Impact of technology on employee relations

Joan Woodward’s(1965) technology contribution which characterized the major technologies used in manufacturing organizations into unit, process and mass technologies. What we could derive from this theory was that routine technology (I. E. Technology leading to more routines in work) like mass meant a more formalized structure and vice versa. Another one was Persons(1967) knowledge technology contribution which divided technology into 4 types routine, non routine, craft and engineering types based on task variability and problem inalienability factors used in the technology.

The third major contribution was Thompson Technology structure that divided technology into Long linked, mediating and Intensive technologies, with long linked corresponding to standardization of operations, tools, parts and machines. Focusing on the Knowledge Technology contribution of Proper, since the world has moved on to become a knowledge based economy. Its two mall dimensions are: a. Task variability that describes the number of exceptions Individuals encounter In their work. B. Problem inalienability which describes the type of search procedure employees follow In responding to exceptions.

The four technology categories in his theory are: 1 . ROUTINE: characterized by the lack of exceptions and its depth of comprehension. Traditional manufacturing technologies such as assembly lines belong to this 2. CRAFT: characterized by its lack of exceptions and unpredictable outcomes that are difficult to analyses. Construction work that demands the drafting of new designs to resolve building problems is an example of applied craft technology. 3. ENGINEERING: characterized by many exceptions and its

depth of comprehension. Standard and accepted methods are available to provide solutions to problems.

Accountants, most engineers and laboratory technicians use engineering technologies. 4. NON-ROUTINE: characterized by many exceptions and poor comprehension. Problems appear frequently with no existing solutions. Commercial space engineering is an example of a non-routine technology. Fig 2. Persons(1967) Knowledge technology theory 2. How Organization structure affects Employee relations? Persons classification can be divided into 2 main divisions one being Routine Technology made up of Routine and Engineering classification that is standard/same technology and the other being Non-Routine technology which is Constantly updating/New technology. . Routine technology leading to mechanization: Due to standardized work and repetitive tasks employees: Are less able to talk with each other during work – thus employee are not able to make any new friends at work. The standardized technology means that each employee has fixed set of duties and doesn’t need to talk to anyone regarding issues faced with the handling of their technology; he/she has a manual etc. To solve their difficulties. Tend to confine their communications to work-related matters – Since solicitation is very less, topics other than work related matters are not discussed ouch.

Generally tend to make fewer friends at work and feel socially isolated – all the above factors increase stress level of the employees as they feel socially isolated and they do not have any outlet for the tensions accumulated at work time. 2. Non Routine/New Technology promoting Creativity: Likely to become involved in conflict with other departments – there is stress on efficiency since not using a routine technology leads to a loss in efficiency.

The employee-employer relationship is not that congenial as there are bound to be creative differences amongst the two. I Employee Relations technology

I Routine Technology I Social Isolation I Non Routine/New I High as infrequent interaction amongst I Low as constantly need guidance to understand latest lymphocytes I technology Friends among Peers I Very few due to social isolation I ION. Of I More in number than in Routine technology cases I I Equation with their Boss Ion very good terms as efficiency is high I Is not that congenial as efficiency suffers due to land Work related issues are few and far I constant new technology related issues I between I Conflict within departments Lonny when one department’s work interferes I Frequent conflict due to new technology

I with the other I increasing dependency among departments 3. How technology strategy combination can affect Employee relations? Fig. 3 Strategy and technology affecting employee relations A combination of strategy and technology can impact Employee relations in an organization. 1 . Strategy of Transparency in communication using Technology: Exchanging information through emails, social networking software for the office employees can be a way of disseminating information amongst them. These are also an important way to improve the relation among the employees as everyone knows what is being communicated. . Leadership strategy using technology: Division of work should be according to what technology the person is comfortable using. Technology can also be used to encourage healthy competition at work as employees can be encouraged to learn latest technology or achieve mastery in the technology already in use. 3. Promoting ‘ Knowledge Worker’ strategy in the organization: As Peter

Trucker believed that dissemination of information would be most important for the important part in making all the employees knowledge oriented workers.

This would boost employee morale and help them perform better in the organization. It would also help them to improve relations amongst themselves due to increased motivation and knowing what is going around them. 4. References 1 . Automation and the Employee BY WILLIAM A. FIANCE, INNER HARDIN and EUGENE H. JACOBSON 2. Impact of Information Technology on Employee Attitudes: A Longitudinal Field Study By Patrick M. Wright; K. Michele Kumar; Gary C. McMahon; Karen Jansen Three Transformation Stages The technological progress over the last century has undergone a slow but definite transformation.

