

IMPROVING PROJECT MANAGEMENT PLANNING AND CONTROL IN THE SERVICES OPERATION ENVIRONMENT BY USING THE 6S TECHNIQUE

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Abstract. *In today's business landscape, more is needed for companies to have a solid organizational system and values; they must also continuously improve their quality management systems to ensure zero accidents and complete safety. With intense competition among organizations to produce quality products, creating a positive and productive workplace for employees is a common challenge. Modern technology and the latest methods must be utilized to achieve desired goals and overcome industry challenges. One of the most modern and latest techniques available to organizations is the 6S methodology, which can help achieve industry goals. This study targets to assess the current level of project management planning and control, determine the awareness and understanding of the 6S methodology, and evaluate its impact on project management planning and control. We have chosen a questionnaire methodology for this quantitative research to examine the relationship between familiarity with the 6S methodology and its implementation in a service operating environment. This study will provide insights and recommendations on incorporating the 6S methodology into project management planning and control in a service operating environment. To ensure the successful implementation of the 6S methodology, organizations should provide adequate training and resources to their project management teams and encourage collaboration and communication among team members.*

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1. Introduction

Nowadays, companies need not only good quality organization system values but also need continuous improvement in quality management systems with zero accidents. To maintain complete safety, continuous development is necessary. The process of continuous improvement in companies is called total quality Management. There is very high competition between different organizations to

produce quality products (Talib & Rahman, 2010). Today, the manufacturing sector has several issues in addition to quality control, including achieving high performance; use optimizing raw materials, complete use of machines and tools, reducing production time, improving the working conditions for employees, ensuring their safety, etc (Fernandes, Ward, & Araújo, 2013). The challenge of creating a positive and productive workplace for workers is a common one for businesses of all sizes. When an organization works on a project with a set deadline, challenges arise. The company then starts seeking a solution to the issues caused by an untidy workplace to improve productivity and human capabilities (Federman, 2009). To eradicate these challenges in industries we have to use modern technology and the latest methods to achieve the desired goal. There are different techniques to eliminate these problems. These are 5S, 6S, and 7S techniques (Carrera, Del Olmo, Cuadrado, Escudero, & Cuadrado, 2021). The 6S is one of the most modern and latest techniques in an organization to achieve desired goals in industries (Ahmed, Islam, & Kibria, 2018)

6S methodology is generating and sustaining a well-organized, clean and safe environment in the workplace. The 6S concept of management organizes and manages the workplace by reducing waste and enhancing quality and safety (Osakue & Smith, 2014). Today's organizations put a high priority on the safety of their workers. The organization uses the 6S technique to provide a highly productive and secure working environment. In every company, it is used to establish a safer working environment. It contributes to higher quality outcomes, cost savings, and increased customer satisfaction (Jilcha & Kitaw, 2016). The 6S management approach helps any firm reduction waste and increase production. 6S methodology is usually applied with the Kaizen, lean Manufacturing, and Just in time industrial practices. There are different steps of the 6S methodology which are: sorting, set in order, shine standardization, sustain, and safety (Dhouchak & Naveen, 2017).

These following benefits were derived after the implementation of 6S to enhance the productivity of work and efficiency of machine (Sajid, Wasim, Hussain, & Jahanzaib, 2018). The 6S method helps plan and schedule equipment maintenance, get rid of things that are not needed, and make sure that products that are nearing the end of their useful life (like chemicals or batteries) are used in the best way possible. Investments, orders, and expenses may be optimized by making this (Jiménez, Espinosa, Domínguez, Romero, & Awad, 2021). Management and staff have a greater understanding of what equipment is used when it is used, and how often it is used. Let us keep parts often used close to the production area, determine where equipment is missing, and use maintenance schedules to keep machines running smoothly. Manufacturers can pay more attention to the quality of their products when the workplace is clean, the equipment is safe, and all the parts they need are easy to get to (Osakue & Smith, 2014). When 6S manufacturing is used, inspection software makes it much easier to do quality checks. There are further

advantages for the organization regarding client retention and growth. When 6S is implemented correctly in the workplace, it results in a well-documented, well-guided, and well-managed workforce. Information transformed into step-by-step processes makes it simpler for staff to follow standards and ensure best practices. Since instructions and guidance are readily accessible, the process reduces stress and improves recruitment. When managers put safety, the sixth S, first, they reduce both short-term and long-term risks to the health of their workers (Anvari, Zulkifli, & Yusuff, 2011).

The objective of this study is to assess the effectiveness of using the 6s technique for improving project management planning and control in the services operation environment. Specifically, the study aims to;

- Analyse the current level of project management planning and control in the services operation environment.
- Assess the awareness and understanding of the 6s technique.
- Determine the effect of using the 6s technique on project management planning and control.

