Study on 6S Method and Improving Working Environments in the Garments Industry

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Abstract: Bangladesh is the second largest exporter of readymade garment (RMG) products trailing China. 80% of the country's total export is contributed by RMG sector which is 13% of the total GDP. Now a day this sector faces challenges to retain its prosperous position due to uprising of new competitors both in the national and international market. More than 70% of EU imports of textile and clothing come from Asia. Many Asian workers have to work in sweatshop conditions, but the issue appears in global media only when major fatal accidents occur, like that at Rana Plaza in Bangladesh, in 2013. Long working hours, low wages, lack of regular contracts, and systemically hazardous conditions are often reported. Trade unions, when allowed, are unable to protect workers. So, continuous improvement is required to overcome these challenges. Various lean tools can be used to achieve this improvement. This paper experiments application of 6S approach to a real world production scenario at a garments factory. Initially, the whole system was analyzed and this showed a lot of incongruities in different areas. Improvement proposals were made based on 6Sand were implemented over the course of next few months. From the proposed improvement proposal, 54.67m^2 space was saved which resulted in a cost savings of 37887 Taka. Average flow distance measure was reduced by almost 665 feet perday in the mechanical room. Overall reduced movement of almost 20% was achieved in fabrics and accessories room. Labor productivity almost increased by27%, resulting in more than 13% increase in multifactor productivity.

Keywords: Working Condition, Working Environment, Industrial Hazards, 6S Methods.

1. INTRODUCTION

The RMG industry in Bangladesh primarily is an export-oriented industry. It is mainly comprised of knit and woven garments. The success of readymade garment exports from Bangladesh over the past two decades has crossed the most optimistic expectations. The sector rapidly attained high importance in terms of employment, foreign exchange earnings and its contribution to real GDP. In order to maintain this rapid growth and to fulfill varying customer demand, the industries must promote some new work practices rather than conventional practices.

Applying LEAN techniques can result in improved productivity; workflow efficiency and cost savings. There are various lean techniques that can be used to achieve that in RM G sector. Examples may include techniques like SMED (Single-Minute Exchange of Dies), OEE (Overall Equipment Effectiveness), TQM (Total Quality Management), Just-in-time (JIT) manufacturing, Kaizen and so forth. One of the most simple-to-implement ways to achieve the desired improvement is to practice 5S on the factory floor. 5S is the name of a workplace organization method that uses a list of five Japanese words Seiri, Seiton, Seiso, Seiketsu, and Shitsuke. Transliterated or translated into English, they all start with the letter "S". The list describes how to organize a work space for efficiency and effectiveness by identifying and storing the items used, maintaining the area and items, and sustaining the new order. Since the implementation of Japanese manufacturing, these techniques have proven to work well. Japanese goods have now become synonymous with the top rank products of the world. A variety of research work has been conducted over the years depicting the significance of implementing 5S in industrial sector. A research was

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conducted in 2010 on the topic of "Implementation of 5S practices in the manufacturing companies: A case study" (Rampant al. 2010). The researchers executed 5S rules in two manufacturing companies. 5S checklist was developed for each division for auditing process. Both the companies associated with the research performed an excellent 5S practice. This study proved that 5S is an effective technique in improving housekeeping, health and safety standards in the workplace as well as environmental performance. The study also concluded that effort and participation from top management is a must for proper implementation of 5S. Studies have also been conducted trying to implement 5S tools on the supply chain network (Burlington 2005). The author in this study has pointed out different measures to be taken in supply chain strategy of an organization in terms of different S of the 5S system. Another research has been conducted in India measuring the effect of 5S system in performance improvement of a small scale industry (Rojasra and Qureshi 2013). The study found that, within weeks after the implementation of 5S, production system efficiency improved from 67% to 88.8%. In another study, 5S along with some other lean strategies were introduced in a metal structures production system (Carvalho 2011). This resulted in a reduction of lead times, work in progress, transports, deliver delays, defects and errors in assembly line and production system. This study was conducted with a view to improve the existing condition by implementing 5S system on a readymade garments industry named Talisman Ltd situated in Dhaka Export Processing Zone (DEPZ). This case study analyzes the impact of 5S in the work place and gives a comparative scenario before and after 5S implementation in terms of space consumption of materials, cost saving, improvement in administrative repair time, improving labor productivity and so forth. Standing for Sort, Set, Shine / Sweep, Standardize / System and Sustain, 5S is a method of creating and maintaining a well-organized, clean, highly effective and high quality workplace. 5S has roots emerging from Japan, where this method was popularized by Hiroyuki Hirano (1990). 5S links with successful change management by generating a high degree of motivation and involvement in an organization. Previous search (Bayo-Maris et al., 2010; Gappetal., 2008; Ho, 2010; Massey and Williams, 2005, 2006; Richet., 2006) indicates that applying the technique of 5S, sometimes referred to as workplace organization or CANDO, can impact on many facets of an organization, including quality control, process/information flow, layout, process design, supplies and inventory, asset management and maintenance. Bicheno and Holweg (2009) note that some companies add a sixth step for safety but the authors fail to document the practicalities of how this is achieved. In fact they advocate that safety should be implicit across the existing five stages as adding a sixth stage causing confusion. This paper investigates whether a high risk manufacturing environment such as the case company collaborating in the research can benefit from improved productivity and enhanced safety in the workplace by incorporating an extra "S for safety" into a 5S program. In so doing this paper reviews the literature associated with the 5S methodology and illustrates, through action-based research, some 5S experiment sand the development of a 6S method.

