EXTENT OF 5S IMPLEMENTATION AT BATELEC II – AREA 3: INPUTS TO ITS OFFICE MANAGEMENT PROGRAM

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ABSTRACT

There is an increasing number of companies and organizations that implement 5S. 5S practice, as one of the techniques adapted to achieve quality, has to be evaluated to identify the company's position on the implementation. This study determines the extent of 5S implementation at Batangas II Electric Cooperative, Incorporated – Area 3. The results were used as basis of the proposed programs as an input to the company's office management in the context of the 5S model itself. The descriptive method of research was utilized with identified employees under office-based jobs as respondents. Sets of data were tallied, tabulated, encoded, and analyzed accordingly using Frequency Distribution and Percentage, Weighted Mean, Weighted Mean Percentage, Coefficient of Variation and Cronbach's Alpha. Significant results revealed that company has a considerable level of 5S implementation. The employees' substantial degree of agreement to certain steps of 5S ensured that their working environment was equipped to form part of the company's continuous thirst for quality. The findings also revealed that even though there is a considerable implementation of 5S in the company, full implementation of 5S was not guaranteed. There were problems encountered during the implementation and considering the acceptability and consistency of respondent's answers identified these.

Keywords: 5S, 5S Model, office management, Philippines, Asia

INTRODUCTION

The practice of 5S has been commonly adapted by most firms in order to achieve human capability and productivity. It is one of the most famous quality improvement techniques developed by the Japanese, Takashi Osada, in the early 1980s. The acronym for five Japanese words *seiri, seiton, seiso, seiketsu and shitsuke (sort, set in order, shine, standardize and sustain)* is also known as 5 pillars of a workplace program (Ashipaoloye et al., 2013). The application of the methodology is believed to considerably uplift the environmental performance and efficiency including housekeeping

and maintenance, health, safety and more. Considering these facts, studies show that there is an increasing number of companies and organizations that follow the path towards implementing the 5S. As these companies are geared towards improvement, these organizational and housekeeping methods form part of their continuous thirst for quality. Based on a systematic approach, 5S is aimed at reducing waste and optimizing productivity by maintaining an orderly workplace. in today's era, customer satisfaction has become the foremost objective of companies (Ashipaoloye, 2013). A company is not just fulfilled at providing products and services, but sees to it that whatever it offers is of quality standard. Failure on the part of a company to assess the level of its quality from time to time will have an effect to its success. Therefore, it is important for the organizations that have adopted this technique to have suitable management methods that fit to the kind of product or services they offer.

According to Batangas II Electric Cooperative Incorporated (Batelec II) management, it is evident that some of its employees are not aware of the importance of 5S. Though the methodology is implemented in the organization, most staff are not aware of it and even some are not used to a cleaner working environment and such interrupts the process flow. Thus, this study was aimed at assessing the compliance of Batelec II specifically its Area 3 to 5S as a quality management tool in achieving its objectives. This study also intended to rearrange and reset the working environment and enhance the process flow by using a more organized 5S tool as well as to propose an action plan to improve its activities, as needed.

Theoretically speaking, according to Sarkar (2006), the philosophy that surrounds 5S is that it is a five-step technique for changing the mindsets of the staff and involving the entire organization in improvements. Sarkar (2006) also posited that 5S may be simple but it is a powerful quality practice that helps identify and eliminate waste in a workplace leading to the establishment and maintenance of a productive and quality environment in an organization. Batelec II, as the largest among 119 Electric Cooperatives (ECs) in the Philippines, is very keen in its mission to offer quality electrification services in selected areas of Batangas. Thus, a 5S is established and is implemented by its management.

The need to ensure the compliance of Batelec II Area 3 to the 5S methodology should be emphasized so as to keep up with the demands and standards of its vision and mission as a company. The purpose of this study was to assess the current level of compliance of the company so as to assist it to become more effective, efficient and productive by reorganizing the process of the office management program.