This can be categorized into three different stages biz. Craftsmanship, mechanization and automation (Data 1990). Each of the stages had an influence on the nature of work and the skill level required to perform a Job. The early craftsmanship was characterized by the worker/craftsman having control over the entire production process, from procuring the raw materials to the finished goods. This required end-to-end knowledge, where the worker got involved in activities right from pitching to potential customers to delivering the final produce/ service.

Each product/service could be characteristically unique as each reflected the skills of the employee. This model of operation can still be found in some of the resent day service firms, what are termed as Service Complexes and Service Shops (Davis 1999). The second stage of mechanization was brought

about by the application of principles of scientific management where tasks were broken down to simpler and specialized ones for large-scale production of standard goods, and methods of estimating a ‘ proper day’s work’ for the worker were developed.

This required a complete reorganization of the methods of production. The role of the individual worker transitioned from a highly skilled one in the craftsmanship era to being considered one of the ‘ factors of production’. Mechanization also created a new portfolio of occupations such as engineers to design and produce the mass production machinery, the machine builders and tool makers and a wide range of skilled machine operators. The third stage of automation not only carried forward many of the features of mechanization but also qualitatively changed the way the worker undertook his/her Job.

The worker no longer directly got involved in the production process but monitored and maintained machines and helped in trouble shooting. This necessitated the worker understand the production process and the Technological change especially through automation has both advantages and disadvantages (Data 1990, Data 1996). Automated systems allow few skilled individuals to do the work, which previously required numerous unskilled and semi- skilled workers.

They also allow tasks that are beyond human capabilities or those dangerous or monotonous Jobs that would be considered inhuman for people to perform. Further the labor intensive ways of production are expensive and restrict the market for the product, which has a negative effect on the

employment in the long run. Automated systems tolerate few or no errors and hence lack the inherent unman flexibility in production. Technology need not be restricted to Just technical automation but can also involve a whole package of resources like capital, entrepreneurship and management (Varian 1990).

Further, technology as such is not quantified but what is quantified are those relating to its manifestations like a particular technique of production, productivity of a particular input, scale economics etc (Majored 2001), e. G. In Sings & Indian (1999) technological change at the firm level is personalized in terms of R& D expenditure, technical collaborations and quality certifications, while Dangers (2001) as taken gross fixed assets and value of plant and machinery to assess the impact of technology on worker wages.

With the liberalizing of Indian economy in 1991 a number of private players started carving a major role in the economic output and simultaneously governments both at the centre and state levels started assuming a smaller role in running businesses. Increased domestic and foreign competition resulting from the economic reforms induced domestic manufacturers to improve efficiency and bring into use advanced technologies on a larger scale (Gold & Kumara 1999).

This is supported by the fact hat during the period 1991-98 there were about 3250 technical approvals in India with the top five technical collaborators (Kumar Jay 1999: 1001). The subsequent break down of trade barriers, globalization, advancements in Information and Communications Technology

(CT) and well accepted management ideas such as TTS on quality, SIT, Computer Integrated Manufacturing(Calm) & Lean Production(ALP) have served to magnify the impact of technology on employment relationship globally and India in particular.

 Technological Change & Employment Labor employment is affected by many factors, two major directly relevant factors are per unit labor requirement for a product (man hours per unit) and the total demand for the product (Kumar Run 1999: 806).

It is likely that technological improvement leads to reduction in per unit labor requirement but at the same time because of the increased demand made possible by the lesser cost of the genealogically advanced product, it can lead to rise in overall demand for labor. This expected rise in demand for labor has however not been equally true for all sectors/ industries. In a study of employment in organized manufacturing sector in India, it was found that even though real gross value added has grown at 7. Percent per year during 1981-2002, employment of workers increased only by 4. 3 and most of this growth happened in the early part of the ass while the latter half of ass and early part of the current decade have shown a reducing trend in organized manufacturing sector employment (Anagram 2004). At the same time, employment in Organized Services sector has been picking up in the latter half of last decade and early part of this decade.

As could be seen in fugues 1-3, organized manufacturing sector seems to have shown a sharp decline in employment post 1996 while services have gained during this period. [FIGURE 1 OMITTED] Further even within the same industry, there seems to be a shift in the occupational and work profile of the employees. As a consequence of technological modernization of banks it was found that though there was an overall increase in employment, this Roth has been made possible by an emerging volume of employment in hitherto new areas such as systems analysts, console operators etc (Data 1990).

In a case of technology transfer to an Indian engineering NC from its foreign parent company during the period 1974-1984, even though the fixed capital increased by about 400 percent, the number of workers actually decreased by 8 percent whereas the total employment increased by 35 percent, indicating a shifting of workforce from workers to supervisory and executive cadres and a corresponding shift in the skill requirements (Varian 1990).