2. MATERIAL AND METHODS

2.1 Materials

- Note Book
- Pen
- 6S Audit Sheet
- Pencil
- Eraser
- Calculator
- Camera etc.

2.2 Methods

2.2.1 Interview Method

This research is based on output from primary data with a standard questionnaire. The data collection included questionnaire survey and focus group discussion. Though the questionnaire was structured still study accepted any kind of information and opinion of interviewees which they wanted to share with us. Since our target was to rely on garments workers opinion, we just count workers as our interview sample. Focus Group Discussions (FGDs) with female workers were conducted to complement the interview findings.

2.2.2 Sampling Method

Questionnaire survey was conducted on 100 female garments workers from Narayanganj and Dhaka. Five factories from Dhaka and five factories from Narayongonj were selected. Ten workers from each factory were interviewed. Among the FGDs, two were conducted in Narayangonj and three in Dhaka.

2.2.3 Procedures of Collecting Data

The workers were interviewed outside the factory since it needed for their comfort. Interview place and time was fixed by workers. Ten data collectors recruited with minimum graduation degrees. They were trained on the research objective, data collection procedures, ethical issues of research method also the reliability and validity of the research procedure. The data collectors were sent to the field for two days of prior testing. Female data collector conducted the entire interview.

2.2.4 Analysis Procedure

Analysis procedure is divided into three steps. In the first step the data was stored in the computer and it was cross checked. In the second step the analyzing procedure was done through excel software following the three research questions. At the last step finally it discussed the whole findings.

2.2.5Reliability and Validity

In a quantitative study it is easier to measure reliability of measuring instrument by getting same results with the same kind of method on the same population. Since the finding of this study is almost similar to our previous study it can be fair to say that research is reliable and valid**.**

2.2.6 Ethical Consideration

According to Bulmer in Gilbert (2001) confidentiality and anonymity are two most important ethical issues. Those who worked in data collection procedure gave all the information regarding the research purpose to the entire interviewees. The research report is not using anyone's name and details even not used any garments name too. It ensured the confidentiality of interviewees.

2.2.7 Limitations

Due to limitation of time and financial resource the sample size of study was limited and could able to cover surveying work at all major garments factory intensive areas of the Bangladesh to get more broader picture in the in relation to set research objectives.

2.2.8 Generalization

It was not the study purpose to generalize the findings. Rather it was the target to get an understanding the working situation regarding the garments workers reproductive health issue.

2.2.9 Presentation of Analysis

This section will focus on three research questions which will lead to reach the main purpose of the research. The research questions are, as said before

•How working conditions and environment are affecting female garments workers reproductive health rights?
•Are female garments workers aware of their reproductive health issues?
•Do garments have any role to make them aware of their reproductive health issues? This section is divided into four sections. In the section 5.1 there will have details of participants. Section 5.2 will highlight the first research question. Section 5.3 will focus the second research question. Section 5.4 will discuss about the third research question. And the section 6 will discuss the major findings and in the section 7 recommendations will try to give a proper way out on the existing problem.

2.2.10 Presentation of Participants

100 female garment workers were randomly selected from the garments situated in the area of Dhaka and Narayongonj. Factories were selected depending on their workers number. Factories where more than 200 workers are working were selected. Since Dhaka and Narayongonj are well known for garments area and lots of female garments workers are working there too, it was decided to make study in those areas.

Table-2: Sampling Areas

Region	Number
Dhaka	50
Narayongonj	50
Total	100

Table-3: Age of Workers

Age Range	Number of workers
<19	7
19-25	42
25-30	34
31-40	15
40+	2
Total	100

Among the 100 respondents 7 are under the age of 19, 42 are between 19 to 25, and 34 are between 25 to 30, 15 are between 31 to 40.Only 2 are more than the age of 40.

Table-4: Marital Status of the workers

Marital Status	Number of Workers
Married	58
Unmarried	35
Divorced	6
Widow	1
Total	100

Table 5: Education Level of the Workers

Level of education	Number of workers
Below primary level	72
Below Secondary Level	28
Total	100

Among the respondents education level is not so high. Among 100 respondents 72 are below primary level where as 28 are below secondary level. It is not unfair to say that this is the most common educational level among garments workers.

Table-5: Family members and earning members of the family

Family Size	2	3	4	5	6	7	Total
Husband	9	16	14	7	1	1	48
Parent	3	2	4	7	7	7	30
Self	8	13	1	22			
Total	20	31	19	14	8	8	100

Among 100 respondents in the case of 22 female garments workers they are the only earning member of their family where family members are 2, 3 and 4.In this case most of them are living with their children and mothers. But those who have husband they are not working at all. In the case of 48 female workers both husband and wives are working where as their family size differ eg, 2, 3,4,5,6 and 7. 30 female garments workers are living with their parents where their parents are earning too.