Framework of the Study

This study is basically hinged on the 5S principles as developed by the Takashi Osada (1995) and the methodology popularized by Taichi Ohno (1988) who designed the Toyota Production System. The conceptual model of 5S incorporates five steps. The five steps describe how to organize a workplace to achieve efficiency and effectiveness. These also identify the necessary actions to be done so as to properly organize the work area and sustain that new order. The five steps include Sort (seiri) which pertains to identification of necessary items relevant to work and their proper designation. It also helps organization to segregate the used and unused item (Breyfogle, 2010); Set in order (seiton) which details proper organization of items in their designated place; Shine (seiso) which focuses on the practical efforts to keep working area clean ensuring purpose-driven work; Standardize (seiketsu) which creates certain standards for both organization and its stakeholders; and, Sustain (shitsuke) which ensures sustenance to the housekeeping standards and future compliance to the methodology.

Objectives

This study determined the 5S as a quality management tool of Batangas II Electric Cooperative, Inc. – Area 3 as a basis for its office program.

The objectives of this study included were to present the demographic profile of the employees in terms of age, sex, civil status, educational attainment, nature of work, length of service and job status, to determine the extent of company's implementation as well as to identify problems in the company's implementation in terms of sort, set in order, shine, standardize and sustain. The researchers shall propose activities to ensure full implementation of Batelec II – Area 3 in the 5S in support of its office management program.

METHOD

Research design

The descriptive method of research was utilized to gather the Extent of Implementation of 5S at Batangas II Electric Cooperative Incorporated and its demographic profile.

Descriptive research can provide valuable information which serves as a basis for scientific decisions. Daniel et al. (2011) posited that descriptive research is used in the literal sense of describing situations or events. Furthermore, according to Singh et al. (2007), a descriptive study is

concerned with conditions or relationships that exist, opinions that are held, processes that are going on, effects that are evident, or trends that are developing. The study is largely concerned with the present situation, although it also considers past events and influences as they are relevant to current conditions (Singh et al., 2007).

Respondents of the study

Based on the data provided by the Batangas II Electric Cooperative Incorporated (Batelec II) - Administrative Services Department in Barangay Antipolo del Norte, Lipa City, Batangas, Area 3 has 129 filled up positions in the organization as of September 2015. Forty of this were doing the office based jobs while the others are on field. The researchers used the population of 40 employees for they were the ones working in the offices. The Batelec II management has limited the research on the office based employees for they follow a different and more technical standards on the field-based employees. Thus, no sampling shall be employed in the study.

Data gathering tools

The researchers utilized two data gathering instruments.

The first is a self-made questionnaire on personal information of the respondents. This included basic variables such as age, sex, and civil status, and educational attainment, length of service, department and job status. The questionnaire was suited to present situations of the company and nature of the participants.

The second was a modified standardized questionnaire patterned after the research instrument of Asphipaoloye and Menez (2013) on the study *Level of Implementation of 5S at College of International Tourism and Hospitality Management (CITHM): Inputs to its Environmental Program*. It has five (5) aspects which represent five (5) steps incorporated in the 5S principles. The five aspects include Sort (seiri) which pertains to identification of necessary items relevant to work and their proper designation; Set in order (seiton) which details proper organization of items in their designated place; Shine (seiso) which concerns the practical efforts to keep working area clean ensuring purpose-driven work; Standardize (seiketsu) which creates certain standards for both organization and its stakeholders; and, Sustain (shitsuke) which ensures sustenance to the housekeeping standards and future compliance to the methodology. Each step contains statements based from 5S' basic practices and the respondent is asked to rate his degree of agreement upon such. The researchers used a four-point Likert Scale to

avoid central tendency. According to Brace (2008), a Likert scale is a technique that presents respondents with a series of attitude dimensions, for each of which they are asked whether, and how strongly, they agree or disagree, using one of a number of positions on a scale.

