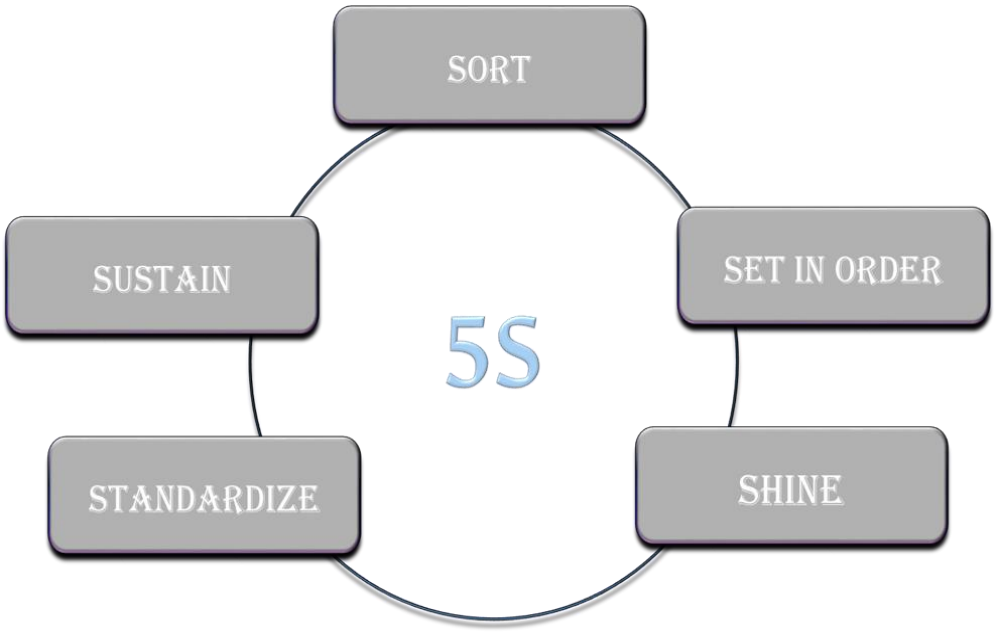
enhance the quality of work as well as work standards. Hiroyuki Hirano allocated a structure to enhance the programs with some steps. Hirano's approach was having only "4s", in which Set in order and Shine were considered as a single aspect.

1.1. **Sort (Seiri):** The phenomenon SORT defines the proper arrangement of the materials as well as tools [18]. The things are sorted according to their needs. For instance, for the things, when it is needed and if needed, then how long it is needed. The main aim of sorting is to organize the work environment and get rid of the junk. Another objective is to discard the items, which are not needed on the shop floor.

1.2. **Set in order (Seiton):** Set in order is the method by which the tools and materials are arranged in appropriate order of machine assembled. The arrangements are done in such manner, that the necessary tools are arranged by the order of their use. It helps to reduce the travelling distance as the searching time of things gets reduced. Also, the labels, tapes, floor markings and signs are used to execute SET IN ORDER [18].

1.3. **Shine (Seiso):** The literal meaning of SHINE is to do systematical cleaning. The main purpose of SHINE is not to show beautifulness but to serve a purpose [18]. Cleanliness helps to make the environment healthy and the better visibility results the higher quality work. The other purpose of SHINE is to identify the areas of dirt and unclean and to clean it.

Figure 1 Structure of 5S Methodology



1.4. **Standardize (Seiketsu):** To create the guidelines for Sort, set in order, and Shine is called STANDARDIZE [18]. The main purpose of it is to create best practices and to use the best practices by the workers and members. By not having the clear standards, there is no path to keep eye on the improvements. The standards are easy to get and communicable.

1.5. **Sustain (Shitsuke):** The prime aim of SUSTAIN is to make the habit of it to the industrial people [18]. Also, other objective is to sustain the activities like sorting and shining every day. Sustain improves the better inter human relationships. Sustain teaches the discipline and keeps the 5S process running.

