

# EMPLOYEES' ATTITUDES AND ADAPTATION TOWARDS THE AUTOMATION: A CASE OF A SELECTED CERAMIC FACTORY

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## **Abstract**

This study attempts to understand the effects of employees' attitudes and adaptations related to the automation in the factory environment. Technological advancement is associated with the post-industrialization. Prior to post industrialization the master craftsmen had several trade apprentices working under him as manual labourer. However, the post industrialization brought in a drastic change by creating a machine and technology dominant societal background.

Under these circumstances, the Sri Lankan Ceramic factories too is seen importing advanced automated machinery to enhance production capacities to create work efficiency to compete with the global market. Automation created more advantages as well as the disadvantages to the production and the employee's attitudes in these work environments. The present study extends to identify the effects of automation on production and the impacts it has made on these workers' attitudes and adaptations.

## **Keywords**

Automation, Adaptation, Industrialization, Ceramic Production, Sri Lanka

## **Current Situation in the Sri Lankan Ceramic Industry**

The Sri Lankan Ceramic industry has a highly skilled workforce, relatively of low-cost labour and excellent management skills at factory levels. However, the tragic situation is that although the total employment in these industries currently is around 20,000 and the quality of the workforce is considered sound, the inflation and rising wages have been fast eroding the low cost of manufacture (Moorthy, 2014). Designs used in these factories are at a mediate level when compared to other countries. Another problematic area identified is the supply of raw materials. The Ceramic Council further reveals more issues that affect the current situation in the ceramic industry, such as expenses for raw materials, gases, lack of understanding of consumer needs, lack of cost-effective energy sourcing, lack of consistency in quality of raw materials, lack of value-adding capabilities at company level, being stagnated as 'contract manufacturers' and lack of readiness to use advanced technology for expanding product range and inability in capturing new markets (Moorthy, 2014).

As discussed, lack of appropriate use of advanced technology is one major problem in the local ceramic industry. As a solution, some ceramic factories have taken decisions to improve their advanced technological capacities to expand product ranges to capture new markets. Some have employed new staff to work with these new computerized technologies in the factory environment.

## **Research Question and Objectives**

The main research problem for this present study is to find out 'how the employees, their attitudes and adaptations to the work environment, impact the automation. Further questions are

What are the effects of shortcomings and strengths in the work environment of new advanced technology? To what extent have these newly implemented technologies changed the attitudes of workers and how do they adapt to this?

## **Methodology**

This study is largely explorative and the approach is qualitative. Non-participatory observation method, semi structured interviews with use of interview schedules were used to collect data. A ceramic tile factory is selected as the location to conduct the research, in which new machineries were added to improve production capacities. The selection is largely based on the machineries that were imported for the factory around 2012/13. Only seven departments out of 13 in the factory, which are directly linked with the production process is selected for this study (Powder preparation, pressing and glazing, kiln, sorting and packing, polishing, quality assurance, maintenance). The departments selected deal with the automation directly.

In order to collect primary data, 15% of the workers were randomly selected out of 211 permanent workers in the purposively chosen seven departments as mentioned above ( $15\% \times 211 = 32$  respondents). Further seven key informants from seven departments and two executive personalities (a Human Resource Manager and a Factory Head) were included in the study. This sums up to 41 respondents.

## **Related Theories on the Phenomenon**

Mainly this study is based on the 'Technology Acceptance Model (TAM)' as the major recent theory which seems being a very influential theory to understand and describe an individual's acceptance of information systems. It was proposed by Davis in 1986. This theory consisted of four primary factors influencing an individual's intention to use new technology. Those factors are Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Behavioral Intention (BI), and Behavior (B).

Further to analyse this research used another related two theoretical pillars; Taylor's (1911) 'Scientific Management' theory and Weber's theory (1920) on 'Bureaucracy' (as it appears in his 1922 masterpiece 'Economy and Society'). Both Weber (1920) and Taylor (1911) are contemporary theorists who appropriately developed different new approaches on management and advanced technology to change the business practices in the twentieth century. While the theory of Scientific Management emphasizes on the performance of the workers enrolled within the newly implemented technological advancement, Weber's theory focuses on creating an effective rigid working environment based on Bureaucracy.

