

# Review on Implementation of 5S methodology in the Services Sector

Ravi Chourasia<sup>1</sup>, Dr. Archana Nema<sup>2</sup>

<sup>1</sup>PG Scholar, Industrial Engineering and Management, Bansal Institute of Science & Technology, Bhopal M.P., India

<sup>2</sup>Professor, Department of Mechanical Engineering, Bansal Institute of Science & Technology, Bhopal M.P., India

\*\*\*

**Abstract** - The aim of this paper is to review the implementation of 5S methodology as one of the tools of lean management in the services sector. It is one of the fastest-growing sectors of the Indian economy. It contributes around 52 percent in GDP. The 5S process is most fundamental component of lean philosophy. 5S is the beginning of a productive life for everyone. 5S system has been developed from Japanese management techniques. It is widely applied in various manufacturing and business sectors. The system helps to organize a workplace for increased efficiency, decrease waste, optimize quality, improves productivity and more satisfied customers. Results have shown that 5S can be applied to the service industry with beneficial effects.

**Key Words:** 5S, Productivity, Efficiency, Customer satisfaction, Quality, Safety.

## 1. INTRODUCTION

The portion of the economy that produces intangible goods is known as the Service Sector. It is also called tertiary sector which comes after agriculture and manufacturing sectors. Service sector covers a wide variety of activities such as health care, tourism, trade, education, engineering, communications, transportation, information technology, banking, insurance and management. The Government of India recognizes the importance of promoting growth in services sectors and provides several incentives in service sector.

The service sector, with around 52 per cent contribution to the Gross Domestic Product (GDP) in 2014-15, has made rapid strides in the past decade and a half to emerge as the largest and one of the fastest-growing sectors of the economy. The services sector is not only the dominant sector in India's GDP, but has also attracted significant foreign investment flows, contributed significantly to exports as well as provided large-scale employment. The services sector contributed US\$ 783 billion to the 2014-15 GDP (at constant prices) growing at Compound Annual Growth Rate (CAGR) of

9 per cent, faster than the overall GDP CAGR of 6.2 per cent in the past four years. [20]

Services sector growth is governed by both domestic and global factors. The sector is expected to perform well in FY16. Some improvement in global growth and recovery in industrial growth will drive the services sector to grow 7.4 per cent in FY16.

Lean is a systematic approach and a combination of several techniques in order to identify and eliminate waste, which leads to continuous improvement and ultimately excellent performance and enhancement of customer value [21]. It is a way to achieve cost reduction, quality and efficiency improvement with less effort. The desired improvement can be achieved by appropriate implementation of lean tools and techniques, practices and principles. The most important lean management tools are 5S, Just-In-Time, Kaizen, Kanban, Poka-Yoke, Plan Do Check Act (PDCA), Single Minute Exchange of Die (SMED), Total Productive Maintenance (TPM), Total Quality Management (TQM), Value Stream Mapping and cellular manufacturing.

The 5S process is one of the most fundamental and widely applied components of lean philosophy. Its application is simple and involves basic common sense. 5S is a Japanese tool, focused on fostering and sustaining high quality housekeeping. 5S is the beginning of a productive life for everyone, and is a principle to productivity improvement. [1]

Many banks and other financial institutions routinely apply the management, fundamentals of lean manufacturing to help standardize straightforward business procedures, thus creating value for their customers [22]. The most successful approach to the industrialization of office and service processes is lean thinking, originally discovered by Toyota [3].

The costs of health care are increasing very fast, health care providers, clinics, hospitals, are under significant pressure to lower costs despite more pressure to raise service and

patient safety, decrease patient waiting times, and minimize errors and associated process. The total time from the starting to the end of a patient process in hospitals, therapy settings and laboratories, and becomes a key measurement that needs to improve [4]. Some public hospitals have taken the action to enhance the quality of their services by improving infrastructure, reviewing monthly achievement, preparing manuals and guidelines, initiating productivity improvement programs, and so on [5]. 5S has been identified as the entry point to promote the service quality in health care provision in the Sri Lankan health sector [6].

