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5S Practice: Its effects on quality and productivity of work among UiTM support staff

*Wan Noorli Razali¹, Zuraira Libasin² & Rosley Jaafar³

¹Akademi Pengajian Bahasa,
Universiti Teknologi MARA Cawangan Pulau Pinang
13500 Permatang Pauh, Pulau Pinang, Malaysia

²Jabatan Sains Komputer dan Matematik,
Universiti Teknologi MARA Cawangan Pulau Pinang
13500 Permatang Pauh, Pulau Pinang, Malaysia

³Fakulti Kejuruteraan Mekanikal,
Universiti Teknologi MARA Cawangan Pulau Pinang
13500 Permatang Pauh, Pulau Pinang, Malaysia

*Corresponding author's email: wannoorli093@uitm.edu.my

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ABSTRACT

The 5S concept, practiced in Japan since the early 1980s, is the most widely accomplished practice in organizations in both the public and private sectors. To create a more comfortable, organized, clean, safe, neat and quality work culture within an organization, 5S practices were then introduced in Malaysia in the mid-1980s. It is able to define, achieve and ultimately maintain a better standard of work culture while increasing the value of employees in an organization. In this regard, the study was conducted to determine the effects of implementing 5S practices on productivity and quality of work among UiTM Cawangan Pulau Pinang's support staff. The questionnaire was distributed to 60 respondents working in the workshops, laboratories, and kitchens at UiTM Cawangan Pulau Pinang. The data were analyzed using the Statistical Package for the Social Sciences (SPSS) software version 21. This study found that the effects of 5S practice among UiTM Cawangan Pulau Pinang support staff in terms of quality and productivity of work were quite excellent, reflecting the improvement in the work quality and productivity among support staff since 5S was implemented. This indirectly improves quality and productivity of laboratories, workshops, and kitchens services. The campus management needs to recover the lack of 5S practice to optimise the work quality and productivity among the support staff.

Keywords: 5S practice, UiTM, productivity, quality of work

1.0 INTRODUCTION

5S practice has been long adopted and practised in UiTM. At the UiTM training centre, it was first introduced in 2007 (Institut Kepimpinan dan Pembangunan UiTM, 2013) . Since then, UiTM continuously improves its 5S quality effort through the establishment of the 5S quality unit and committee in all of its campuses and departments including UiTM Cawangan Pulau Pinang. This is done to allow its staff to understand and internalise the 5S practice.

Seiri, Seiton, Seiso, Seiketsu and Shitsuke or sort, set in order, shine, standardise, sustain are the five Japanese terms used to explain the vital principle of a renowned concept of 5S. According to the National Productivity Corporation (2005), this concept establishes a quality organisational environment, focusing on the five elements aforementioned which instil the continuous improvement spirit among workers and employers. This then allows companies to stay organisationally competitive in the industry.

5S according to Ghodrati (2012) is simple and understandable to all because the terminologies involved are easy, logical and natural to human characters, thus making it implementable by industry and organisations of any type and size. This ideal concept they added, makes work space more efficient and encourage waste decrement as well as optimising quality and productivity.

5S is also viewed as foundational element to continuous improvement initiative such as TQM, ISO, Lean and others (Ghodrati, 2012). Not restricted to being the core element in most quality initiative principle, Randhawa (2017) explains in detail the emphasis made by Patten in 2006 where 5S goes beyond merely an act of cleaning. It brings changes to the workers' attitude in their work and working environment. It promotes the sense of ownership and pride as well as making the employees more responsible in their work (Randhawa, 2017). Thus, 5S strength is it is easily recognised and simple enough to be practised. Since it is the first step in the journey of achieving higher level of quality, it is a must for it to be understood and internalised by all parties involved in a higher education institution.

Ab Rahman et al. (2010) believed that the initiative and top management involvement is highly vital to ensure the success of the 5S practice. Three vital elements are recommended by Dolcemascolo (2003) to sustain the 5S initiative in an organisation. They are commitment, top management and performance measurement. When explaining on commitment of all staff, the author explains that if an organization is not committed to 5S, the effort may be short-lived. Apart from the top leadership, staff engagement is deemed equally vital in any effort for continuous improvement initiatives (Antony, 2011). A well-managed 5S strategy will not only remove waste but also improve the daily jobs of every employee. As employees are the important aspect of 5S implementation, it is important to explore their perception of their 5S practice and how it has affected their working condition.