3. RESULTS AND DISCUSSION

3.1 How working conditions and environment are affecting female garments workers reproductive health rights?

a) Wage Employment

Table-6: Monthly salary structure of the Workers (Amount in Taka)

Age Range	Data	Divorced	Married	Unmarried	Widow	Grand Total
Avarage Salary	2,293	2,293	<19			
Number	7	7				
Avarage Salary	2,531	2,381	2,445	19 - 25		
Number	18	24	42			
Avarage Salary	2,767	2,528	2,666	2,565	25 - 30	
Number	3	27	4	34		
Avarage Salary	2,817	2,498	3,250	2,612	31 - 40	
Number	3	11	1	15		
Avarage Salary	2,900	2,900	40+			
Number	2	2				
Avarage Salary	2,792	2,536	2,396	3,250	2,510	Total
Number	6	58	35	1	100	

The above salary structure clearly shows that the amount which the workers receive is very few to even survive in this city where rising prices of essential commodities have made the matter worse. Sometimes even this small amount of money cut for absence of work on a particular day. Sometimes they do not get the payment on time. So when they even fail to survive with this amount, how could they pay attention on their reproductive health issue?

b) Conditions of Employment

Almost all of the cases the management does not provide appointment letters/ contract letters, identity cards and service books. Though all the workers demand their job as permanent job still they couldn't prove it at all in any kinds of documents. Even they are not aware of keeping documents for their security.

Table-7: Working Hours

Working Hours	**Number of Workers**
Always 8 hours	0
Always more than 8 hours	50
Sometimes more than 8 hours	50
Total	100

Among the respondents there is no single female worker who works only for 8 hours. Among 100, 50 always work for more than 8 hours and 50 sometimes work more than 8 hours. Among 100 respondents 40 female garments worker said that they always feel pressure to work overtime and 60 said sometimes they feel pressure from the authority to work overtime.

Table-8: Overtime

Structure of payment	**Number of workers**
Same as normal hourly rate	28
Double of normal hourly rate	56
Do not know	16
Total	100

In the case of payment for their overtime work they have different opinion. Among 100 respondents 56 has told that they get double of their normal hourly rate.28 female garments worker think that they get same as their normal hourly rate. 16 of them couldn't give any specific information regarding their overtime payment.

Table-9: Paid weekly holiday

Response about paid weekly holiday	Number of Workers
Get payment all the time	87
Get payment sometimes	0
Get payment most of the time but sometimes not	13
Total	100

Among 100 respondents 87 have told that they have paid weekly holiday and 13 have paid holiday most of the time but sometimes miss paid weekly holiday. Only 40 among 100 are aware of maternity leave. Most of them have experienced that it is difficult to get job when a female is pregnant.

3.2 Status of Occupational health and Safety at Workplaces

The respondent informed that they are not aware about occupational safety and health rights issues and factory management do not organize any education or training program for them at workplace. Every day they work with different hazards and risks. There is no job security, social security, gratuity or provident fund for the garment workers whom this study interviewed. Obviously where they cannot enjoy job security and not have any confirmation regarding the social security and provident fund it is natural to effect on their mental and physical health.

Table-10: Health problems and Diseases among workers due to hazardous working conditions

Problem	Yes	No	Yes %
Eye problems /irritation	24	15	62%
Headache (frequent)	38	1	97%
Respiratory problems	14	25	36%
Stomach ache/Ulcers	10	29	26%
Nausea and vomiting	11	28	28%
Fainting at the work place	7	32	18%
Frequent body ache	7	32	18%
backache	12	27	31%
Skin irritation	7	32	18%
Pain in joints	8	31	21%
Anemia	11	28	28%
Others	7	32	18%

In the table (10) shows that 21% are facing all the diseases mentioned above for the working load and environment. Here others mean the problems which they face physically other than the above mentioned diseases. The above table shows that the common problem the workers face is Headache which is 97%. Moreover the study shows that a good number of workers face eye problems, respiratory problems, nausea and vomiting, back pain, anemia with the percentage rate of 62,36,28,31,28 respectively. And these problems possibly could create trouble to them during their childbirth period.

Table-11: Reproductive Health Condition

Problem	Yes	No
Excessive bleeding during menstrual cycle	67	33
Extended periods	32	68
More than 1 period a month	21	79
Lower abdominal pain associated with periods	61	39
Cramps in the stomach	0	100

The above data shows that although they do not have to suffer due to cramps on stomach, but many of them suffer due to excessive bleeding during menstrual cycle, and extended periods. Few of them even suffer for untimely periods and majorities have to suffer in abdominal pain which is 61%.

Table-12: Access to rest, toilet and safe drinking water

Issues	Yes	No
Rest	0	100
Toilet	40	60
Safe drinking water	20	80

The above table amply illustrates the plight of the workers. None of them receive any rest and only 40% get toilet facility whenever they need and 20% get safe drinking water. In the case of toilet they are facing hygiene problem. Most of the time in the toilet theydon't gets any water.

Table-13: Harassment at work places

Harassment at work	Physical	Mental	Sexual

places	Harassment	Harassment	Harassment
Yes	5	20	10
No	70	60	90
No Answer	25	20	0
Total	100	100	100

Harassment at workplaces is a common phenomenon and the above data just shows that. Although the data is showing less girls who have got harassed but the fact is many of them are harassed on their way or even at workplaces which get unnoticed often. Even they didn't want to talk about this issue because shame and fear.