The researchers used Cronbach's Alpha on IBM's SPSS to test the internal consistency and reliability of test scores in the questionnaires. The questionnaire yield 0.891 which made the instrument highly acceptable.

Ethical consideration

The researchers in consultation with its academic and industry advisers carefully chose the topic and proposed it with Batelec II management. The company immediately accepted the proposal in an urge to strenghten its 5S implementation in the cooperative. To protect the best interests of the researchers and the host company, It has been agreed that the research shall be non-commercial, and is purely for education purpose. The host company will not be charged any fee for its usage.

Data analysis

The gathered data were tallied, tabulated, encoded and analyzed accordingly using the following statistical tools:

- Frequency Distribution and Percent Method: This was used to describe the socio-demographic profile of the respondents according to age, gender, civil status, educational attainment and length of service

- Weighted Mean: This was used to describe the Levels of Implementation of 5S at Batangas II Electric Cooperative Incorporated Area 3. A four-point Likert Scale was used

- Weighted Mean Percentage and Coefficient of Variation: These were used to determine the acceptability and consistency of the respondent's answers to be able to identify problems encountered by Batangas II Electric Cooperative – Area 3.

- Cronbach's Alpha: This was used to determine the internal consistency and reliability of test scores in the questionnaires using the statistical software SPSS.

RESULTS AND DISCUSSION

Socio-demographic profile of respondents

The socio-demographic profile of the respondents is looked upon in terms of gender, age, civil status, educational attainment, nature of work, job status, length of service and salary.
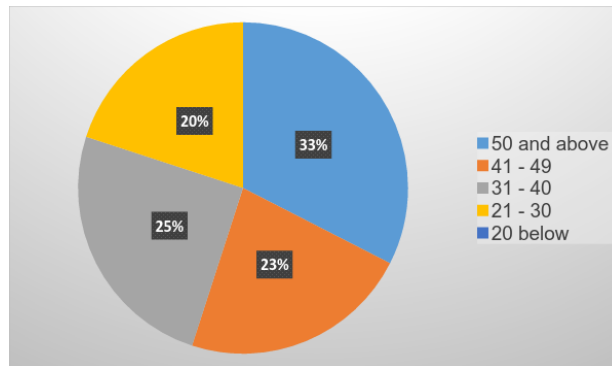

Figure 1. percentage distribution of respondents' age

Batelec II – Area 3 has a unique case since most of its employees are in the oldest age bracket. The management explained that this is due to the longevity benefits that the company offers its employees. In terms of 5S as a standard being implemented in the office, whatever age bracket an employee belongs, he or she is expected to practice such to be able to comply with the requirements of being an employee. Ashipaoloye (2015) posited that everybody is not excused to implement 5S so as to create the working place in which space, time, money, energy, and other resources can be controlled and utilized efficiently and effectively.
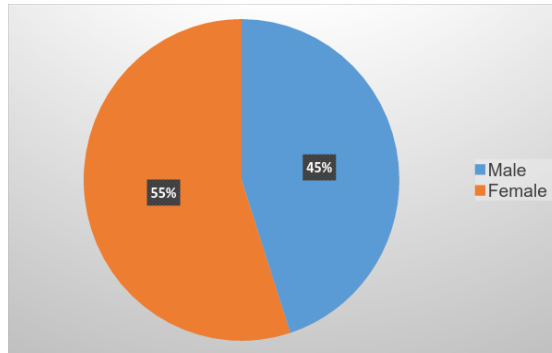
Figure 2. Percentage distribution of respondents' sex

