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Barriers of Productivity in Public Sector Automotive Manufacturing Industry of Pakistan

S. Z. Sarwar, N. Ehsan , I, Mirza, J. L. Piracha, M. Azeem, A. Ishaque

Abstract**—**The public sector losses are the major cause of stagnant growth of Pakistan. Public sector automotive manufacturing industry is one of the major contributors of these losses. This research has been carried out in order to identify the major barriers of productivity of this industry and suggest measures for improvement. This qualitative and quantitative research consisted of informal interviews, discussions augmented by closed ended questionnaire. Three major manufacturing units were chosen for this research and responses from 103 employees were collected. It was found out in this research that numerous productivity flaws exist in the system which requires immediate attention. Besides highlighting flaws this research also suggests corrective actions and areas for future research to overcome these problems.

Keywords**—**Automotive manufacturing industry, barriers of productivity, Public sector losses.

I. Introduction

PAKISTAN since its inception went through twisting government policies. Starting from reliance on private sector for manufacturing and services, policies drifted towards nationalization in early 70's. In late 80's and 90's once it was realized that public sector organizations are not performing as per the desired expectations declining private sector was given relief through inclined polices. The Privatization Act 2000 was the first mile stone achieved that gave a remarkable boost to the private industry [1]. Due to shift towards privatization and support for the private sector Pakistan's output got a rise from 5.67 percent in 1959-60 to about 13 percent in 2005-06 [2]. It has been established in a survey that manufacturing industry of Pakistan contributes 19% in the GDP [3]. It has also been revealed in this survey that all units have still not been registered as yet. Most importantly public sector manufacturing industry is always excluded from these country wide surveys.

All over the world productivity analyses of industries have been carried out in past few decades.

S.Z.Sarwar is a PhD Scholar at Center for Advanced Studies in Engineering, Islamabad Pakistan and is presently working as General Manager, Productions at Ravi Autos, Lahore, Pakistan. (phone: +92-321-5564525; e-mail: zahoorsarwar@yahoo.com).

Dr. N. Ehsan is chairman of the Engineering Management Department at Center for Advanced Studies in Engineering, Islamabad, Pakistan (e-mail: m4nadeem@yahoo.com)

Ibtisam. Mirza is a PhD Scholar at Center for Advanced Studies in Engineering, Islamabad Pakistan (e-mail: ibtisam.m@gmail.com).

J.L. Piracha is head of Engineering Management Department at University of Engineering and Technology, Lahore, Pakistan (jlpiracha@hotmail.com)

M. Azeem is an MSc student at Center for Advanced Studies in Engineering, Islamabad Pakistan (e-mail: mehad08@gmail.com).

A.Ishaque is a PhD Scholar at Center for Advanced Studies in Engineering, Islamabad Pakistan (e-mail: azamishaque@yahoo.com).

Main reason was to indicate the probable flaws and to suggest and implement the methodologies ensuring improvements. A comprehensive study carried out in India indicated the efficiency gap between foreign and domestic firms in eleven manufacturing industries [4]. The necessity of model-to-model transformations has been studied and successfully implemented [5]. Collection Productivity formula has been created and Credit Research Foundation (CFR) carries out productivity analysis guiding industries how to enhance their productivity [6]. Core methods of measuring efficiency and productivity have been discussed and evaluated [7]. Effects of technical changes on the Turkish manufacturing industry have been studied [8]. Sources of technical inefficiencies in the Korean manufacturing industries have been identified [9]. Productivity growth and structural changes in Chinese manufacturing have been deliberated upon [10].

Automotive industry throughout the world has flourished enormously. Productivity analyses of this industry show that they have added a lot to the GDP of respective countries [11]. Growth of Indian automotive industry has been premeditated showing remarkable productivity enhancements [12]. Pakistan came into the race of productivity enhancement a bit late and most recently long awaited Productivity Association of Pakistan was launched on 25th April 2009, in Islamabad [13]. The automotive industry of Pakistan has shown some improvements, mainly due to enhanced capital inputs, but still its' contribution in the GDP and employment is of modest size. Particularly once comparison is made with other Asian countries like Japan, Korea, Malaysia, China and Thailand a remarkable difference can be observed. In these countries automotive industry has exploited the catalytic role in promoting broad based manufacturing sector growth [1]. Another misconception about Pakistan automotive industry is that it is wholly private sector owned. A very huge public sector automotive manufacturing industry of Pakistan has been in operation since long, but unfortunately, it has been excluded even from the nationwide surveys [2]. Not much of research has been carried out on the operational procedures and productivity enhancement possibilities of this industry, security and difficult access being the prime factors.