In an aggregate study of the organized manufacturing sector for the period 1982-2002, it was found that the increase in gross value added is accompanied by greater employment of employees in the supervisory cadre as against the worker cadre (Anagram 2004). Further there has been a change in demand for the type of employees within the same occupational group, from operatives and laborers to professional and technical workers in many of the industries such as Banking (Data 1990, 1996), Software Services (Sings & Indian 1999) and Textiles (Charlatanry 2002, 2006, Dangers 2001). [FIGURE 4 OMITTED]

Impact on Skill Profile of Just-in-time inventory, manufacturing cells, robotics and service quality concepts etc, there is an increasing pressure on the organizations to implement team based work designs. Hence the technological changes almost always are followed by a corresponding change in the essential work structure of the organization. Organizations have become increasingly flatter and work unit in most organizations is no longer an individual but is a team. Hence there is an increasingly felt need to foster the skills and attitudes to function as an effective team player.

FIGURE 3 OMITTED] The impact of new technology on skill requirement in the textile industry has been widely reported. Textile industry in India has a special place with 4 percent contribution to the GAP and 12 percent of the world’s textile production (GO 2009). The cotton mill workers account for 20 percent of the total employment in the manufacturing sector (Chowder 1996) and the textile industry is the largest contributor after agriculture to the employment providing Jobs to about 21 million people.

When new types of technologically advanced looms were introduced in textile rims, the skill requirements changed to those of monitoring and troubleshooting of the production process instead of directly getting involved in the production (Charlatanry 2002, 2006, Data 1996). This is because with the introduction of new automated machinery, the technologies are no more separate from each other and detection of faults requires a thorough understanding of the production process and familiarity with different equipments used (Charlatanry 2006).

Hence the skill required for the Job, which previously emphasized manual dexterity, physical trench in manual and repetitive tasks has been taken over by the need for machine trouble shooting and process handling skills. The roles and responsibilities of the senior workers were more flexible in the modernized mills and they were expected to handle a higher number of departments compared to rigid and specific allocations along different categories of work within a department in the non-modernized mills.

This change is Just not restricted to introduction of new production processes but may be related to even initiation of new management ideas. For instance, at the ginning of the nineties, when Motorola started measuring workers' performance against quality & outputs instead of measuring against a time clock, it became necessary for its workers to know their equipment and production process, and be able to initiate any trouble shooting process themselves which were previously not in their ambit (Highborn 1990).

This required the worker to unlearn deeply held attitudes and values when they were Just responsible for working on individual machines to those of understanding the production process as a whole. Impact on Wages The impact of technological change on wages has been mixed. Buddha (2003) in his study of 137 Indian firms in six manufacturing sectors in India found that collective the basic wages and bonuses of blue-collared employees, hence indicating that the wages are still determined by factors not directly related to individual/film performance and technological change.

However, this is also sector specific. In a study by Sings & Indian (1999) in the software industry, it was found that technological change does have a

significant effect on salaries paid to employees. Charlatanry (2002) in her study of spinning mill workers found that the modernized ills required ‘ unusual skills’ from workers compared to the traditional ones and they also had higher wages due to the greater dependence of the organization on these workers. However, the effect of increased investment in technology on wages has not always been positive.

Varian (1990) in his study of the Indian subsidiary of a NC found that the wages as a proportion to value-added remained at about twelve percent and has not changed significantly with the introduction of new technology over the years. Further, Allay Kumar (1999) in a study of sixty select Macs, found that he aggregate rise in wages and salaries, was much lower than the aggregate increase in operational expenses, suggesting that the growth rate of wage bills has not kept pace with investment in operations.

The impact on wages because of technology change is also influenced by the political process. Batcher (1991) argues that there is a positive correlation between wage levels and introduction of advanced technology but how the pie is distributed will depend on the balance of power between the negotiating parties. In the Canadian context, he found that skilled blue-collared workers, both unionized and non- noised, could bargain a higher pay compared to those doing manual work.

Further, the union’s bargaining power was lower for technology innovators than among non-innovators. In a similar vein, in the case of modernized textile mills in India there is an emergence of distinct and firm specific skills which require higher cost and time investments (Charlatanry 2002). Hence

companies are willing to pay higher wages in these mills as contrasted to non-modernized mills. This necessitated decentralized bargaining in the case of modernized firms while the non-modernized ones went in for industry wide bargaining.

In the latter case since the skills are not specific to an organization but rather are generic to the industry they required support of the wider political base. Anagram (2004) in his study of employment in organized manufacturing sector notes that while real wages of workers have roughly stagnated during 1981-2002, the real emoluments of supervisors have gone up by 77 percent during the same period indicating that the increase in wages due to technology change has not been so favorable to the workers in general.