With increasing competition in the world, two major challenges are in front of organizations' managers. Firstly, in this competitive environment, managers have to make the best judgment and choose the best methods to achieve their target and not to lose very finite opportunities. Secondly, lack of knowledge is one of the most important problems of managers about familiarity with a convenient method to successfully improve the performance of the organization [16]. Service providers must refocus on the production of quality services in order to retain customers' satisfaction and competitive power in the long run [9].

In their work Y. Johana et al. (2014) have shown that 5S methodology can effectively provide a better workplace for the administration staff of a higher learning institution as they feel more comfortable, safe and organized which in the end could assist them to improve the quality of their work. [13]

In the implementation of 5S in HRM, D. S. Uma and A. Kannan (2010) have shown the employees of an organization fail to change while the customer demand and the market expectation changes rapidly. [12]

## 2. 5S METHODOLOGY

### 2.1 SORT

The first step in the process is known as "Sort". It is getting eliminated by what is not needed. Unnecessary items are removed from the work area. All incomplete work is completed or removed from the area. Items which require repairs and replacement are segregated. All work areas, cabinets and drawers are cleaned, organized and labeled. The main motto is to "Separate needed items from unneeded items by sorting through items and disposing of rarely used items" [18]

### 2.2 SET IN ORDER

The second step is called "Set in order" or "Straighten" which means to put the things which are required in specific position. There has to be "A place for everything and everything in its place." Straighten involves locating the items in the order of flow. All work areas, storage areas and equipment are clearly decided and well organized. Standard information boards are established for data management so that the success of the changes can be verified. The main motto is to "Arrange the remaining items to be most efficient and usable following the process flow by organizing and labeling item locations" [18]

### 2.3 SHINE/SCRUB

The third step is known as "Shine" or "Scrub" which means to "Maintain the work space for the already sorted and set in order items by cleaning the workspace". Scrub is the cleaning portion of the checklist. All the working areas are cleaned.

### 2.4 STANDARDIZE

"Ensure flexibility across all users by developing procedures to preserve and monitor the first three 5S."

It is meant to standardize procedure and best practice in the workplace so that the standards are completed (documented) and ensuring that they are strictly adhered to.

### 2.5 SUSTAIN

"Making a nature of properly maintaining correct procedures."

The last and the most difficult of the 5S is sustain. Standard work guidelines and standard cleaning work procedures are followed. Emphasis is given as to how the set, instructions and guidelines are followed through routine inspection. It leads to increase in awareness among the employees, decrease of errors and wastage, improvement in communication among staff and human relations.

## 3. LITERATURE REVIEW

A detailed review of research in implementation of 5S in various service sectors like banks, hospitals, hotels, restaurants, library and educational institute has been discussed.

The research done by Y. Yadav et al (2011) is an implementation of 5S in banks at Ajmer city. There are three general purposes, exploratory, descriptive and explanatory, of carrying out research. The aim of this research work is to gain a deeper understanding of how to develop an environment that only includes the required items, effective

working environment and eliminate hidden waste to improve the levels of safety and quality at the work place. A clean, organized and systematic workplace which directly reduces waste and thus impacts productivity, quality, costs and other factors is achieved after implementation. It concludes that 5S is an approach to achieving world class status. [1]

A.M. Văduva (2011) in their study shows how to address change and how to implement lean in different parts of the business. Special emphasis has been given towards 5S implementation in the banking sector. [2]

The research done by S. Erdem and K. Aksoy (2009) in Turkey's banking sector is to eliminate waste by means of lean methods. A data was collected by observing customers, employees and operations in a branch of a nationwide state bank in the Aegean region. After analyzing the collected data, some improvements due to elimination of unnecessary operations were observed. It concluded that basic operational expenses were reduced with high level of satisfaction among customers. [3]