Table-14: OSH policy and Services

Health related security	Yes	No	No answer/Don't know
Written Health and safety Policy	29	71	
Health and Safety Training	100		
Periodic Medical Examination	100		

It is unbelievable but true as the above table is showing there is no health training and safety of the workers, there is no medical examination for them as well. None of them receive health or safety policy and most of them have no idea about any such kind of policy at respective factory level.

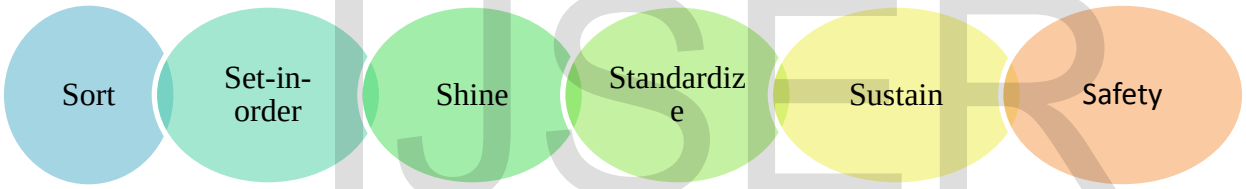

Figure 1: 6S methodology

3.3 Sort

Separate what is needed and what is not needed, and keep only those things that are needed in the workplace. Discard unnecessary items. Separate what is needed and what is not needed, and keep only those things that are needed in the workplace. **Discard unnecessary items.**

Something used once a year would not be an everyday item. And we would not necessarily need all of the everyday items at once; but if lost, a replacement would be necessary.

The Key to Sorting:

Sort does not mean that you throw out only items that you are sure you will never need. Nor does it mean that you arrange things into neat, straight patterns. When you sort, you leave only the bare essentials. **When in doubt, throw it out!**

Even after neatly arranging our tools, the proper tool can be difficult to find if we haven't eliminated those which we don't need. If we don't get rid of things, we may not have room for the stuff we do need.

Wastes Avoided by Implementing Sort

1) Waste of Space, including shelves and cabinets
2) Waste of inventory when parts and products become unusable and obsolete
3) Waste of time in having to move things around and search for parts.

4) Waste in control of unneeded items.
5) Waste of time during inventory

☐	Is the item needed every day? Place close to area of use.		☐	Do we know if we use the item or not? Place in temporary storage.
☐	Is the item needed every week? Place close to the process.		☐	Is the item never used? I. THROW AWAY
☐	Is the item need every couple of months? Store away in a convenient place.		☐	Stop bringing new, unneeded items into the work cell!

Efficient materials storage and handling:

Figure 2: A cluttered shop-floor impedes the easy flow of material and workers, causing production delays, errors and accidents

The storage and handling of raw materials, components and products is an integral part of most production processes. Done efficiently, it can ensure that work flows smoothly and helps to avoid delays and bottlenecks. However, storage and handling by themselves are not sources of additional value or profit, as during these operations, goods do not acquire any new qualities. Just the opposite happens: materials are damaged and lose their value, accidents occur and your scarce capital is tied up in unnecessary stock.

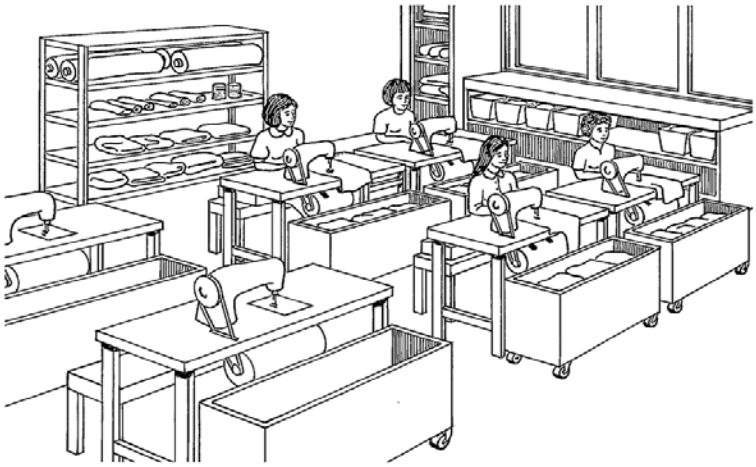

Figure 3: The same shop-floor after unnecessary items have been removed. Once floor space is retrieved, new work places could be added and the flow of work-in-progress is speeded up.

Figures 2 and 3 shows the same work area before and after unnecessary items were removed. Some of the most organized enterprises manufacturing garments practice a specialized inventory method known as "Kanban" or "just-in-time" 1 the basic principle is that materials are brought to the production area only as and when they are needed. This helps with stock control.