## **General Information of respondents in the factory environment**

All 41(100%) selected respondents were male and their age composition indicates that there are more employees within the age between 41 -50. That is 51% (21 respondents) of the total population. The lowest percentage is shown in the fifty or above age category and it is indicated as 7% (03). Those of age 30, or below also shows a low percentage as 15% (06). These data indicate that factory utilizes a majority of a middle-aged work force. With related to that their service duration in the factory shows that 51% of workers (21) of the total sample have worked for more than twenty years at the factory. Only 5% (2) people have joined the factory five years earlier. This statistical data reveals that factory is full of a mature contemporary work force and newcomers were very low.

According to analysis of educational attainments, majority of middle age work force with 20 years of work experience have joined the factory at young ages to do manual works. As to this requirement, the factory management has particularly considered those with physical health more than those with educational achievements. According to that majority of 64% workers (26 workers out of 41) having ordinary level qualifications and below ordinary level qualification, while only 2 respondents out of 41 (executive officers- 4%) are having degree and post graduate degree.

## **Respondents' Opinion on the Adaptation of Automation in the Factory**

Use of advanced technologies in a factory is an essential need in this era to create a good and a balanced competition with the other countries. Based on the methods of usage of computer based high speed machinery, creates advantages as well as disadvantages among the employees during the period of its adaptation.

When analysing opinions based on the newly adapted technology, all respondents are satisfied to work with the machineries. As to Taylor's theory (1911) on scientific management, all these workers conveyed their satisfaction based on easy, efficient, speedy, time saving, money saving, less labour requiring, accuracy, less wastage, easy and less maintenances, untiring outfit made by these automated machineries. Braverman and Davis, Canter and Hoffman (1972) too emphasized that Taylor's principles of scientific management is still fundamental in work designs (cited in Watson 1980, 215) as discussed by the respondents.

### ***Contract basis/under employment***

Automated machineries create a large surplus of labour, under employment or unemployment in the selected factory. As an example, the machine called "red line machine" replaced 20 employees at once. Further When employing new workers, the management prefers the contract basis and man power based work culture over the permanent workers as there is less responsibility for the management over these workers. Some of these workers are assigned for risky jobs in dangerous security zones in the factory. The management is allowed to take in maximum labour for cheap wages that provide minimum responsibility for the management as discussed by Braverman (1974). He emphasized that technology creates dehumanization and replaces human labour causing unemployment and under employment with low wages. In this situation, although technology creates work efficiency, it creates a work-overload with more responsibilities and risks for permanent workers. This results in tension for the workers due to the less labour force in the factory.

### ***Work tension***

After the arrival of automated machineries, the management always tend to follow up on targets and massive production requirements. This is unbearable for some workers at times and also for the machineries. It has been confirmed as one of the respondent's opinion was "workers are always concerned about their targets and do not give priority to the quality of tiles. Nevertheless, if there is a delay in the pressing processes within the department, it directly affects the kiln department. When reducing the number of pressing tiles, there are then not enough tiles to feed the kiln. Though there is a number of tiles to feed the kiln it cannot be switched off, because it creates millions in losses to the factory". Under these circumstances, quality is rather neglected in this factory as concentration is given to achieve targets. Further the present physical structure of the departments too increases the workers' stress level through less ventilation, high lighting, dust and packed working environment.

Similarly, to the theory in this factory also begin conflicts based on the goals assigned by the authority and by the departments (Philip Selznick 1966 cited in Watson 1980, p.198). All these production departments too try to achieve targets working day and night with great difficulties. Though Human Resource theory indicates that there should be structural reforms in order to get successful outputs and satisfy the ego and self-satisfaction of the workers (Brown 1954: 81), the situation of this factory is different. According to the respondents' explanation, the factory made earlier small products (300mm×300mm) and after the arrival of new machineries the size was doubled(600mm×600mm). In relation to that requirement of materials for the production increased. However, the preparation department and some other departments do not have facilities to cater to the need. This caused many problems in preparation of materials and increases the stress level of the workers.