F.Y.F. Young (2014) has reviewed the use of 5S in healthcare services. Information about 5S, Lean principles, ways to apply 5S in healthcare settings, combinations of 5S and other tools and suggestions to increase the success of 5S in healthcare services were reviewed. It concludes that 5S can be applied to healthcare services with beneficial effects. [4]

S.P. Kaluarachchi (2009) has reported in this paper how the TQM implementation efforts of a Sri Lankan public hospital were adopted alongside an attempt to change its culture. The study revealed that the change in the cultural values of the hospital occurred as a result of the application of Japanese 5S based TQM activities. Successful TQM implementation in the hospital contributed toward improving its service performance. [5]

K.W.C.U. Kendangamuwa et al. (2015) found the factors contributing to the sustainability of 5S programs in government hospitals. The study revealed that the implemented 5S programs were sustaining in eight hospitals out of ten, the sustaining rate being 80%. Ten factors were studied as contributing factors for the 5S sustainability. The study revealed that organizational leadership, customer satisfaction, community participation and organizational culture were the major contributing factors. [6]

A survey was conducted in a private hospital in Malaysia by AR. Abdul Aziz et al. (2014). The questionnaires were distributed to 330 staff members who were divided into two sections. It was found that before the application of 5S, the scores varied from poor to good (scoring from 1-3) for efficiency of work process, achievement after the implementation of 5S the scores, had changed from good to excellent (scoring from 3-5). In the second section, the staff had given 100% scoring for the commitment towards clean, safe and conducive working place, 64% scoring on the necessity to immediately disposed items that had been segregated, 99% scoring for the importance of arrangement for easy searching /putting back the items, 99% scoring for the importance of schedule for cleaning of the workplace to ensure it is free from dust and 99% scoring on the importance of 5S as a good management system. It concluded that 5S is an effective tool for housekeeping or organization of supplies in health care. [7]

W. Ulhassan (2014) has studied the characteristics of lean implementation at a Swedish Hospital. The study used a case study design to examine information about the lean implementation at two cardiac inpatient wards and at an emergency care department at a Swedish hospital. Contextual factors seemed to effect both lean implementation and its sustainability. Employee involvement in the lean implementation reduces the harmful effects on psychosocial work factors. It was concluded that lean produced an improved work environment for health care staff. [8]

D.A. Gürel (2013) have examined the implementation of 5S in hotel industry. They have shown that the survival of hotels depends on increasing service, quality and value which in turn depends on improving service production. It concludes that 5S is a valuable business model. [9]

L. Maggie and Y. Liu (2006) share the experience of implementing the 5S system in a library which serves as a reference to the library association in the continuous improvement of library environment. It also attempts to analyze the validity of "library as place" and its compatibility with the impact of information technology development. The work concludes that the 5S system provides a framework and guidelines for creating and maintaining a congenial and pleasant environment for library staff. [10]

The research done by S. Maidhili et al. (2014) on the Kaizen formula and 5S of Japanese strategies focuses on the improvement in space management of any organization. This

paper explains about the various aspects focus on 5S in detail. According to the study 5S engages people through the use of standards and discipline. It concludes that 5S creates space for better utilization in a library. [11]

According to D.S. Uma and A. Kannan (2010) an organization is a living, interconnected, and integrated system. Action taken in one place influences things elsewhere. A good 5S training program sensitizes people to all kinds of ways they can become more productive. This paper discusses the implementation of 5S concept in Human resource management. It concludes that 5S program is the key component of establishing a visual workplace. [12]

Y. Johana et al. (2014) discovered the difference of attitude among its administration staff after the implementation of Quality Environment (QE) /5S and to identify how this process could provide better services to the client. It also looked at the improvement needed to be done to ensure the sustainability of QE/5S in the workplace. Quantitative and qualitative methods are used in this study to explore the gap between attitude of the staff and sustainability in the implementation of QE/5S. This research contributes to the knowledge of the importance of QE/5S and steps that need to be taken in order to sustain the implementation of QE/5S towards a better workplace environment in the future. It concludes that the application of 5S at the workplace helped in improving safety, work efficiency, productivity and a sense of ownership among the administrative staff. [13]