2. LITERATURE SURVEY

Mr. Y.R. Chavall (2017) and team implemented 5S methodology in the college workshop of SGMCOE, Mahagaon college. The main aim behind this was to spread awareness of 5S in the college. The major issue was the teaching staff as well as students had no knowledge regarding this methodology. They arranged the informative seminar to light up the information of 5S. They divided the workshop into three zones for the ease of implementation of methodology [1]. To apply the sorting process, they made various zones in the workshops and allocated the supervisors, instructors and also the volunteers. All unnecessary materials were groped at the red tag zones; also waste is differentiated according to their material properties. After implementing the 1S in various zones, an audit was conducted by the management team. Audit team examined all the alterations in all the zones. Additionally, they took appropriate actions on the queries raised during the audit. After audit conclusion made, SEIRI was successfully implemented in the college workshop and consequently it could be seen that the systematic sorting was taken place.

Nita Sukdeo (2017) did the study of an ink manufacturing organization has been selected for the implementation of the 6S methodology. The organization was facing the issued regarding the products being returned because of incorrect labelling and packaging. Another concern was that employees were wasting their time searching for tools which resulted in downtime. The main purpose of the study was to enhance the overall rate of productivity and efficiency by solving such obstacles of the organization. A method called Organizational photography was applied to represent the situations of before and after effects of the 6S implementation [2]. In this method of direct photo analysis, the researcher captures the photo and does the analysis of it. Also, an audit was done to validate the objectives to application of the 6S methodology. There were an 8 weeks' observation done and the scores were given between 30 and 120. As a consequence of the audit, it was exhibited that 6S is the main foundation for the waste reduction, reduction of non-value adding activities and cleaner and safer working environment. The Upper management has said that they have gotten

excellent understanding of the 6S methodology and this will lead to a sustained working environment, which has a declination of hazards and risks.

The study carried out in one of the leading company in M.I.D.C (Ambernath Maharashtra) by Saad Shaikh et al (2015) showed that implementation of an effective tool named 5S helps to manage materials which can improve housekeeping, environmental conditions, health and safety standards and increase productivity and quality [3]. Also sorting eliminates unused, unwanted material from the storage room. It is observed that, how setting the things in order allocates space for components, and due to this , it gives more space for storing more material and tools and results in reduction in searching time. As 5S reduces the searching time, it improves the production and quality of the products and disciplined environment is developed amongst employees and organization. It was observed that by applying the methodology, the effectiveness enormously surged from 55% to 75%.

Shreya Chavan et al. (2017) studied the implementation of 5S in Prabha Engineering manufacturing industry in Rabale (Navi Mumbai). 5S system implemented in the manufacturing unit which is found to be appropriate due to the many merits such as the wastes, scraps and losses were minimized, and production were controlled with flexible workstations[4]. The main problems were ineffective inventory management, lack of quality improvements, quality control and lack of employee participation. After sorting the raw materials, labeling the tools and areas, removing dust and oils from the floor, creating the guidelines for above three and by keeping the discipline the desired results were gained.

R5 Food & Beverage Ltd is a private company faced few challenges to run its operation because of various issues in machines and availabilities of space, labour productivities, cleanliness of the floor etc. After a few observations done by Riad Bin Ashraf (2017), it was observed that due to absence of systematic procedures and knowledge these problems were occurring. Due to such obstacles, they applied 5S in the company as each S of the system was implemented. After implementation, about 310.1 square feet space was saved. Additionally, the new layout resulted in a declined flow distance, which was 1686.8 feet from 2450.65 feet per day [5]. Eventually some good results were achieved such as cost reduction, appropriate usage of workplace, prevention of the tools, surging efficiency, less time required for finding required things, improved working conditions and decreased machine maintenance cost.