Literature Review

Project management (PM) has significantly advanced and gained much attention during the past thirty years. Organizations are using the PM discipline more frequently to manage business objects. Business is getting more and more "projected" or "design-acquainted," and "operation by systems" has surfaced as a veritably effective system for assimilating organizational conditioning and inspiring brigades to reach better norms of performance and effectiveness (Munns & Bjeirmi, 1996). Over the past 30 years, project operation has come to be honored as an effective instrument for handling demanding or complicated tasks. The process of bringing new systems online and into the request places demands on established associations and needs operation practices that differ from those necessary for day-to-day operations (Collyer & Warren, 2009). In similar circumstances, where companies have a finite, unique, and strange undertaking, the ways of design operation can be successfully enforced. Similar innovative, delicate challenges have come to be known as systems, and project operation is now constantly used to break them. As a result, the project's result has been constantly linked to project operation success (Aurich, Mannweiler, & Schweitzer, 2010). Project operation and project success aren't always nearly identified, as has been demonstrated over time. The control of time, cost, and progress, which are constantly projected operation objects, shouldn't be incorrect for determining the success of a design since the pretensions of both the project operation and the design are distinct. In conclusion, operations management is a discipline that focuses on setting up systems that create value as a result of human, technological,

and system components. The many primary responsibilities of operations management include organizing, motivating, staffing, managing, and directing (Bertrand & Fransoo, 2002).

During Second World War, the production capabilities of Europe and Asia were destroyed. Europe and Asia's production capacities were obliterated during the Second World War. Due to their focus on quantity rather than quality, the United States (U.S.) at that time increased its production capacity. However, when compared to other nations at the time, they produced the highest quality goods available. Dr. W Edwards Deming, a U.S. expert in quality control, begins working with Japanese people in late 1940 and continues for several years. More than a million companies employed the quality circle concept, which was created by the Japanese in the early 1960s. Dr. Genichi Taguchi, a different Japanese quality specialist, revealed a statistical concept at the same time. It helped to improve the production process and product quality. The Japanese spread several high-quality practices throughout the world as a result of his progress (Dhouchak & Kumar, 2017).

5S is one of the highest-quality techniques created by the Japanese. Its creator is Hiroyuki Hirano. Toyota used it for the first time in 1970. The basis of the current "just in time" inventory is the 5S technique. The 5s stand for "sort", "set in order", "shine", "sustain" and "standardized". The real purpose of 5S is to give each employee the idea that they own the process. Japanese scientists created the 5S. It was determined to be among the finest methods for enabling just-in-time production (Singh, Rastogi, & Sharma, 2014). The 5S technique has a number of significant advantages. These are:

- Both product quality and manufacturing costs can be improved by utilizing this technique.
- It enhances the efficiency of both machines and equipment and employees.
- It makes a significant contribution to a simpler and more organized workplace. As a result, less time is spent moving materials throughout the factory.
- Maximum efficiency in resource use is facilitated.
- There will be less waste produced by the facility as a result.

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Safety is currently the most prevalent problem in any business because it increases the risk of numerous serious incidents. Many experts have suggested using safety as an additional element with the 5S technology to lower the possibility of serious accidents. 6S technology is the name for this application of safety in 5S technology. Many businesses today use 6S (5S+Safety) technology, which

combines the 5S technology with an additional safety component. The 5S technology has been updated or replaced with the 6S. Currently, this technology is becoming more and more widespread. These days, the 6S technology has been used by organizations (Jiménez, Romero, Fernández, Espinosa, & Domínguez, 2019).

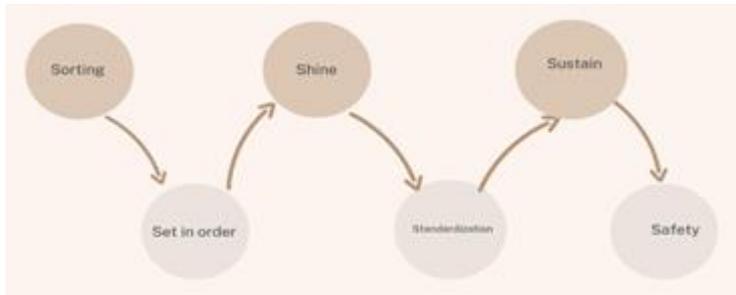


Figure 1: 6S Technique

Many organizations have adopted 6S for improving efficiency and operational effectiveness. 5S is an outdated organization system that helps to establish a workplace by making it neat and clean. It is believed that such a work environment raises employee self-esteem, and improves productivity and quality. 6S philosophy has become one of the entire work cultures, thinking processes, and everyday modes of operation from management to the manufacturing floor. 6S methodology to improve the employee's safety in the workplace (Dhouchak & Kumar, 2017).