M. Jiménez et al. (2015) point out the experience in 5S methodology implementation in order to optimize the work and safety of the university engineering laboratories. Learning, control and maintenance of the resources and activities involved were performed in less time and with a considerable reduction of cost after the implementation of 5S. There was an increase in available space for the location of the resources. The researcher concludes that the introduction of the 5S methodology leads to systematic risk reduction. [14]

Z. Radnor and G. Bucci (2011) highlight the main findings from an independent analysis of the implementation of the Lean improvement methodology in Business Schools and Universities in the United Kingdom. It says that lean has expanded beyond manufacturing to become an improvement methodology firstly in the service sector and more recently in public sector organizations looking towards improvement efficiency and customer value. The data collection was done through semi-structured interviews with individuals in five

Business Schools and Universities known to be involved in Lean implementation. [15]

P. Rai (2016) aims to identifying the effectiveness of 5S implementation in diverse industries to study employee performance and their attitude towards 5S. Surveying method was used and data collection was done by distributing questionnaires among general staff members of the organizations which have implemented 5S technique. The target organizations were chosen from different organizations and diverse field of work. The result shows that 5S is an effective tool for the advancement of organizational performance, regardless of organization type, size, its production or its service. 5S technique has been strongly supports the objectives of organization to achieve continuous improvement and higher performance. It has been concluded that 5S is a useful quality management tool to improve employee performance in any organization. [16]

MG. Kanakana (2013) in his study seeks to explore whether implementing lean manufacturing principles in the service sector is feasible and whether service organizations that have implemented these principles have gained from utilizing the methodology or not. The qualitative approach was utilized to assess service organizations that have implemented lean manufacturing principles and the study revealed that although the methodology was designed for manufacturing industries, service industries could implement them. It was concluded that application of lean principles achieved organizational competitiveness and increased customer satisfaction. [17]

#### 4. CONCLUSIONS

After the study of these papers it is concluded that efficient use of 5S in an organization provides a safe environment, optimal utilization of space and leads to improved quality. The results indicated that various service industries such as hospitals, hotels, banks and higher education have utilized the principles and tools of lean to increase their competitiveness. The 5S describes how items are stored and how the new order is maintained. It helps in increase in coordination between employees and improvement of staff productivity. It reduces the service time and increase customer satisfaction. The 5S methodology provides a basis to create an organizational culture and start working with continuous improvement criteria. 5S is proposed as a quality and value oriented business model appropriate to the service industries. The success of the 5S program can be attributed to the strong cooperation and active involvement of all staff members of the organization. Future work will discuss the adaptation of the 5S methodology in educational institute.