Avoid placing materials on the floor:

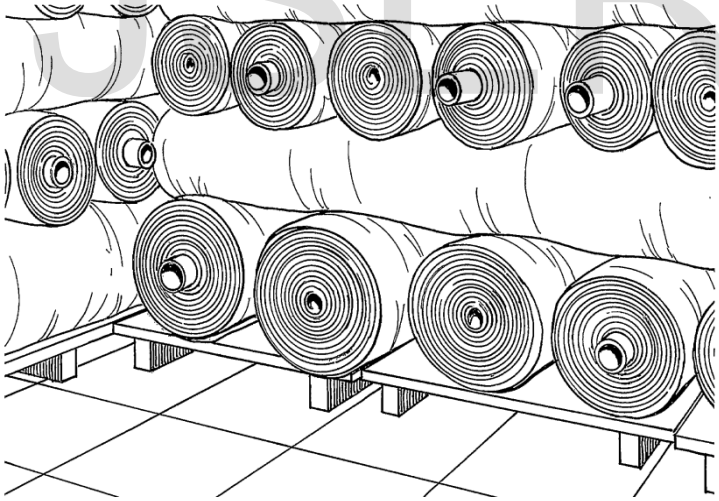

Figure 4: Wooden pallets keep fabric rolls off the floor, preventing damage to expensive material

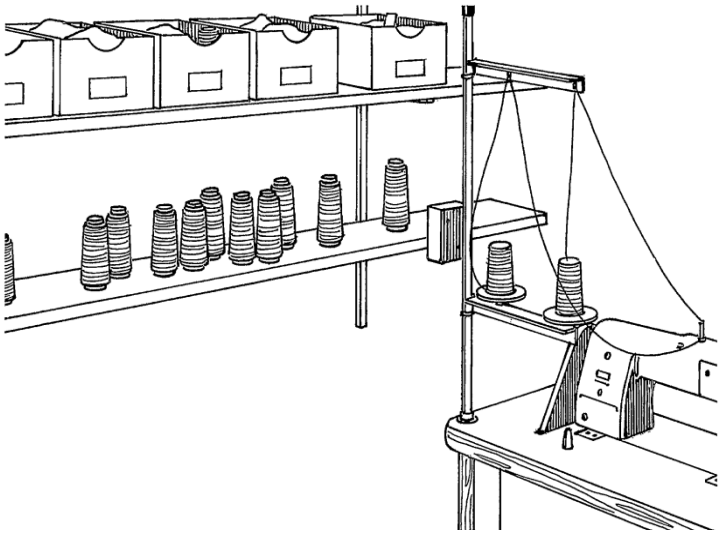

Figure 5: Light items like bobbin boxes, thread cone stands and small boxes containing needle-draws and other supplies can be stored overhead near workstations, using lightweight shelves

Figures 4 and 5 show that Workers should be trained to place raw materials and work-in-progress in racks and containers, and on shelves. 'The basic idea of the Hanban or "just-in-time" (JIT) is that manufacturers make garments to order, thereby reducing the work-in-progress levels and the finished goods stock. Raw material is drawn from suppliers only when it is needed; then the succeeding stages of manufacture are drawn by each workstation from the preceding operation. Stock turnover is greatly improved leading to smaller warehousing facilities.

3.4 Set in Oder

Neatly place and identify needed work items. Designate a place for everything so that anyone can find it. Always put things back in their designated spots.

- Neatly place and identify needed work items. Designate a place for every needed item so that anyone can find it
- Always put things back in their designated spots
- Make it so that new employees, people from other companies, or people who seldom come to the plant can find things easily
- Design a storage place that is well marked so that necessary items can be taken out quickly and used easily
- Create storage space that makes it easy to return things to their places and see if they're missing
- If things are in order, time wasted due to searching is eliminated.

Wastes Avoided by Implementing Set-In-Order:

1. Waste of time searching for parts or tools
2. Waste from stopping the process
3. Waste from replacing lost items
4. Waste caused from changing plans
5. Waste from late deliveries

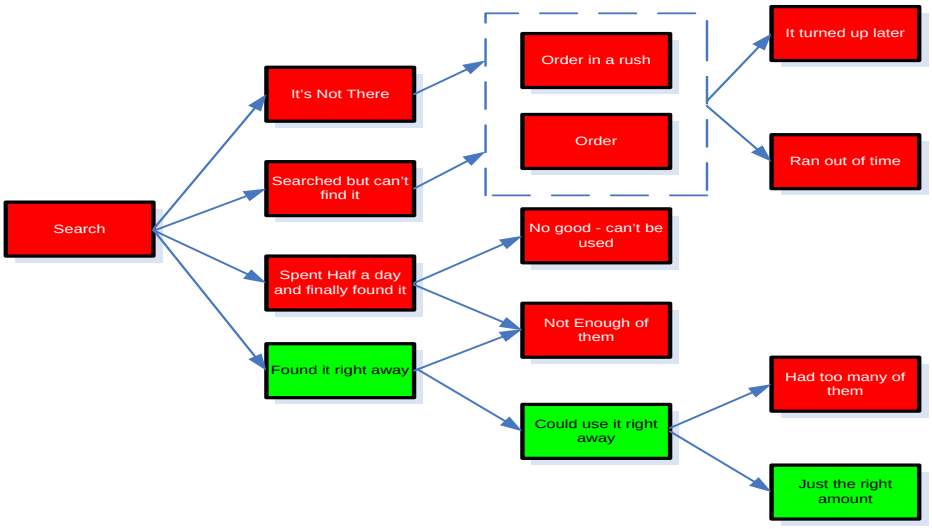

Figure 6: 6S Movement for RMG factory

Here's how to store parts and in-process inventory

- Place parts according to kind, and make the amount easily seen
- Make first in, first out possible
- Make the area only big enough for the necessary amount
- Make it so that when there are too many parts, they protrude from the area. This way anything abnormal can be discovered
- After everything's put in order, post written standards in the area and train everyone in the workplace