Employees have a right to an environment that is reasonably safe and devoid of known threats, thus it is clear that health and safety in the workplace are important. Health difficulties can be physical, mental, or social in nature, and it is a condition of being free from disease, illness, suffering, or damage. Being safe means not being in any risk of harm, damage, or injury. A risk is the potential for a situation, event, or developing set of events to have negative outcomes.

The main goal of lean 6S is to minimize variations in both processes and products. The actual study primarily concerns the product rather than the system life cycle. Workplace worker safety is achieved via the practice of safety. Workplace worker safety is achieved by the use of safety. It reduces the possibility that any workplace accident may involve employees or others. The ability to work fearlessly is given to the employees by it. Any workplace must prioritize safety to operate efficiently and continuously. So, it is important to adopt excellent safety practices at work. Any industrial plant's operation might be impacted by a lack of safety. The fundamental goals of safety are to reduce risks and provide a secure workplace (Kaushik, Naveen, & Kaloniya, 2015).

Methodology

The resolution of this quantitative research was to inspect the connection between familiarity with the 6S technique and its implementation in a service operation environment. To gather data, we utilized a questionnaire survey, which verified to be a useful instrument for capturing information on various factors involved and how they interconnect within an organization. Using a standardized approach allowed for the easy comparison of responses across different groups or individuals, which can help to identify trends and patterns that would have otherwise gone unnoticed. The survey was distributed via WhatsApp and Facebook to 100 respondents, primarily middle management from a range of service sector organizations. To ensure clarity and alignment with the study's objectives, we specifically targeted middle management. Once we received the survey responses, any missing data was completed by calculating the mean, and the data was entered into SPSS for analysis. This approach enabled us to gather a significant amount of information quickly from a large group of respondents.

Age of respondents

The study included respondents among the ages of 20 and 50 years. Among those aged 20-30, the response rate was the highest at 72%. Respondents in the age groups of 30-40, 40-50 provided response rates of 22%, 6%, respectively. The age group of 40-50 provided the lowest response rate of 6%.

Table1 *Age of Respondent's Table*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-30	72	72	72	72
	30-40	22	22	22	94
	40-50	6	6	6	100
	Total	100	100	100	

Gender

Male and female are both participate in questionnaire survey. 75% of male participants' give responses the questionnaire and 25% Female participants give responses to the questionnaire.

Table 2 *Gender of Respondent's Table*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	75	75	75	75
	Female	25	25	25	100
	Total	100	100	100	

We put the information from all of the respondents into the SPSS software that IBM made for social sciences for correlation analysis. The software was used to conduct the necessary analyses to check for dynamics.

Results

The succeeding sections talk about the results of the study.

Table 3 *Correlation of Familiarity of 6S Technique to Implementation of 6S in Service Operation Environment*

	Familiarity with 6S	Implementation of 6S
Familiarity with 6S	1.00	
Implementation of 6S	.306**	1.00

According to the given data, a solid positive correlation exists between familiarity with 6S and the implementation of 6S, with a correlation coefficient (r) value of 0.306. This relationship is statistically significant, with a P value of <0.01. Therefore, an increase in familiarity with 6S will result in a corresponding rise in the level of implementation of 6S.

The study provides insights and recommendations on how to incorporate the 6S technique into project management planning and control in the services operation environment. It also provides the relationship of awareness about 6S and implementation in service operational environment. The results also include Improvements in

- Productivity, Quality, and Safety,
- Cost reduction, due to the implementation of the 6S technique.

Conclusion

Incorporating the 6s Technique into the operation of a service setting for project management planning and control is essential, as it maximizes advantages such as enhanced efficiency and productivity. To achieve this, one must have a solid understanding of all six steps of the process and be dedicated to constant upkeep and refinement. Employers and workers must engage in serious work to realize the benefits of the 6s Technique. This involves consistent training on the approach, frequent progress monitoring, and a willingness to adjust and enhance procedures in response to input and outcomes. Organizations should ensure that their teams have access to the software and equipment needed to collect and analyze data to use the 6s Technique effectively. The application of the 6s Technique to project management planning and control in service operations can benefit enterprise companies. However, achieving long-term success and steady growth requires a substantial commitment of time, energy, and money.

In the future, organizations operating in service environments can consider implementing the 6S technique to improve project management planning and control. By incorporating the 6S principles into their project management processes, organizations can achieve greater efficiency, productivity, and quality in service delivery. Additionally, by establishing a culture of continuous improvement and safety, organizations can sustain these improvements over the long term. To ensure successful implementation of the 6S technique, organizations should provide adequate training and resources to their project management teams and encourage collaboration and communication among team members. Overall, the future looks promising for organizations that adopt the 6S technique to improve their project management planning and control in the service operation environment.

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