The researchers conclude from the figure that more than half of the employees in Batangas II Electric Cooperative Incorporated – Area 3 are females. According to Ashipaoloye and Menez (2013), experience has shown that a Filipino women have been joining the labor force out of economic necessity and partly in response to economic opportunities and as well as their role in the family.
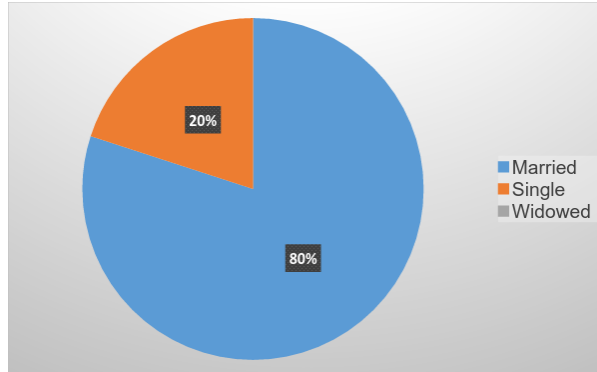

Figure 3. Percentage distribution of respondents' civil status

It can be concluded that majority of the employees of Batelec II – Area 3 are married. According to Menez (2013), civil status may contribute to the activities of 5S; on the other hand, married people are supposed to be very good in planning in real life.
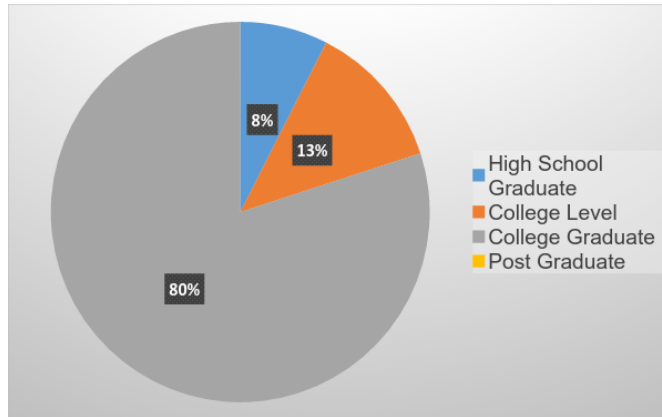
**Figure 4. Percentage distribution of the respondents'
educational attainment**

Majority of the employees are college graduates. Rampell (2013) posited that there are cases, that employers are specifically requiring four-year degrees for jobs that previously did not need them, since companies realize that in relatively poor job market, college graduates may be willing to accept whatever job is at their disposal.
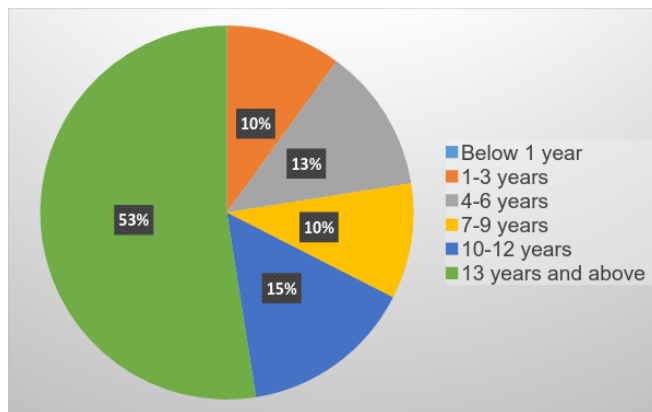

Figure 5. Percentage distribution of respondents' length of service

Most of the employees have rendered more than 12 years of service in the company. As posited by Hausknecht et al. (2009), employees stay in a

company for a various reason. The main reason for an employee to stay in a company is job satisfaction. One cannot expect an employee to stay if he or she is not contented in his or her job. Flexible schedule and location also makes the employee stay in a company. Lack of alternatives may also be a factor why employees stay because of the unavailability of jobs outside of the organization
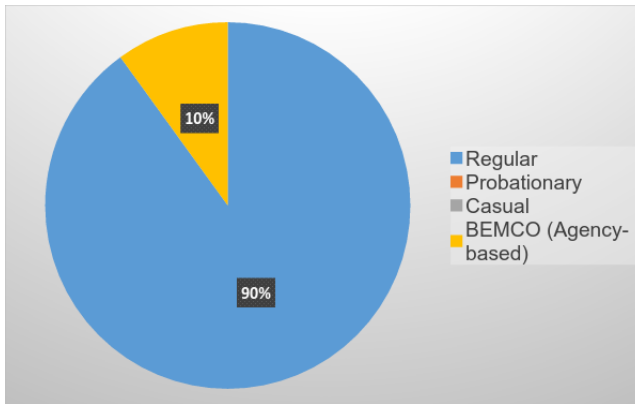