Figure 7: Multi-level racks save space and allow material to be temporarily stored in an orderly manner

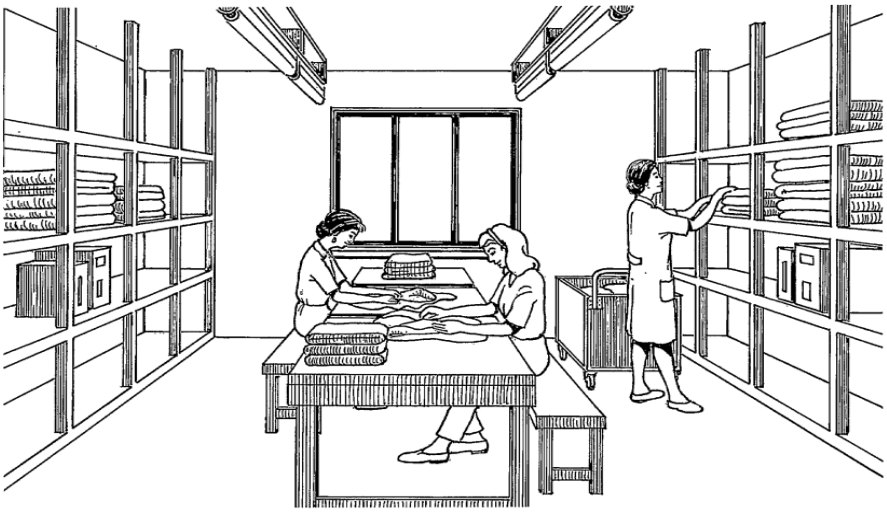

Figure 8: Shelving designed to use wall space fully

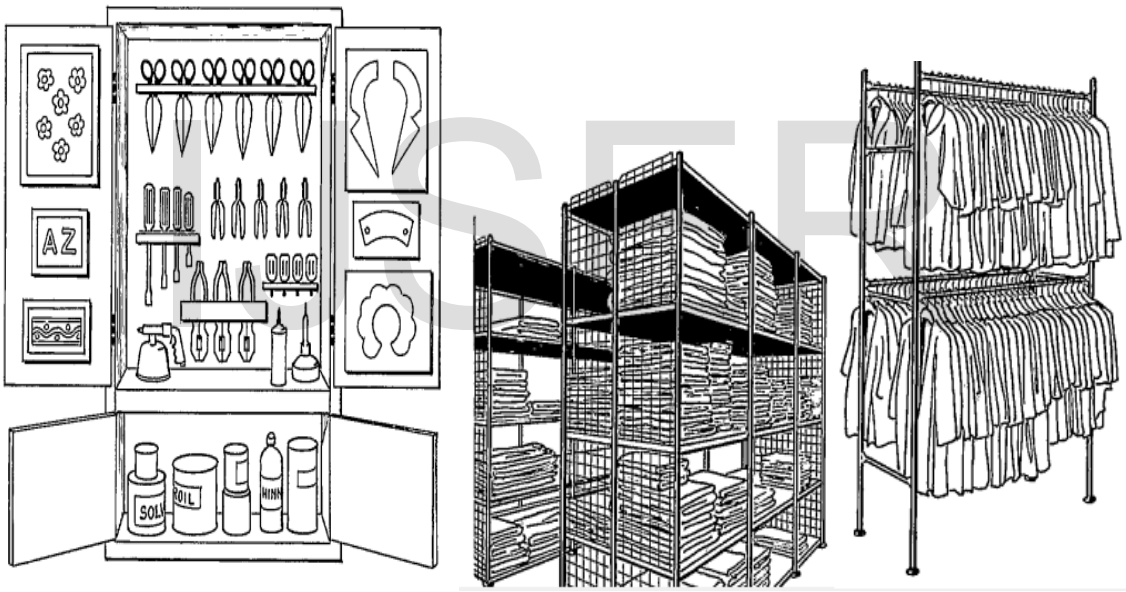

Figure 9: A wall cabinet for storage of die cuttings, small screens, tools and dangerous substances. Made of wood and equipped with four locking doors, it provides easy access to any tool and takes an absolute minimum of floor space. These two light storage systems are easy to assemble and dismantle, and quickly provide space for hanging or placing flat items which will soon be needed again. Little bins are appropriate for storage of small items, elastic, ribbons, bobbins, lace or labels, Front opening bins make the contents easy to see and provide ready access to the stock. The bins can be stacked or fixed on rotary racks in the storeroom.

3.5 Shine

Clean up. Always maintain a clean and shiny work place. Identify why things are getting dirty. Clean with a purpose and always maintain a clean and shiny work place. Even if you straighten up, put things in order, and arrange necessary items so they can easily be taken out, it's not enough unless the object taken out is in a usable condition. Ensuring equipment is in usable condition is the primary purpose of shine.