Study for relation of 5S principles and ergonomics conducted at Tabriz-IDEM, Iran by Mohammad Rasouli Dizaji et al (2011). For collecting the needed data they used the three various types of questionnaires. The questionnaires constructed based on 5S, ergonomics and TPM. To determine the

sample volume data, author used Krejcie and Morgan's tables [6]. They used numerous types of tests for result purpose. T-test between 5S and ergonomics, Pearson correction tests between 5S and TPM and ergonomics and TPM. Eventually, 5S principle, ergonomics and TPM is interconnected modes of technique, which are used to enhance plant efficiency as well as productivity of organization.

A study was conducted at Sunmill industry Pvt. Ltd. MIDC by R.A.Pasale et. al. (2013) to improve the organization standard in terms of manufacturing. The major problem was the time taken to setup the machine was more than actual machining cycle time by the workers. This occurred due to misplaced tools, fixtures and improper material. To decrease the finding time of the tool, author introduced the sorting concept of 5S. In this, they differentiate various tools according to the machining sequence processes [7]. They introduced numerous "bins" to solve the lost material issues. They set the order of material of operation and jig fixtures according to the operation held. After the implementation, they observed the time taken for setting up the fixtures was shockingly differed from the initial one. The average time taken to set up the fixtures was 98 minutes before implementation. However, after implementation the time was drastically declined to 76 minutes.

P. M. Rojasra et al (2013) described the development of key areas, which could be used to adopt and implement the lean manufacturing practice and also presented some of the techniques to evaluate and reduce the resources needed on projects resulting in enhanced production efficiency [8]. The prime aim of this study was to implement 5S methodology and measure the performance improvement in Krishna Plastic Company, which is a small-scale industry situated at Amreli, Gujarat. It shows that a small manufacture can rapidly increase output and reduce quality threats by 80%. Also, it presents methodology for determining the real problem connected with industries in implementation of lean. Author also presented selection of required lean tools in the light of company's long-term vision.

The study was done by effort consultancy in Plastic Pipes Manufacturing Company [9] recommends implementing 5S and give suggestions to make the 5S practices more influential. There was lack of haphazard inventory and also the walk way and hazardous areas were not existed. It results over mass of material at the storage. To tackle these issues the labeling and colour coding on the respective places were introduced. Moreover, Gemba Board was used to give the daily tasks and activities to the workers. And the 5S observation sheets were prepared for analysis of data. Also, they got extremely good results by creating the proper area for every item in the industry. For instance, the mouse as well as the monitor has also their defined places, from where they cannot be moved.

S.R. Dulange (2013) runs the field experiment at the Solapur Textile Sector. The objective behind the experiment was to improve the textile market in the country, by using modern management

techniques in power looms. They made audit team for the data collection. They analyzed the lack of production tools, improper management lack of inventory stores and also the place for material was not decided. In order to resolve the problems, they introduced the colour coding method in organization for sorting the materials [10]. Also they used different tags in power looms too. They set the proper order of the material flow by using the various bins. After implementation of this modern system, they analyzed the data for next 30 weeks. Studies reported the results that the better productivity was achieved. Hence, the Solapur Textile Sector grew in terms of management and productivity.

Authors Oleghe Omogbaia et al (2017) used Dynamic approach to implement the lean tool 5S methodology. They observed problems like out of order manufacturing, demand fluctuations, plant is small and tidy, and product manufactured is seasonal product. The SD model was built on various variables such as order entry rate, lead time, short time, manufacturing cycling time etc. [11]. This dynamic model is able to access the advance improvement in lean manufacturing. The analysis result shows that total time spent on searching the items is reduced from 0.6 to 0.2 work hours per day which exhibits 67% improvement. The company's managers need to adopt the methodology to improve the aspects of lean using an SD modeling technique.

R.T. Salunkhe *et al* conducted study to reduce the time being wasted for searching of the spare parts for maintenance work industry. The study was done at the ABC industry .They used lean manufacturing tools like Kaizen and 5S methodology for solve the problems. In Kaizen, they differentiated the place of pipe and hoses in different racks. The bins did not having proper items as any items were kept at any bins. After implementation of 5S methodology there was tremendous change in searching time as the bins were segregated by colour codes [12] .The searching time gets reduced to 6-8 minutes from 13-15 minutes. After implementation, they achieved control over the inventory by maintaining minimum level of self-life items.