Watson (2008) in his book on 'Sociology, Work and Industry indicate that the management's process of minimizing permanent workers and filling those positions with automated machinery creates rationalization and that threatens the social solidarity and social cohesion. This is proven by respondent's explanations on the department situation of working with minimum number of labourers. As to them the contract basis workers cannot be trusted as much as permanent workers. Permanent workers are overloaded with duties of which they are fed up. Utilizing a large number of contract workers too is a threat by the permanent employees. However due to minimizing the labour force and filling the requirements through contract workers and machinery, has adversely affected the permanent workers' satisfaction, organizational solidarity and cohesiveness. Further it indirectly effects the factory production and especially the quality of products.

Though respondents agreed using advanced technology is easier than performing manual labour work, they emphasized that the current advanced technological environment is rather difficult and causes tension at times due to repetitive and target oriented work process. They express their feeling as “There are times we bare the tears with difficulty without letting it flow down freely – Samahara Awasthawala Ahen Kandulu wetennetuwa witarai”.

### ***Deviant/ Informal Behaviours***

According to this tentionous environment some workers show their opposition to management through informal/ deviant behaviours. On the working conditions of advanced machineries, Weber states that a highly pre-structured environment does not create deviations. This isn't applicable to this factory atmosphere. The respondents emphasized that some workers purposely make breakdowns via improper operating or separation of machinery parts. Although the new kiln in the selected factory highly facilitates production, the siren sound that automatically runs in case of an error, disturbs workers in their naps during the night shift. Due to this, some workers secretly remove its parts. A small mistake could cause damages of million rupees. Therefore, there is much danger in such negligence which some workers attempt at their convenience. In order to prevent deviant activities like machine break downs and improper operating systems etc. management has decided to install CCTV cameras in all departments. It is as theoretically proved by Browns (1954); management has developed methods and techniques to control human labour (Cited from Keith,2006, p.145). Further as Browns discussed, When the workers went on strike to get their salaries increased, the management informed that their salary for the month will be ceased; all workers went back to work. Although the upper level members are satisfied by these decisions, the lower level workers experience serious levels of frustration in such incidents. It confirms that the power flows downward against subordinates (Faucalt 1977- 1979 cited in Keith 2006, 146).

### ***Sentiments and Logics***

Roethlisberger and Dickson (1939) placed organizational behaviour in a frame work that could be distinguished between sentiments and logics (Brown 1954, 70). As this theory discusses, the workers at this factory too think logically about their sentiments. A respondent mentioned that when employees ask for a salary increment, the management reply that they are running a factory with a great loss, at a time both local and world market has collapsed. In this regard, respondents logically questions; how the targets and production go up if the market is collapsed? Further Roethlisberger and Dickson (1939) explained that through the concept of 'logic and sentiments' the workers decide whether to facilitate the smooth function or to develop an opposition. Some of the respondents explained that after thinking logically about their salary payments and job promotion procedures, majority of workers are not prepared to work hard. They strictly adhere to work only for the paid amount. These decisions reflect disagreements on the issues by thinking about sentiments logically.

### ***Employing Technocrats***

The management recently started employing technocrats for most job positions. Some such employees although assigned as cleaners within the factory, have G. C. E. Advanced Level qualifications and a good general knowledge in computers. The management have taken immediate steps to make such employees permanent. Although they are minor workers, in place of absentee machine operators these employees are assigned to operate the machineries due to their technological knowledge. This situation is highly applicable with Taylors idea on scientific management of giving priority to the technocrats and simultaneously related with Bell's (1973) argument that post-industrial society is based on knowledge. On the other hand as Marx points out, the management exploit the workers by paying low salaries as floor level workers and utilize them for multi-purpose high ranking duties. Bourdieu and Passeron (1977) also emphasized that educational attainments helps in gaining respect from others. Bourdieu and Boltanski (1978) identify education as a class reproduction method as it dismisses the older mechanism of direct inheritance of wealth. Offe (1976) too further justify education as a contemporary pattern of stratification that is accepted by achievement principles (Watson, 1980, p.202 -203).

## ***Job Satisfaction***

Under the Human Relations theory, Chung and Megginson (1981) posit organizational implication of need satisfaction as below:

“People have a multitude of needs, and satisfying those needs is their life long objective. Studying human needs is important for understanding organizational behaviour, because it explains the internal causes of behaviour” (cited in Brown, 1954, 78).