II. Motivation

Pakistan came into being about 62 years ago but still its more than 60% population has very stumpy daily income. The basic reason of economic instability is the poor performance of different state institutions particularly the public sector. The public sector losses of Pakistan are enormous and a major cause of stagnant growth. The only aspect emphasized upon is

quality assurance while totally neglecting the importance of productivity. The most important aspect to realize is that quality without productivity is of no use. One evidence of neglecting productivity is that the first ever productivity association was launched in Pakistan just 13 months ago [13]. Public sector automotive manufacturing industry of Pakistan is worth in billions of Rupees. This industry cleaves a very huge portion of Pakistan's budget due to its inefficiency and non-effectiveness. This research has been carried out in order to study and identify the barriers of productivity in this huge manufacturing industry of Pakistan and suggesting remedies to enhance productivity.

III. Management & Employee Relationship Survey

A detailed survey was conducted in three major manufacturing plants. Survey included personal interviews, discussions and questionnaires. The most difficult part of the survey was to get the questionnaires filled by the individuals. The basic reason was lack of precedence of taking feedback from the employees. People were reluctant to share their feelings and inner thoughts about the system. During survey the major observations made about management and employee relationship are enumerated as under:-

1) Organizational structure is hierarchal and has rigid lines of authority and responsibility.
2) Decision making system is highly centralized top down.
3) The concept of 'On Job Training' is emphasized and new workers learn from their seniors instead of formal training.
4) Supervisor and subordinate relationships are characterized by dependency, fear and control.
5) There is a lot of post decision verbal communication to seek compliance, which thereby creates an environment of excessive centralization.
6) Employees are less scared of being fired as compared to private sector due to over assurance of job security. This aspect makes the workers careless and at times less productive.

Results of surveys conducted are:-

- Response of employees on working environment is depicted by pie chart as shown in Fig 1.

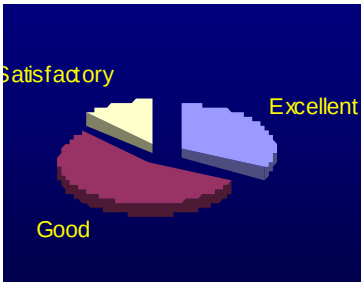

Fig. 1. Response of employees on working environment

- Response of employees on management attitude is depicted by pie chart as shown in Fig. 2.

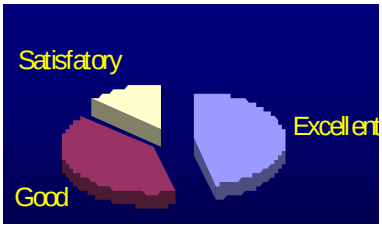

Fig. 2. Response of employees on management attitude

- Response of employees about requirement of extra training to perform their job is shown in Fig.3.

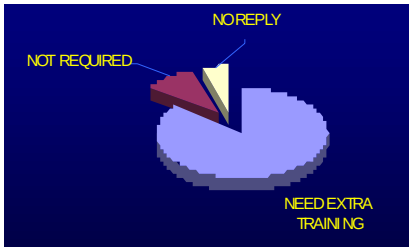

Fig. 3. Response of employees on requirement of extra training

The remarkable difference in the results obtained from the first two graphs and the third graph can be accounted to be because of the degree of fear employees have in commenting about management.

IV. Identification of Flaws and Recomendations

Productivity barriers as observed in this research, on the basis of information gathered from interviews, have been categorized in separate groups. This categorization is in line with the categorization made in basic productivity literature [14]. These observations along with recommendations are reported in succeeding paragraphs.