A Study was conducted at "Sandvik Asia Pvt. Ltd, Mehsana, Gujarat" bh Mayank Dev Singh et al (2015) with objectives of reducing the abnormality. Also they faced the problem of improper materials handling and waste of time and motion [13]. There is no visual glass by which one can see the fluid which can flow in the pipe. To solve the issues, they used 5S methodology, and they used manual sorting of material and provided the stopper at fallen down area. They allocated the tray in which the clothes and materials can be put. Additionally, a specific place was introduced for air gun. After Implementing lean manufacturing and 5S the searching time is reducing to 5-6 minute from 14-16 minutes. They saved 640+ pages per year by providing updated preventive maintenance system.

By providing standardize operation strategy, it is possible to reduce human movements in the shop floor.

Sagar et al. (2017) analyzed and implemented the 5S methodology in Harsh Polymers. The main problem faced by them was the utilization of raw materials and time wasting for finding the tools. [14] Also the place management was improper and the labors were unaware of modern innovative techniques. The research suggested that the most essential thing is to implement the rules. In order to solve the issues, they provided the bins for raw materials and tools. They created the racks in which they managed the tools according to the series of operation. Consequently, 25% to 30% of time was saved of worker by implementing this. Also the audit sheet was provided to maintain the above 3S and that is the main aim of 4th S. By the cooperation among the staff and workers, all the aspects of 5S were achieved.

Deepak Dhounchak et. Al. (2017) conducted implementation study on the industry of the manufacturing. The main problem in the industry was lack of management and improper working place. Author examined there were lots of problems in the industry like improper manner of production, lack of safety towards worker, dirty workplace, and disarrangement of tools. In order to resolve these problems they introduced the concept of 6S in the organization [15]. They made red tags to identify the unwanted items to maintain proper tools arrangement. They made specific tools space to put the all the tools as per their designations. To improve the cleanliness on the shop floor they provided several techniques of cleaning. Also, they introduced the worksheets to keep the standardizations of the organization appropriate. They allocated the safety kits to the workers and gave the knowledge about that kit by arranging safety awareness programs. After implementing 6th S the organization became very well arranged and enhanced safety of workers.

The study of Abhay R. kobarne, et al. (2016) describes the most considerable issue in the company and which was the poor training as well as lack of awareness methodology like 5S. They observed that lack of communication, the wide gap between the upper level management and the ground employees and less knowledge of some methodologies were the primary issues in the industry. Therefore some critical decisions of 5S activities, containing time and budget were approved by management [16]. Thus, more cooperation from all level of people is suggested during implementation period. It was seen that the checklists which were made earlier, were not as satisfied as they should be. However, after implementation, the results started to come satisfactory. Also, it was also observed that continuous training is the prime element to change the organization's environment. Moreover regular assessment should focus on improvement and development about all inputs in the industry. Along with these aspects an additional aspect which is safety was also increased. Eventually,

the 5S improved overall performance and reduced the wastes in manufacturing and also promoted neatness in storage and reduced the inventory.

A faculty named György Czifra (2107) did the study in the DS SMITH company, which is a leading European company which offers packaging solutions tailored to the requirements of a specific customer with emphasis on the modern trends in best packaging designs. They combined theoretical knowledge and practical experience to construct a system corresponding to the rules of the 5S system. They made the Gantt diagram for the implementation process, containing the assignment of resources, end time limits, and targets. Also the survey was conducted by obtaining photographic documentation. The critical places and incorrect solutions were illustrated in the photos [17]. Moreover with the same photos, they attached the particular solutions for respective issues. While the auditing process, they identified only a few small differences, which were observed in a short correction proposal. Approved solutions were applied in the rest of the workplaces and on the old production lines as well. The most crucial aspect for completing the tasks was to change the staff's mentality, which was achieved by well-timed lectures using some examples.