Thus, the main objective of this study is to determine the effects of 5S practice among UiTM Cawangan Pulau Pinang support staff in terms of quality and productivity of work. The results of this study can be further extended to other studies to obtain accurate and detailed data and determine the appropriate steps that can be taken by UiTM Cawangan Pulau Pinang management to ensure that all UiTM Cawangan Pulau Pinang support staff are able to achieve the highest quality of work, which then optimise work productivity.

2.0 LITERATURE REVIEW

2.1 5S Concept

The Japanese management tool, 5S is explained by National Productivity Corporation (2005, pg.3-7). It is based on 5 important concepts:

1. SORT - To sort and systematically discard items that are not needed in the workplace.
2. SET IN ORDER - To arrange necessary items in a neat and systematic manner so that they can be easily retrieved for use and to return after use.
3. SHINE -To clean and inspect the workplace thoroughly so that there is no dirt on the floor, machines and equipment.

4. STANDARDISE -To maintain a high standard of workplace organisation by keeping everything clean and orderly at all times.
5. SUSTAIN -To train people to practise the 5S system continuously so that it becomes habitual and ingrained in the culture of the organisation.

2.2 The effects of 5S Practice on quality and productivity in the working environment

Sánchez et al. (2015) have discussed about quality in depth. They selected the term quality as defined by Juran (1990) (as cited in Sánchez, 2015) which is the condition when customers are completely satisfied with what is being delivered to them. The writers added that this customer satisfaction is the main goal of a company or an organisation together with the continuity in the organisational improvement. In a simpler explanation, the service provider must ensure the smoothness and correctness of the process and at the same time satisfy the customers' hope and desire. Sánchez et al. (2015) also highlighted that productivity can be defined as the connection between the quantity of goods or services produced and the volume of resources used in their production. It can thus be summarised as efficiency in production. In their study, 5S implementation had increased that multifactorial productivity which then produced a positive effect.

According to NPC Kelantan (2013), in the aspect of 5S practice impact, most respondents agreed that it has improved the work environment, making it safer and more comfortable apart from increase productivity and safety level as well as reduce department cost. Therefore, 5S which has been applied effectively has created a more quality, conducive, comfortable, cheerful and safer environment. Endless research focus on the 5S implementation in the industry especially manufacturing sector, including those conducted by Ab Rahman et al. (2010). In the study conducted by the authors, their subjects, two companies agreed that the 5S practice is effective in improving housekeeping, environmental performance, health and safety standards in their organisations.

2.3 Lab Assistants and Helpers' role in 5S practice

It is no doubt that 5S implementation is also a priority for all workplaces including the higher education institution's laboratories, kitchens and workshops which are similar to those in the industries. The 5S continuous improvement effort is a need in ensuring quality is achieved in university's laboratories, kitchens and workshops to assist in providing better and more effective learning experiences. Jimenez (2015) made use of the 5S concept to improve the university industrial laboratories and has proven to be fruitful in reducing cost and increase safety. Continuous observations and monitoring will ensure that every employee understands 5S and makes it a daily practice.

For this continuous improvement effort to be realised, it has to be fully supported by everyone especially the top management in making it a success. A well-managed 5S strategy will not only remove waste but also improve the daily jobs of every employee. As employees are an important aspect of 5S implementation, it is important to know what they feel about this practice and how it has affected their working conditions.

Yusof, Mohd Hardi, Abdullah, Jumadi, Wan Mohammad & Taharuddin (2014) administered a structured questionnaire which was distributed randomly among the staff to find out the attitude of the administrative staff and 5S implementation sustainability. Ample research were conducted on the effect of the 5S practice but the studies exploring the laboratory, kitchen and workshop assistants and helpers' perspective of their work condition after the 5S implementation are still scarce, making them the focus of this current study.

3.0 METHODOLOGY

The main challenge encountered by most researchers is in designing a reliable and appropriate questionnaire to collect information from the sample of a population. It must allow consistent respondents' understanding and the response task or direction should be one that allows respondents to provide meaningful information through their responses. In this study, the questionnaires were adopted based on the questionnaire designed by JPA. The questions in the questionnaire form were modified and

adapted to meet the UiTM specifications. This questionnaire contains five sections namely quality, productivity, cost, safety, and moral. Every section utilised the Likert scale as a measurement tool for the study. Respondents were asked to indicate whether certain items were applicable to their perspective. Most of the questions asked the respondents to rate their level of agreement on a five-point Likert scale which are 1- strongly disagree, 2- disagree, 3- neutral, 4- agree, and 5- strongly agree.