- Get rid of all garbage and dust from the work area

- Clean everything from the floor, the walls, the ceiling, and even the opposite side of the fluorescent lights or the inside of cabinets
- All machine equipment, shelves and lockers also must be cleaned
- Especially today, since high quality and high value added products are being developed and produced, even a small amount of dirt or dust can cause rejects. No matter how advanced the machines are, if they are not being cleaned thoroughly, it won't mean a thing. Cleaning up (Shine) does not mean just to clean; it should be recognized as a vital part of the manufacturing process
- Polish the machinery every day so that our equipment really shines
- Never just paint over the dirt on machines. Don't mistakenly think that if it looks clean, it is clean.
- Thoroughly polishing the machines and equipment every day will allow any little abnormalities to be discovered. This is called a clean-up examination.

Figure 10: It is good practice to clean the floor at least once a day. Spraying water on the floor before brushing prevents spreading dust.

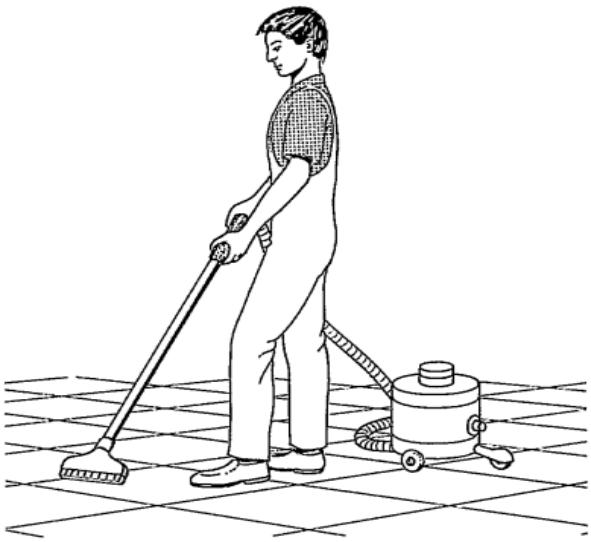

Figure 11: Vacuum cleaners are recommended for cleaning floors, walls, workstations, windows and ceilings

Warning: Do not blow dust away. Dust containing very small particles does not fall immediately to the floor after being raised by sweeping and blowing. A 0.001 mm particle will only fall 1 m in 3.5 hours in static air. This means that a particle remains airborne most of the working day and can be inhaled. Frequently, dust cannot be seen in the air, but the next day it can be found covering the floor, work tables, machinery, materials and finished products. Exposure to chemical

substances used for cleaning and stains removal causes fatigue, headaches, dizziness and irritation of eyes and air passages as well as damage to the lungs. Many problems of chemical hazards can be solved at little or no cost. Some garment enterprises use organic solvents for cleaning fabric and finished products. Organic solvents can be dangerous and expensive. It may be possible to replace organic solvents with safer substances. For example, stains of an oily origin or other can normally be removed with a soap-based cleaning solution. A 5-10 per cent solution of soap will normally be less expensive and less dangerous than an organic solvent. If you use organic solvents, keep them properly stored and labeled. They should be very carefully handled and used sparingly.

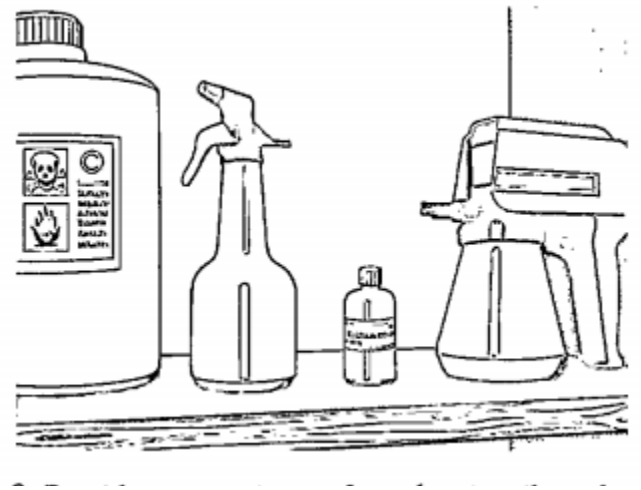

Figure 12: Dangerous equipment in factory

3.6 Standardize

Become a role model for adhering to the standards of the first three S's and encourage others to follow them. Make rules and procedures to promote a good work environment until the first three S's become everybody's second nature. Become a role model for adhering to the standards of the first three S's and encourage others to follow them. Make rules and procedures to promote a good work environment until the first three S's become everybody's second nature.

- Once the need to standardize becomes part of the culture of our workplace, everyone in the plant will have the discipline to follow through on what has been decided.

Some people may say;

- "Even if our company does the 5-5, it will never work because the basics of the job are not even being done"
- "Even if we make a tool board, no one returns things to where they belong."
- "Even if we decide on a place to put parts, it is only followed for the first two or three days!"

If we consistently use the first three S's — Sort, Set-In-Order, and Shine; we will find it easy to standardize our work methods and continuously improve our efficiency and productivity. We will follow through on planned procedures each and every time.