Kaushik Kumar et al (2012) described the steps to be followed during the implementation of the 5S methodology in any industry. Authors clearly mentioned that, if any industry implements this lean tool, then it will be very beneficial for the organization. They mentioned that what is 5S and how and when it is used [18]. Research gives the brief idea about the Sort, Set In order, Shine, Standardize and Sustain. They also stated the various benefits of the system according to industry so it can be known exactly how and when to apply this methodology.

The Review by Amardeep Singh (2015) of 5S gives a brief idea about the 5S implementations accepted by various manufacturing industry also reflects that the 5S initiatives approaches to improving performance of the industry [19]. Study shows that the 5S is not a short-term program, which is completed over the night. It is the long process. Also, this is a tactic which is used to improve the productivity in any field as the study suggests. The main aim of the 5S is to make the workplace orderly to improve safety and efficiency, to reduce the product defect rate and other possible wastes.

A research conducted by Vivekananda S. Gogi et al (2014) to identify and improve the plant layout of pulley's factory to eliminate obstructions in material flow and thus obtain maximum productivity. The research exhibits that the efficiency of a plant layout can be increased by redesigning the plant layout using string diagram and proper planning of layout. These fundamental guidelines should be considered and followed. The issue was improper material flow on the shop floor and hence, the transportation time increased. The paper also explains about the material flow and layout design using

the string diagram [20]. To examine the material flow, they used Outline Process Chart and Flow Process Chart. By following DGCA specified path, the efficiency was improved by 17.21%.

The authors Mr. Khan Zaidahmed Zaferullah, Dr. Sanjay Kumar (2013) focuses on the application of JIT in Nigeria. [21] The survey conducted by him had revealed that JIT is just as workable in Nigeria. The current scenario of globalization, Just in Time manufacturing system is coming as boosting for attaining manufacturing excellence in the industries. The various merits receiving from the implementation of JIT practices are Quality Benefits, Time-based Benefits, Employee Flexibility and Production process simplification. Implementation of JIT practices in a firm leads to contribution towards the economic growth of the country.

Priyanka Rai (2016) highlighted that 5S is required to be followed in HRM for the organization to reach the pinnacle of glory and at the same time care should be taken [22]. The research showed that after implementation of 5S practice, its benefits for industrial organizations are more. The reliability has been carried out for the data analysis. The data was coded in terms of Likert scaled questioner form. Total 450 employees took part from diverse field of operations in this. The results showed that the technique is very useful, applicable and beneficial. But it also shows that some organizations are implementing 5S in some proportion, not as whole policy because of the employees .They show less interest towards their role in 5S implementation. But overall it can be said that 5S is a required quality management tool which causes to improve performance of employees in any organization without any limitation on different kinds of products or services and organizations need to consider it as a part of their organization strategy.

In this Malaysian research organization paper Arash Ghodrati etal. (2011) examine the performance characteristics of the 5s implementation the industrial organization. The selected industries for study are from various diverse fields of work and providing various services. This study has been performed in different companies with different kind of products and services. The study has followed descriptive research based on survey method. In this methodology they collected the data by distributing the questionnaire five industries which had implemented 5s before that. Individual analyses of five organizations successfully showed that 5S implementation has an effective impact on performance of organization. The results are obtained by comparing different parameter of the 5s in different industry. They used SPSS and excel software to ease of the process [23]. The results clarify that the 5S is an effective tool for improvement of organizational performance. It does not dependent In order to continue improvement for achieving higher performance of plant the 5s methodology support every time in any situations. In the last we can say that by the using of 5s, efficiency of

organization is increased and 5s has huge positive impact of the overall organization interims of productivity and performance.

There was a sixth S added in the existing methodology. "SAFETY" was the next S after sort, set in order, standardizes, shine and sustain. It was introduced by Mayank Vivekananda S Gautam, et al. (2014) [26]. They provided various methods for cleaning and working environment. Also, they mentioned the various safety equipments which are necessary during working on shop floor. Other than that, they also provided useful visual evidences to obtain more firm results.