The target population of this study was all support staff working in the laboratories, workshops, and kitchens with approximately 60 respondents from the Faculty of Mechanical Engineering, Faculty of Civil Engineering, Faculty of Chemical Engineering, Faculty of Electrical Engineering, Faculty of Hotel Management and Tourism, and Department of Applied Science at UiTM Cawangan Pulau Pinang. The employees were selected as respondents in this study because generally, all the staff levels will eventually get involved in the audit process. These staff are directly involved in various activities that prioritize the knowledge and application of 5S practice in their workplace.

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 21 software. In order to test the validity and reliability of the questions in this questionnaire and to identify any issues that may arise during the questionnaire, a pilot study was conducted before the actual study. The pilot study was conducted on 10 respondents who participated in this study. As a result of this pilot study, the Cronbach's alpha coefficient obtained was 0.957 which indicates that the questionnaire was constructed with high reliability and was capable of measuring the variables in this study. Tasir and Abu (2003) stated that if the Cronbach's alpha coefficient value is less than 0.6 which is low reliability, only then the items in the questionnaire need to be adjusted to increase the coefficient value.

4.0 RESULT AND DISCUSSION

The demographics of the respondents by gender, age and duration of service for the 60 respondents involved in this study is depicted in Table 1. The proportion of male respondents was 66.7% (40 respondents) while the female respondents was 33.3% (20 respondents), the percentage is moderate due to the majority of the respondents were servicing in the engineering field that is 76.7% (46 respondents). The majority of the respondents were in between the ages of 31 - 40 (85%) and 75% have been with UiTM Cawangan Pulau Pinang for over 10 years, indicating that they are matured and have extensive work experience. UiTM Cawangan Pulau Pinang has been operating for 22 years since 1996 and 15 years on its permanent campus which is currently known as Campus of Permatang Pauh.

Table 1: Demographics of Respondents

No.	Demographic	Frequency	Percentage (%)
1	Gender		
	Male	40	66.7
	Female	20	33.3
2	Age (year)		
	20 – 30	5	8.3
	31 – 40	51	85.0
	More than 40	4	6.7
3	Duration of service (year)		
	Less than 3	3	5.0
	4 – 8	12	20.0
	9 -14	39	65.0
	15 – 20	5	8.3
	More than 20	1	1.7
4	Field		
	Engineering	46	76.7
	Non-engineering	14	23.3

The six items representing the questions to determine the 5S practice impact on work quality in the workplace is shown in Table 2. The list of the items are shown below:

Item 1: A clean workplace has had a positive impact on the quality of my work.

Item 2: The practical and tangible interior directions and signage have had a positive impact on the quality of my work.

Item 3: Proper workspace layout for machines, tools, and workplaces has had a positive impact on my work quality.

Item 4: The structured storage system for machinery, equipment, and materials has had a positive impact on the quality of my work.

Item 5: The easy-to-understand standard operating procedure (SOP) for machines, equipment, and materials has had a positive impact on the quality of my work.

Item 6: Overall, the quality of my work has improved since 5S was implemented at UiTM Cawangan Pulau Pinang.

Table 2: Effects of 5S Practice in the Quality of Work

Item	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean	Std. dev
1	0.0	0.0	5.0	53.3	41.7	4.37	0.581
2	0.0	0.0	6.7	63.3	30.0	4.23	0.563
3	0.0	1.7	1.7	58.3	38.3	4.33	0.601
4	0.0	0.0	5.0	58.3	36.7	4.32	0.567
5	0.0	0.0	3.3	63.3	33.3	4.30	0.530
6	1.7	0.0	5.0	55.0	38.3	4.28	0.715
Average	0.28	0.28	4.45	58.58	36.38	4.31	0.59

The average mean and standard deviation obtained are 4.31 and 0.59 respectively. This shows that the effects of UiTM Cawangan Pulau Pinang support staff practicing 5S in their quality of work are quite good which means the quality of work has highly improved since 5S was implemented at UiTM Cawangan Pulau Pinang.