## REFERENCES

- [1] Y. Yadav, G. Yadav, S. Chauhan, "Implementation of 5S in Banks," *International Journal of Research in Commerce, Economics & Management*, Volume No: 1 (2011), Issue No. 2 (June).
- [2] A. M. Văduva, "Lean Management in Banking," *Annals of the University of Craiova Economic Sciences*, Year XXXI No. 39, 2011, pp. 118-123.
- [3] S. Erdem, K. Aksoy, "Implementing Lean Service Operations: A Case Study from Turkish Banking Industry," *İşletme Fakültesi Dergisi*, Cilt 10, Sayı 1, 2009, pp. 171-198.
- [4] F. Y. F. Young, "The Use of 5S in Healthcare Services: a Literature Review," *International Journal of Business and Social Science*, Vol. 5, No. 10(1); September 2014.
- [5] S. P. Kaluarachchi, "Successful TQM Implementation in Sri Lankan Public Hospitals," *Annals of Business Administrative Science* 8, 2009, pp. 55-74.
- [6] K.W.C.U. Kendangamuwa, S. Sridharan, D R K Herath, R.M.M.K. Ratnayake, "Factors Contributing to the Sustainability of 5S Programmes in Government Hospitals in Regional Director of Health Services Area Kurunegala," *International Journal of Scientific & Technology Research*, Volume 4, Issue 03, March 2015.
- [7] AR. Abdul Aziz, MB. Nishazini, Fareza, N.A. Azizan, "Survey to See the Impact of 5S Implementation Among Staff of Kpj Seremban Specialist Hospital, Malaysia," *IOSR Journal of Business and Management (IOSR-JBM)*, e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 16, Issue 3. Ver. I (Mar. 2014), pp. 82-96.
- [8] W. Ulhassan, "Lean, Team and Psychosocial Factors-A Longitudinal Investigation at a Swedish Hospital," *Medical Management Center, Department of Learning, Informatics, Management And Ethics Karolinska Institutet, Stockholm, Sweden*, February 20, 2014. (ISBN 978-91-7549-439-5)
- [9] D. A. Gürel, "A Conceptual Evaluation of 5S Model in Hotels," *African Journal of Business Management*, Vol. 7 (30), 14 August, 2013, pp. 3035-3042.
- [10] L. Maggie, Y. Liu, "Library as Place": Implementation of 5S System, *Journal of East Asian Libraries*, No. 139, June 2006.
- [11] S. Maidhili, G. Meenambika, K. Nithyanandam, "Application and Usefulness of 5S and KAIZEN for Library Space Management," *Library Space and Content Management for Networked Society*, Bangalore, 2014.
- [12] D. S. Uma, A. Kannan, "Implementation of 5S in HRM," *Journal of Contemporary Research in Management*, October - December, 2010.
- [13] Y. Johana, N. M. Hardi, L. Abdullah, N. Jumadi, W.N.S.W. Mohammad, N. S. Taharuddin, "The Sustainability of QE/5S Implementation in an Administration Office of a Higher Education Institution," 2014, <https://www.researchgate.net/publication/278244980>
- [14] M. Jiménez, L. Romero, M. Domínguez, M. M. Espinosa, "5S methodology implementation in the laboratories of an industrial engineering university school," *Safety Science* 78, 2015, pp. 163-172.
- [15] Z. Radnor, G. Bucci, "Analysis of Lean Implementation in UK Business Schools and Universities," ISBN 978-0-9567461-1-5, first edition 2011.
- [16] P. Rai, "Effectiveness of 5S Implementation on Organizations Performance," *Abhinav International Monthly Refereed Journal of Research in Management & Technology*, Volume 5, Issue 1, January, 2016.
- [17] MG. Kanakana, "Lean in Service Industry," *SAIIE25 Proceedings*, 9th - 11th of July 2013, Stellenbosch, South Africa © 2013 SAIIE.
- [18] C. B. Fairbanks, "Using six sigma and lean methodologies to improve OR throughput," *AORN Journal*, 2007, pp 73-82.
- [19] J. Kandampully, "The new customer-centered business model for the hospitality industry," *Int. J. Cont. Hospitality Manage*, 2006, 18(3), pp. 173-187.
- [20] Media Reports, Press Releases, DIPP publication, Press Information Bureau, India budget 2015-16 - See more at: <http://www.ibef.org/industry/services.aspx#sthash.Mah4Iwwk.dpuf>
- [21] M. R. Enaghani, M. R. Arashpour, M. Karimi, "The Relationship between Lean and TPM," *University Of Borås, School of Engineering*, SE-501 90 BORÅS, 2009.
- [22] Mayer, K., *Lean Banking*, [www.evolvegexcellence.com/BLOG/2008/09/LEANBAN KING.HTML](http://www.evolvegexcellence.com/BLOG/2008/09/LEANBAN KING.HTML)