The research done in a concrete panel industry, gives a glance of Lean and Six Sigma in the construction industry, which was done by Celep Oguz et al. [27]. The study is presented to investigate the applicability of Lean Six Sigma methodology and the implementation in the construction industry. Both Six Sigma and Lean are best production management tools and the combination helps each other. Lean in principle eliminates anything that doesn't add value to the customer. On the other hand, Six Sigma aims to control the process by understanding the root cause. Overall, the combination of both tools can lead to a very useful methodology to improve any process.

Ajay Anantrao Joshi (2015) emphasized about the 7^{th} as in the methodology in the paper. The 7^{th} exhibits "spirit" (team spirit). The spirit stands for the formation of the team which has motivational leader and cooperative members. Targeted outcomes after the implementation of spirit are better communication among the employees of the organizations [28]. Workers feel the self-motivated at every time and they work with full of energy and with extreme high confidence. Spirit reduced the boredom approach of the employees toward their jobs. After all, the employees got better understanding of the problems and solve the issues with some appropriate approaches; hence, the healthy environment can be created. "Sphoorti Machine Tools" has improved productivity by successful implementation of 5S methodology. This study's main aim is to improve the bottom-line production without the need for capital investment which was conducted by Soumya R. Purohit et al (2015). Also, they have found increase in productivity and hence profit levels too. The other merit behind this methodology implementation was higher enthusiasm and punctuality among the workers and safer working situations [29]. Also, the 5S concept is evolving into a 7S Methodology as there are two new aspects to add as 'Safety' and 'Security'. Therefore, they described that this methodology is still evolving and a lot of innovations to implement this methodology are also coming up in future.

Just-in time production system is one of the initiatives that focus on reduction in wastage by eliminating non-value-added activities. A study conducted by A. S. Aradhye, S. P. Kallurkar (2014) at the temple of the Dakshin Kashi, which is located near the BhimaRiver showed that, the pilgrims'

normal waiting time in queue for darshan was 8 hours. The waiting period for pilgrims' queue of darshan is reduced by implementing software-based JIT system, which system is improving continuously. As they have used this software as a test for some limited slots for the darshan for the pilgrims. They got more than 10% of response after this first attempt. Eventually, the pilgrims' normal waiting time in queue for darshan was reduced to 30 minutes [30].

A study done in a Malaysian Automotive Parts Manufacturing by Nadirah Roslin et al (2012) describes the progress in its early stages of lean manufacturing implementation [31]. The observation of lean success determinants is limited to this case, and care should be taken while generalizing the results of this case study to other Malaysian manufacturing organizations. The literature suggests that there are few critical success factors such as availabilities of resources, organizational culture, and information technology proficiency which impress each dimension of lean manufacturing. Thus, future studies of multiple case studies can be conducted to get the influence of a variety of success factors for different lean manufacturing tools.

The study of AR.Abdul et al. (2014) on 5S is conducted at the "Seremban Specialist Hospital", Malaysia. They used lean tool and 5S strategy for workplace organization and improve the efficiency of the hospital. The survey was conducted on several categories such as cleanliness, efficiency of work process etc. to get the results. After implementation of that, they successfully generated the level of understanding amount in the staff. Result also shows the immediate change is accepted after applying 5S. For analysis in various filed they used the various pie charts as well as bar graphs [32]. Before implementing all the results obtained were poor to good, but after applying 5S result were drastically changed from good to batter and then best.

The research carried out at the Hari Bio-Mass Processing Unit by K Ramesh and team (2014) conducted the study for reducing the waste and removing un-wanted activity in the biomass plant. In order to solve the transparent process flow, they diagnosed the current work flow of the organization. In order to minimize the waste, they trained the labors and line supervisors. Document analysis and result reported that after implementation of 5S, the industry achieved the clean work space. Also they washed the walls to enhance the working environment. As a result, the unwanted activities were reduced, floor layout became neat and clean and approximate 700 kgs of excessive scrap got reduced [33].