By looking at each mean item, item 1 had the highest mean of 4.37 indicating that they believe the clean workplace has had a positive impact on the quality of their work. However, item 2 had the lowest mean of 4.23 indicating that their perspective of the practical and tangible interior directions and signage have had a positive impact on the quality of their work. The management of UiTM Cawangan Pulau Pinang should be aware of the needs to continuously improve the directions and signages to achieve a high impact on the quality of work in laboratories, workshops, and kitchens.

The seven items representing the question to determine the impact of 5S on work productivity by practicing 5S in the workplace are shown in Table 3. The list of the items are:

Item 1: I am satisfied with the layout of the workspace, machinery, equipment, materials, and furniture found in the laboratory/workshop/ kitchen.

Item 2: I am satisfied with the arrangement of files/documents in the laboratory/workshop/ kitchen.

Item 3: It doesn't take me long to find the files/documents once the 5S is implemented in the lab/workshop/ kitchen.

Item 4: Store management in the laboratory/workshop/ kitchen is better in terms of stock control, product search and merchandising.

Item 5: By putting SOP on each machine/equipment/ workpiece, the rate of error or damage to the machine/equipment/ workpiece can be reduced.

Item 6: The implementation of 5S in a workplace is a great chance to have better work productivity in the laboratory /workshop/kitchen.

Item 7: Overall, the implementation of 5S will enhance the productivity of laboratories/workshops/ kitchens at UiTM Cawangan Pulau Pinang.

Table 3: Effects of 5S Practice in the Productivity of Work

Item	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean	Std. dev
1	3.3	3.3	15.0	60.0	18.3	3.87	0.873
2	3.3	1.7	16.7	60.0	18.3	3.88	0.846
3	0.0	3.3	8.3	61.7	26.7	4.12	0.691
4	1.7	1.7	8.3	63.3	25.0	4.08	0.743
5	3.3	3.3	11.7	56.7	25.0	3.97	0.901
6	1.7	1.7	11.7	58.3	26.7	4.07	0.778
7	1.7	3.3	5.0	63.3	26.7	4.10	0.775
Average	2.14	2.61	10.96	60.47	23.81	4.01	0.80

The average mean and standard deviation obtained are 4.01 and 0.80 respectively. This shows that the 5S effects on productivity of work among UiTM Cawangan Pulau Pinang support staff practicing 5S are quite good too. This means the implementation of 5S has enhanced the productivity of laboratories, workshops, and kitchen assistants at UiTM Cawangan Pulau Pinang.

By looking at each mean item, item 3 had the highest mean of 4.12 indicating that it does not take them a long time to find the files and documents once the 5S is implemented in the lab, workshop, and kitchen. This is true since practicing 5S creates a well-prepared and well-organized work station. In other words, it eliminates clutters and wastes. Nevertheless, item 1 had the lowest mean of 3.87 showing that their satisfaction with the layout of the workspace, machinery, equipment, materials, and furniture found in the laboratory, workshop, and kitchen is moderate. This aspect requires the management of UiTM Cawangan Pulau Pinang's attention so that appropriate action can be taken to solve this problem to heighten the productivity of work in laboratories, workshops, and kitchens.

In addition, another item that shows a moderate mean in terms of productivity are item 2 and item 5 where the mean scores are 3.88 and 3.97 respectively. The arrangement of files and documents in the laboratory, workshop, and kitchen requires revision in the future to increase productivity in the workplace. To reduce the rate of error or damage to the machine, equipment, and workpiece, the management of UiTM Cawangan Pulau Pinang should not only place SOP on each machine, equipment, and workpiece, but should also provide proper understanding and knowledge to the person in charge (support staff) so that the productivity of work can fulfil the UiTM's needs.

5.0 CONCLUSION

The findings of this study found that the effects of 5S practice among UiTM Cawangan Pulau Pinang support staff in terms of quality and productivity of work were quite excellent. Despite this, the management of UiTM Cawangan Pulau Pinang needs to do extra work to recover the lack of 5S practice so that quality and productivity in work can be well-optimized.

The best quality in the workplace will produce high productivity at work. To achieve better performance on both of these implementations in 5S practice, the management of UiTM Cawangan Pulau Pinang should also consider the cost and the safety of 5S implementation in the workplace (lab, workshop, and kitchen). Furthermore, the moral behavior of staff towards practicing 5S also needs to be considered. By providing them with the sufficient knowledge and learning skills through trainings, the institution can ensure that the 5S practice among support staff is relevant and continuous.

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