Figure 6. Percentage Distribution of Respondents' Job Status

The researchers found out that there are no probationary and casual employees as of the time of the conduct of this research. The job status of the employees is a reflection of their many years of service in the company (Ashipaoloye, 2013). As per Article 281 of the Philippine Labor Code, which reads: Probationary employment shall not exceed six (6) months from the date the employee started working, unless it is covered by an apprenticeship agreement stipulating a longer period.

Extent of implementation of 5S program

The extent of implementation was measured through the administered survey questionnaire. The instrument was designed to test the degree of agreement of every respondent in terms of the steps involved in 5S. A four point Likert scale was used to avoid central tendency.

Table 2.1Implementation of 5S program in terms of sort

Sort	Weighted Mean	Verbal Interpretation	Rank
1. Office supplies, equipment and other items are properly sorted and stored	3.48	Agree	2
2. Items not frequently used are appropriately stored	3.28	Agree	5
3. Frequently used items are properly stored	3.53	Strongly Agree	1
4. Only necessary items are found in the workplace	3.40	Agree	3.5
5. Both items needed and not needed are clearly distinguished in the workplace	3.40	Agree	3.5
Composite Mean	3.42	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree.   Ranking: 1 = Highest; 5 = Lowest

The over-all assessment of the respondents on their compliance to 5S program in terms of sort is 3.42 and is verbally interpreted as *Agree* Sarkar (2006) posited that *sort* step gathers all items in a workplace and sorted based on needs and wants. Flinchbaugh (2006) also suggested that all people who work in a certain floor should be ask to remove everything that is not necessary. However, it does not mean that one really puts everything he or she does not need away, neither does it mean that one eases all items that he or she needs into orderly positions. (Paulsen, 2010)

Table 2.2 Implementation of 5S program in terms of set in order

Set in Order	Weighted Mean	Verbal Interpretation	Rank
1. There are safety signs showing possible hazards in the workplace	3.38	Agree	2
2. Color coding and other visual controls are used to set documents and files in order	2.35	Disagree	5
3. The use of visual control such as labeling is very visible in the workplace	3.35	Agree	3
4. There are good storage facilities	2.88	Agree	4
5. Important files are well documented, identified and stored correctly	3.58	Strongly Agree	1
Composite Mean	3.11	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree. Ranking: 1 = Highest; 5 = Lowest

In as far as the observations done by the researchers, there was no compliance on the statement 'color coding and other visual controls that were

used to set documents and files in order'. This also got a weighted mean of 2.35 with disagreement verbal interpretation. It has to be noted that as postulated by Sarkar (2006), in set in order, all the items that have been sorted and arranged should be able to facilitate efficient working systematic arrangement. Paulsen (2010), suggests that to be able run this step, the following should be considered: (a) what one needs to do his or her job, (b) where should the item be located and (c) the quantity of that particular item one needs.

Table 2.3 Implementation of 5S program in terms of shine

Shine	Weighted Mean	Verbal Interpretation	Rank
1. There are schedules for cleaning the workplace	3.38	Agree	1
2. Cleaning materials are sufficient enough to clean the work area	3.28	Agree	2
3. Each employee has his or her own cleaning schedules	3.08	Agree	4
4. There are staff assigned to clean particular areas of the workplace	3.10	Agree	3
5. There is a staff assigned to oversee the cleanliness of the work area	3.03	Agree	5
Composite Mean	3.17	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree. Ranking: 1 = Highest; 5 = Lowest

All agreed items were evident based on the copy of narrative reports provided by the management in as far as cleaning and clearing any item and working environment. The shine step makes the organization look like a brand new business (Flinchbaugh, 2006). Least among the items was the staff assigned to oversee the cleanliness of the work area with weighted mean of 3.03. In an interview with the management, it admitted that there is no specific person assigned to see if the area is clean. Usually, it just let the division heads to the job. However, it must be noted that cleaning is not just about making everything looks good. It is a way to notice problems early and to keep work areas and equipment in good operating condition even more to extend the duration for all.