3.7 Sustain

Maintain and practice the first four S's. Be thorough in straightening up, putting things in order and cleaning. Maintain and practice the first four S's. Be thorough in straightening up, putting things in order and cleaning.

Once we start the 5S's do not let them fade out halfway through and come to nothing. The cycle of starting out strong and then losing enthusiasm causes people to resist change and therefore to resist improvement that is essential to our future. When this occurs the company tends to fall into a rut.

"No matter what our company does, we leave things half finished."

"I wonder if the 5-S program is just another flash in the pan like the Such and Such program."

"After all, no one will follow it anyway"

"Well, let's just get it over with"

The best way to overcome this type of thinking is to break the cycle and really devote ourselves to the continuous improvement program and 5-S approach. We can all work together and make this a successful way of conducting our day-to-day business.

3.8 Safety

Safe working environment for workers & employees should be managed. All of the things safety is more important thing in the garments industry.Safety is a way of keeping the worker and workplace safe. It focuses on eliminating hazards and creating a safe working environment. It is easy to recognize potential dangers when the work place is well organized and clean. A separate safety sweep should be performed in order to identify, label and deal with hazards. The workers should wear the Personal Protective Equipment (PPE) during the working conditions in order to be safe in the industry. The Personal Protective Equipment (PPE) kit includes Helmet for head protection, goggles for eye protection, ear protection, safety shoes, hand gloves etc. First-Aid box not less than one for every 150workersshould be provided and checked every month for sufficient medicines and its expiry dates. Fire extinguisher should be provided in every department of the industry and also it expiry dates should be checked and should be replaced if expired as soon as possible. Every employee of the organization must be given proper information about hazardous substances/process and should be informed about dangers and health hazards. Every organization must be ready with safety measures and emergency plans.

- To understand the basic safety issue of garments workers
- To find out the common problems in garments industries.
- To list out the common Diseases of garments workers.
- Try to solve the problem with available technology.
- To frame out guidelines for building proper Health & Safety plan for garments manufactures.

Basic safety issue:

- Respiratory protection
- Eye protection
- Heat stress protection
- Fire protection
- Training program
- Finger protection
- Proper lighting
- Ergonomic design of the work station.
- Awareness.
- First aid medicine.

3.9 In the Productivity:

Damage Body Percentage reduced by 6s method system. The ratio is given below:

	Pcs	Variance	Ratio
January	1681	0	0%
February	1285	-396	-24%
March	1063	-618	-37%
April	555	-1126	-67%
May	733	-948	-56%
June	722	-959	-57%
July	583	-1098	-65%
August	820	-861	-51%
September	319	-1362	-81%
October	417	-1264	-75%

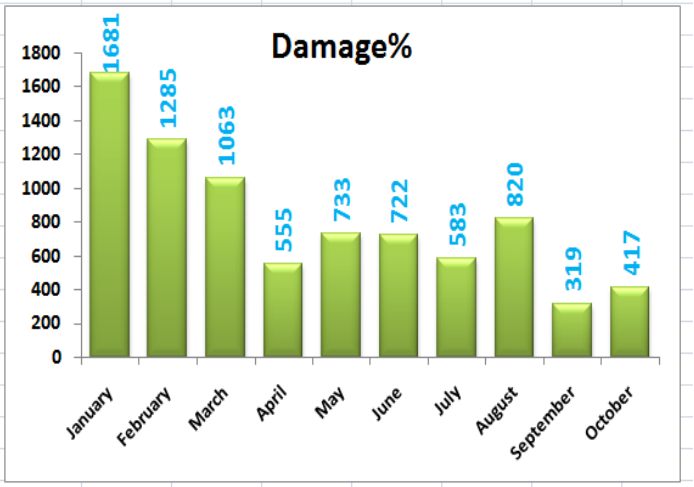

Figure 13: Ten months productivity report and damage percentage

From the figure 13, it is shown that the percentage of damaged garments is decreased due the proper improvements for factory, plant, from raw materials to finished goods and utilization of worker by ensuring safety. And in resulting, productivity is increased and it has possible to use more space within the factory as well as different sections in a garments factory.

4. CONCLUSION

Garment manufacturing, like other industrial processes, can be hazardous work. It is necessary for employers and workers to be aware of the hazards associated with garment manufacturing and take precautions to guard against work-related illnesses andinjuries. In-fact, all the garment factories are located in the residential and commercial area of Dhaka, Chittagong, Narayanganj, Tongi, Gazipur, Saver etc. Besides, most of the garment factories hardly comply with safety rules. So, naturally the garments workers have to suffer a lot of occupational accidents. The occupational health and safety condition of the workers belonged to the industry, is getting more critical and complicated gradually. Devastating fire also destroys huge wealth of garment industry which creates a great problem for buyers and a bad impact in the national economy. The garment industry of Bangladesh has been the key export division and a main source of foreign exchange for the last 25 year & workers are the driving force of it, so we should think about their safety to protect them from unexpected accidents. The basic cause of industrial accident can be attributed to the unplanned and unsystematic set up of factories. Most of the factories have been housed in a clumsy condition which is very risky and hazardous working environment to workers. We Think 6s method plays an important role to solve this problem.

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