Worker Acceptance The reasons for introducing new technology vary from one organization to another. New production system in a plant is brought in by the management typically in response to the change in market conditions, which require more ‘ efficient’ technologies to be adopted (Data 1996). Studies have indicated that the technological improvements/changes lead to improved productivity, lower costs and productivity seems to hold for varied sectors from Heavy Electrical (Varian 1990), Software (Sings & Indian 1999), Textiles (Charlatanry 2002, 2006, Dangers 2001) and Banking (Data 1990, 1996).

Studies indicate that after a time lag major technological changes have always induced significant changes in the organization recesses (Grotto & Triptych 2000) and the success of new technology is dependent on the

extent to which the workforce is willing to adapt to the technological and organizational changes (Dally & Agrarian 1995, Grotto & Triptych 2000: 520). Davis, Bugaboo & Warsaw (1989) have proposed a theoretical model for a better prediction and explanation of end-user acceptance of technology and is called Technology Acceptance Model (TAM).

This proposes that one can predict technology acceptance of employees by knowing their behavioral intentions, which in turn are influenced by attitudes, perceived usefulness of the technology and ease of use of he same. In their longitudinal study of 107 users to predict computer acceptance, it was found that perceived usefulness was able to explain more than half of the variance of behavioral intentions after 14 weeks and perceived ease of use though small, was significant enough to explain the behavioral intentions.

The importance of employee acceptance of new technology and also the adaptability to change has been highlighted in the study by Data (1990) on the introduction of computers in the Indian Banking Sector in the ass’s and ass’s. The study indicates that a key factor in the acceptability is by taking the unions and the employees into inference before introduction of automation. This was done through a free flow of information, education and training of employees in terms of what computerizing means and what changes it can bring in.

The transformation of Bank of Broad from a large public sector bank with a legacy culture to a highly customer centric, technology driven bank through a variety of initiatives including implementation of Core Banking solutions is

credited to clear and transparent communication with the employees (Kendall 2007). Studies in the Indian context have shown that attitudes in terms of Job satisfaction and freedom and autonomy at the work place ere found to be significantly positively related to technology acceptance (Grotto & Triptych 2000, Evangelically & Avalanched 1999).

Evangelically & Avalanched (1999) in their study of a steel plant found significant and positive correlation between meaningful, interesting Job and technology, indicating that new technology introduction does have an influence on how the employees feel at work. Unlike in the West Indian employees rarely differentiate the work and social roles and it would be possible to develop a feeling of " we-ones" if policies and practices instill among employees the feeling of ' acceptance and belonging' (Dally 1999: 220).

As Kendall (2007: 210) observes " l always felt that employees were equally concerned as stakeholders about declining business at the bank. I also felt that they did not exactly endorse the attempts of trade unions to stymie technology or other customer-centric initiatives. It was with this belief that we reached out to 40, 000 employees directly through a monthly letter and numerous employee meetings engagement. However this belief and actions associated with it seems to be an exception rather than the norm. Buddha (2003) found that strategic and financial information are comparatively less shared with the blue-collared workers than with he white-collared workers, due to low faith of management in their subordinates, preference of managers for centralized decision making and control, and lack of awareness by the employees.

Further, it is found that 87% of the employees communicate through their immediate supervisors and also that most of the communication is done through staff bodies. Such results suggest that any successful technological change has to be accompanied by a continuous and consistent communication with the employees, sharing both developments and concerns on the business front and the need for new technology implementation and its implications for employees.

Further engaging supervisors and staff unions in the communication process are likely to bolster efforts of management. Union Response In the British context Margarine (1981) found that the union response to introduction of new technology varies as per the likely effects of the new technology, the importance of the new skills introduced by the technology and the impact on bargaining power previously established.

For the unions the new technology has implications for the number of Jobs, their content and the earnings that it is going to affect. In the Indian context, in a study of ‘ unusual’ collective agreements in the public and private sectors Rattan (1991: 17) found that unions no longer resist changes in work practices resulting from modernization or computerizing except in the case of employment of contract workers and restrictions on subcontracting.

In the case of Indian Aluminum Company Limited, Blur, “ It is agreed that the right to plan, direct and control operations of the plant, to introduce new or improved production methods, to expand production facilities and to establish production schedules and quality standards are solely and exclusively the responsibilities of the management. The management’s

authority to perform these and other duties will be respected in every case” (Rattan 1991: 32).

In the case of modernization of Indian Iron and Steel Company, Burner, thirty options were considered and discussed with all the unions through extensive sharing of information and the option adopted was to close down six plants and retrain and redeploy five thousand surplus workers instead of retrenching them. Even though there were no discussions on the specific technology to be used, the consequences of modernization were discussed in detail with the unions.