The study performed at piston and piston ring manufacturing company named B. Shankra Sales Organization(Agra), described, the production line is at underutilization [34]. The main problem of the inefficiency of the workers was the overload or idle time. One of the strongest tools for improving

productivity is that of Line Balancing. The activity carried out by Priyanka Yadav, Suman Sharma (2016) simplified the method of operation to decrease the unnecessary or excessive work. It has been shown that proper line balancing and plant layout reduces the power consumption of the machine. As a result, the cycle efficiency was increased from 76.61 to 80.95% and the rate of rejection of the piston in a slot is decreased.

Gheorghe Dulhai conducted a study at the manufacturing unit of the autocar exhaust. The aim of the study was to improve manufacturing of the auto car exhaust by various methods like 5S and continuous improvement. They used the questionnaires in order to examine the tasks. After implementation of this 5S strategy, the accidents get reduced. The maximum days they maintained safety [35] till 56 days. Reduction of physical efforts, fewer accidents during the production process were obtained. The results got appear in short time around 1-2 weeks.

Dilek Acar Gürel (2013) did the conceptual evaluation of 5S model in the hotel. The conventional approach in hotel management is focused on performance results like more profit, productivity and satisfaction. They described that an effective management system should be in hotels, in order to fulfill the expectations of the customers. According to Kandampully (2006), the main aim of the hotel management is to manage the service quality in the hotels [36]. The main merits of 5S for hotels are the clean, organized and safe work environments, where failures and losses are reduced. Therefore, the adoption of this business methodology focuses on value and quality in the entire organization. In this study, 5S model is utilized as one of the processes which satisfy the quality and some management requirements of the hotels instead of the conventional practices. However, it is observed that the implementation of 5S in hotels is limited while the various fields' implementations are encountered. This study described 5S as an effective business model for the hotels and its prime purpose is to play a role to fill the conceptual gap. The hotels already have experienced on the quality of organization, sequence, neat and clean environment, and discipline too. The study is anticipated to enhance an awareness of the quality components in a business model for hotels, looking for more profit.

The study by Mohd Nizam Ab Rahman et al. (2010) was done with doing the comparison between the two companies which were described as company A and company B. Company A's prime goal was to achieve customer satisfaction via quality products and excellent services by well experienced employees. Company B's motive was to become a number one ASEAN company for quality assurance, cost and delivery. Consequently, in company two fields were observed to be out of the excellent condition. In company B, both of the administration and manufacturing site showed the least value with compare to other parts. It can be eventually said that company a secured upper position in

the excellence level in comparison to company B. Therefore, company B illustrated weaknesses in numerous aspects. This is because of the overall proportion of company B where it only acquired 72.35% as compared to company A that gained an excellent level of 90.48% [37]. The variation in this percentage happens probably due to the size, company background as well as the positions of both companies in Malaysia.

3. LIMITATIONS OF 5S

- Some of workers think that they are already too busy in their work; they have no time to clean and organize the workplace. [38]
- In organization if the cooperation between the department is poor then sustainability of 5s not implemented properly.[39]
- Absence of appropriate record keeping mechanisms, and auditing mechanisms for evaluating and sustaining the progress 5S program in the organization.[40]
- 5s system fail even when poor leadership performed by the leader of the team. [25]

4. CONCLUSION

The literature study proves that the 5S methodology is one of the most appropriate as well as beneficial one for any industry who wants the improvements in their existing system. In addition to this, it also gives the proof that 5S helps to enhance the work productivity along with time efficiency in less time. The appropriate implementation of 5S leads to minimization of the cost and the standards of the company go towards upside. Moreover, due to fewer accidents the safety automatically rises. Overall, it can be understood that 5S methodology gives extremely outstanding results if it is applied in best manner.

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