A. Technology Based Productivity Barriers

Inventing and utilizing new technologies is a key to prosperity in today's world. In the race of globalization and global technology diffusion, strategic planning and decision making is essential. Production technology nowadays is taken as integration of information technology and automation. In Pakistan's public sector this aspect is being taken into account in a very sluggish pace. Few of major flaws in this field are:-

1) Lack of computerization: Most of the departments are still following the old filling system. Resulting not only in the wastage of millions of rupees but also wasting precious time and human resources. Need of today in this regard is quite eminent.
2) Old gadgetry and equipment: More than 50 years old gadgetry and equipment is still in use in these installations. A number of times studies have been carried out to purchase new equipment but due to huge funds

requirements these options were rejected. The biggest problem is that the cost of poor quality has never been studied in these manufacturing units. Rejection rates are always tampered and rework costs are not calculated.

3) There is an emergent need of carrying out cost and wastage related studies so that cost effectiveness of new equipment can be understood. Secondly, lack of education and poor vision of higher echelons of these institutions needs to be addressed.
4) Only CAD is not enough: Most of these installations do have a computer aided design (CAD) department. But there is a need of the time to understand CAD/CAM concept and utilization of computer integrated manufacturing (CIM).
5) Automation is not just replacing humans with machines: It has to be understood that buying few CNC machines cannot automate the complete process. World has advanced towards flexible manufacturing systems. Automation projects are initiated not only for labor cost savings *but also for improved product quality* and fast production. Initial high investments will pay back in the shape of savings due to quality products. There is a dire need in these huge plants to integrate advanced information and engineering discoveries into production process.

B. Techniques Based Productivity Barriers

In today's world of time based competition novel production techniques are being explored every day. Utilizing these techniques for the betterment of the organization is the responsibility of top management. In public sector of Pakistan most of the ancient production techniques are still in practice. Few of them are as under:-

1) Non utilization of planning aids: Projects handled in these plants are worth in billions of rupees but no worth mentioning planning aid modules have been incorporated resulting is poor planning and listless handling of these projects. Considering the works magnitude it is essential to have Enterprise Resource Planning (ERP) incorporated as soon as possible. But, unfortunately even elements of Material Resource Planning I (MRP-I), closed MRP and MRP-II are not yet been utilized properly. Production planning and forecasting are done on personal experiences and gut feelings.
2) Batch production: Concept of batch production is in practice in these plants. This concept was used without any other combination back in early 20^{th} century. Disadvantages of using this technique single handedly are recognized worldwide. Today concepts of repetitive manufacturing and Just In Time (JIT) manufacturing techniques are used by all the manufacturing giants of the world. Diffusion of these techniques is essential for productivity enhancement.
3) Huge inventories: These plants are holding inventories in house which worth in billion of rupees. These inventories vary from raw material inventory to work in process (WIP) inventories and even to finished goods inventories, awaiting collection. A lot of funds, space, time and human resources are used in handling these inventories. These inventories can be handled cost and time effectively by incorporation of JIT purchasing and JIT inventory. For these techniques to be integrated one of the basic prerequisite would be to let go of the old system of selecting suppliers on the basis of *lowest possible prices* and adopting the techniques to have long term supplier's relationships based on trust. Top management has to perceive suppliers as partners not as slaves or servants.
4) Old maintenance concepts: Mostly in these plants breakdown maintenance practices are followed which were discarded by the world in 1950's. In some departments preventive maintenance has been tried at a limited scale. Implementation of Total productive maintenance (TPM) throughout these organizations is a better solution to enhance machine productivity.

C. Employee Based Productivity Barriers

Employees are of strategic importance. They have a direct impact on production. Implementations of all kinds of technologies and techniques have to be accomplished by employees. Fewer mistakes throughout the production process means improved productivity per employee. In public sector the managers instead of treating the man power as co-workers feel themselves as masters and commanders. In last two to three decades some revolutionary changes have come about but still the only terminology known and understood is Human Resource Management (HRM). In the field of HRM the only phenomena known is to deal with them in a better manner to get better output. The major reason due to which advanced nations have developed is that they have realized the most important aspect of human behavior and that is, better treatment, more financial benefits/incentive, motivation, job security etc are not enough. A thorough, comprehensive and most importantly *continuous* research and studies have to be carried out of human behaviors to get better productivity. This concept in these manufacturing plants is seldom understood. Prominent productivity flaws related to employees are list below:-