Table 2.4 Implementation of 5S program in terms of standardize

Standardize	Weighted Mean	Verbal Interpretation	Rank
1. Rules and responsibilities are clearly spelt out by the management	3.53	Strongly Agree	2
2. The different areas of the workplace are distinctly labelled	3.40	Agree	4
3. All staff are conversant with 5S program	3.48	Agree	3
4. Standardization procedures are being introduced from time to time	2.20	Disagree	5
5. Staff are encouraged to maintain a high	3.65	Strongly Agree	1

level of standard in the workplace		
Composite Mean	3.25	Agree

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree. Ranking: 1 = Highest; 5 = Lowest

Though the overall compliance appears to be Agree, the introduction of standardization procedures from time to time was rated Disagree with a weighted mean of 2.20. Standardization procedures are very much significant in order to achieve compliance with the standardize step. Baker (2008) describes this as a step that clearly identifies and labels. The purpose of this step is to keep the first three Ss, sort, set in order, and shine, as a standard all the time.

Table 2.5 Implementation of 5S program in terms of sustain

Sustain	Weighted Mean	Verbal Interpretation	Rank
1. Areas for improvement and noted and acted upon	3.48	Agree	3
2. 5S checklist is provided during the implementation of the 5S	2.00	Disagree	5
3. There a regular auditing of the department to ensure compliance to 5S	2.38	Disagree	4
4. There are seminars and trainings conducted from time to time	3.60	Strongly Agree	2
5. A staff is assigned to oversee the compliance	3.45	Agree	1
Composite Mean	2.98	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree. Ranking: 1 = Highest; 5 = Lowest

Among the steps, sustain has received the lowest composite mean. This is the final step in the entire 5S system, but also is the hardest step for 5S. The Sustain step is considered the most difficult because it requires continued diligence (Paulsen, 2010). The final step does not aim to just to keep the first four 5s again and again but also keeps up the increase of the improvements. The most important thing on this step is that, it creates a system that distributes data for the company and this can help the company to make informed decisions (Bersbach, 2010).

Problems encountered in the implementation

The problems encountered by Batelec II – Area 3 were identified through the consideration of the acceptability and consistency of responses measured through various statistical tools. The findings showed revealed that

in terms of *sort,* no problems have been encountered in the implementation of this step. Every statement has met the minimum requirements of acceptability and consistency. In terms of set in order, problems concerning the use of color-coding and other visual controls and availability of a good storage facility were identified. Two problems were identified in the shine phase of 5S. The problems are *'there is no staff assigned to clean particular areas of the workplace'* and '*there is no staff assigned to oversee the cleanliness of the work area'*. In the *standardize* phase, it was found out that standardization procedures are not being introduced from time to time. Under the *sustain* step, two problems were identified. The management has not provided a 5S checklist during implementation and the company did not observe regular auditing of its 5S

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Proposed activities to ensure full implementation

The proposed programs were based on the significant findings of the research. The researchers used the principles of 5S stand-alone model. The 5S stand-alone model is the model that uses a 5S checklist to verify area compliance to 5S-ing non-conforming parts and organization of each assembly line (isixsigma.com).