The above statement is applicable to some of the respondent's' aspirations of strengthening/attending to their personal needs such as building their own houses, treating their health requirements, etc. Though theories emphasize on managements' participation on workers individual needs, they are yet to be fulfilled. Some workers complained that within the past 17 years, only two medical check-ups on eyes has been organised.

All respondents emphasized that management do not think about workers positions beyond bureaucracy. It badly affects the work satisfaction as well as the production. On the satisfaction on economic stability Dale (1958) found that good intensive increases productivity. But respondents emphasised that they were not satisfied with their economic conditions. Some of them have ventured upon different businesses to strengthen their personal economies. Most of the manpower and temporary workers give up the job due to low salaries.

There are individuals or groups within the organization who utilize great freedom than other members depending on their relationship to the higher officers (Clegg 1975 cited in Watson 1980, p.199). The respondents' explanations are very much related this statement. There are some high rankers within the departments of the factory with less work schedules. Their main responsibility is to give information on workers' to the management secretly.

As to the respondents, the management often favoured the top rankers even when they are wrong but trade unions safe guard the subordinates. Real situation in this factory is as appears in a song sung by Billy Bennett and the lyrics are as quoted from Keith's (2006) book of 'The Sociology of Work'. That was as follows:

“It's the rich what gets the pleasure  
It's the poor what gets the blame” (Keith, 2006: 19).

Manual workers, who work in assembly lines in the factory, consider it as tiring work. If they slow down the assembly line speed, targets will have to be reached with overtime work. Another difficulty is if an employee who is due, doesn't come to assume duty for the next shift, the existing worker has to continue. As the respondents explained, they work throughout a shift with much difficulty and two shifts at a stretch make it difficult for them to focus due to exhaustion. As to Mayo (1933) these industrial problems are due to emergence of imbalance between social and technical skills (cited in Brown 1954, 72). Further, respondents find difficult to adapt to new technological advancements due to the social factors such as less education level, lack of technological knowledge, lack of experience in working with computer-based machineries, English language etc.

As Udy's (1958) findings that memberships of a bureaucratic hierarchy of an organization is based on kingship or political status obligations (cited in Blau and Scott 1977, p.172-210). Respondents explained that job promotions are often based on relationships between the top personalities within the factory. Although Taylor emphasized that scientific management involves both organizational and mental revolutions by breaking down the barriers between worker and employer, in reality it does not happen as they influence some workers to be their personal connections to take maximum from the subordinates. Such situations within the factory atmosphere is related to Marx's explanation on machines and technology as a tool of oppression and exploitations of workers as lesser and cheap labour (Cited from Watson, 1980, p.202 -203).

When using technological innovations there are a certain set of disciplines to use them in a user-friendly manner. There are set of safety instructions about placement, installation, safety factors, usage, and maintenance etc. If those are not installed according to the given safety parameters, even though this machinery provides more economic benefits, they can create huge health issues to the users. This factory management too only consider about economic benefits and do not provide adequate attention to workers issues. Marx's (1844) explanation is applicable to the situation that capitalists exploit workers while showing they pay high attention outwardly.

Workers are not satisfied with welfare programs and identify such programmes as “*taken from us and are given back as if it is from them*”. Respondents are further not satisfied with the managements’ contribution towards job security, insurance systems and health issues. However, as to Taylor’s explanation on implementing new technological output in a factory, the management should provide proper trainings, bonuses, intensives and proper working environment for the benefit of the workers by increasing the levels of material rewards. Nevertheless, the situation in this factory is different to Taylors’ suggestions and it affects the job satisfaction of workers.

## Conclusion

Automation has created both advantages and disadvantages to the production as well as to the employees as discussed. According to all respondents’ opinions, technology created easy an efficient working condition. The machine speeds help to maintain a range in products and obtain massive targets to compete with the global market that brings in larger economic benefits.

Further adaptation to new technological advancement is essential from the point of view of the country’s economic benefit and to the industries. Nevertheless, in attempting to adapt to these technologies is merely not enough. The physical and psychological human capabilities need to be further strengthened and balanced with the use of advanced technology to succeed as industries. Under these circumstances the management needs to jointly optimize the technical factors as well as the socio psychological factors of the workers, or else the management will find it difficult to achieve the expected success.

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