1) Over adherence to job specialization: Very strangely it was observed that most of the workers are performing the same tasks for more than 20-25 years. For example, a worker who was assigned the tasked of performing turning or threading on a job piece will keep on doing so till the date he retires from the job. This invariable working on the same job makes the work boring and monotonous resulting in poor productivity and low quality of produced parts. The concepts of job enrichment, job enlargement and cross training can only enhance labor productivity in these organizations so there is a need to redesign the workers job.
2) Employment of technical staff on administration duties: One of the biggest evil practices in these production plants is employment of skilled manpower on administration duties, i.e. security duties, guard duties, working parties

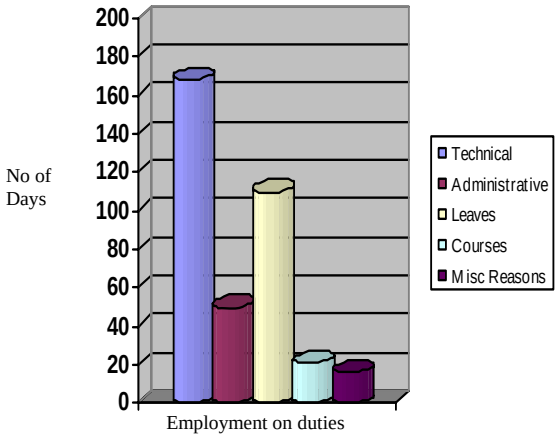

Fig. 4. Graph showing employment of technical staff on different duties in one year.

and other administration duties. When a trained worker remains on non-technical duties for a long span of time the worker losses practice of a specific field resulting in low quality finish of jobs carried out by him/her. Numbers of days which are wasted in non productive work per annum are reflected in the graph as shown in Figure 4.There must be a ban imposed on employing trained and skilled manpower on administration duties. Secondly, leave policies need immediate revision.

3) Scarcity of technical training: Several training cadres are run for employees, which mainly consists of non-technical training. As per the promotion criteria these non-technical training is more emphasized than technical training. Most of the lower staff is not given any kind of formal training at all. There is an emergent requirement of inculcating technical training and making technical proficiency a major criterion for promotion.
4) No concept of labor standards: There is no concept of labor standards. Inefficiency and non-effective performance is covered by making people work for long duration of overtimes without additional benefits. This practice results in stressful environment producing poor quality products. A *Labor Standard* is the number of physiological or psychological stress, and all other aspects of workers' jobs [15]. These standards give the performance criteria of a worker. A comprehensive research is immediately required to make labor standards for these production plants. Latest techniques of work measurement should be utilized for example time and motion study, work sampling, predetermined time standards, and learning curves. Depending upon labor standards worker's pay must be made conditional as per job performance in order to enhance the productivity.
5) Workers empowerment: In centralized style of management, like these plants have, there is no concept of empowerment of workers. This practice results is minimal participation of workers in working environment. It has to be understood by the top management that they must give the employees the authority to act. They are the main force who will utilize the latest technologies and techniques to enhance the productivity, which will only be possible once all the workers accept the responsibility of producing quality products.

D. *Waste Based productivity Barriers*

A lot of fund of the Government of Pakistan is being drained due to non elimination of wastes from the production lines. Few of the causes of wastes in the public sector automotive manufacturing industry are enumerated as follows:-

- Producing less then the potential of a plant (from both machinery and labor point of view).
- Lack of comfortable environment.
- Forced overtimes without addition benefits.
- Safety hazards and lack of accident free environment.
- High rejection rates and enormous rework costs.
- Customer's feed back system is not supported.
- Insufficient training.
- Low paid and unsatisfied workers.
- Extra manpower resulting in inefficiencies.
- Only six working hours per day.
- No team work and less workers involvement.
- High stress levels.
- Too many leaves.

V. Findings and Discussion

The swift pace of induction of high technology affirms continuous revision and updating of procedures and processes. To improve productivity one has to pay attention to a fast changing world and improve the organization's capacity to adjust to change. It is a recognized fact that organizations which do not realize this important aspect will not only be left behind in the race of today but will also be vanished like all those in the past unable to coup up with the changing world. This research conducted has revealed the fact that the low productivity parameters, which contribute to or put barriers against quality of work and productivity not only require immediate consideration but also calls for detailed research in the areas as highlighted in this research.

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