The proposed activities under *sort have a* main objective to further improve the compliance. As posited by Locher (2011), tagging technique is important because it provides a standard process for sorting. Strict and frequent inventory of items is necessary because excess stock of anything is waste. There are three proposed activities under Set in Order. These include the use of outlining technique, construction of a storage room and enforcement of labelling technique were proposed to meet three different objectives. The concerns are for the improvement of the step and proposal of solutions to eradicate identified inconsistencies. Under the shine aspect, The first activity is the preparation of a visual and physical sweeping list. As posited by Gopalakrishnan (2010), the list can help eliminate delays during the cleaning process and it acts as a reminder on what needs to be done. Second on the list is the retooling of the 'Clean as you go' policy inside the company. Skaggs (2010), explains that cleaning must be done not just after working, but on a regular schedule to remove dirt and dust from the workplace. Third on the list of the proposed activities is the assignment of section heads to perform timely inspection. The head will be responsible to motivate the employees to start cleaning their work area (Gopalakrishnan, 2010).

The main objective of activities under standardize is the improvement of the 5S standards being adapted by the company. Effective communication and introduction of standardization procedures is also included in the

objectives for this is the problem identified under the step. Proposed activities include the review of the currently implemented 5S standards and the establishment of schedule for periodic repetition of 5S activities. The sustain step has received the least considerable weighted mean. The main objectives of the proposed activities are not only to improve but also to maintain the discipline concerning 5S implementation. The first activity is the retooling of 5S roles' in waste management. A proposal to restructure quarterly audits into monthly audits was also raised. Development of a checklist for usage during implementation is one of the basic requirements of the 5S model thus, this is proposed Documentary measures should never be forgotten. According to Navqi (2013), the best way to benchmark the best 5S practices is documenting the procedures for shining, sweeping, and sanitizing the work place. The documents can include digital photos of the desired conditions.

CONCLUSIONS

Based on the results of the gathered data, below are the conclusions drawn from the study:

The findings showed that majority of the employees are females. Most of them belong to the age bracket of 50 years old and above, college graduates and married. They are regular employees with the length of service of 13 and above years.

The findings showed that employees have a considerable degree of agreement on the level of implementation of 5S. This signifies that both the company and employees ensure that 5S principles are being implemented in the office. Moreover, in terms of sort, it is found out that the majority of the employees agree that 'office supplies, equipment and other items are properly sorted and stored', 'only necessary items are found in the workplace' and 'both items needed and not needed are clearly distinguished in the workplace'. Findings in the set in order step include agreement on the statements, 'important files are well documented, identified and stored correctly', there are safety signs showing possible hazards in the workplace', there is currently a weak compliance on the statement 'color coding and other visual controls that are used to set documents and files in order'. In the shine phase of 5S, it is found out that employees agree that there are schedules for cleaning the workplace. On the other hand, no specific person is assigned on a regular basis to check if the area is clean, they just let the division heads do the job. There is no particular person assigned to check if the working area is clean and tidy. Employees agree that staff are encouraged to maintain high level of standard in the workplace and rules and

responsibilities are clearly spelled out by the management. However, introduction of standardization procedures from time to time is rated disagree. In terms of sustain, employees' agreement to the present level of their sustenance of implementation is average. They strongly agree that there are seminars and training conducted from time to time. However, 5S checklist is not provided and there is no regular auditing of the department to ensure the compliance of 5S.

The problems encountered by Batelec II – Area 3 are identified through the consideration of the acceptability and consistency of responses measured through various statistical tools. The findings showed reveal that in terms of sort, no problems have been encountered in the implementation of this step. Every statement has met the minimum requirements of acceptability and consistency. In terms of set in order, problems concerning the use of color coding and other visual controls and availability of a good storage facility were identified. Two problems are identified in the shine phase of 5S. The problems are 'there is no staff assigned to clean particular areas of the workplace' and 'there is no staff assigned to oversee the cleanliness of the work area'. In the standardize phase, it was found out that standardization procedures are not being introduced from time to time. Under the sustain step, two problems are also identified. A 5S checklist has not been provided by the management during implementation and regular auditing of its 5S is not observed by the company.

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