CHAPTER - 4

CHANGING INDUSTRIAL PRODUCTIVITY SCENARIO

4.1 Introduction

In the recent address to the National Association of Manufacturers (NAM), the President of the USA has made it clear that manufacturing is one of their prime focus areas. “Our manufacturers make products that enrich our life, that drive and sustain our economy, that create jobs and opportunity,” he said. America realised the importance of manufacturing to its economic leadership and prosperity as the President admitted; “Our economic growth is powered by manufacturing. Our manufacturers pioneer the innovations, technology and methods that maintain this nation’s economic leadership.”

President, USA also highlighted the need for improvement of productivity, “Productivity grew at 1.4 percent per year. At that rate, it would take 50 years to double the standard of living for Americans. Our economist now project that productivity will grow by 2.7 percent over the long-term, and at the rate, we can double the standard of living of Americans nearly twice as fast. In other words, the more productive a society it is, the better life style our citizens will have. The US realised that to remain competitive innovation is the key, so the R&D activities makes sense if nation wants to remain a competitive nation.

Indian Perspective: US President’s message is vital for the Indian manufacturing sector also. In India too all our efforts are on at various levels to enhance the productivity and competitiveness of the vital manufacturing sectors. Recognising the importance of manufacturing in overall economic growth of a country and the need for enhancing its productivity, competitiveness, and employment generation, the national strategy for manufacturing has put forwarded by the National Manufacturing Competitiveness Council (NMCC).

Further Finance Minister explains that the economic reforms engine has been chugging along the growth trial, slowly but steadily since Independence. This reform engine has also been buffeted and affected periodically by the winds of change sweeping the global economic landscape. The pace and thrust of economic reforms

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took a quantum jump since 1991 in response to the macro-economic. A major wave of liberalisation swept through the economy, starting from the industrial trade and financial sectors. Many developing countries have introduced market-based economic reforms to reap the benefits of globalisation. The emphasis has been to accompany in reforms with a human face.

The main objective of current phase of reforms is to secure high growth, while making such growth inclusive to improve the living standards of the poor and marginalised sections of our country.

The aim of the reforms process is to help India to forge ahead not only with a high rate of economic growth, but also to ensure that the growth process generates more employment, is equitable, socially just and humane.

Thus, India’s political scenario will continue to lead the country on the path of economic reforms. Economy will grow at a brisk pace and achieve its full potential bringing growth and prosperity to all sections of the people, this is a changing industrial productivity scenario of tomorrow, says Chidambaram.

4.2 Tools for enhancing innovativeness in enterprises

Innovation is the specific instrument of entrepreneurship, the act that endows resources with a new capacity to create wealth.

- Peter F. Drucker

The third world economies need to grow fast to provide decent living standards to their poor people. They are market economies and can grow fast of their enterprises become globally competitive and master the art of seizing the opportunities. Innovativeness offers a huge opportunity to these enterprises for rapid growth and sustainable competitive advantage. But, innovativeness is not easy for enterprises nurtured in hitherto protectionist economies and authoritarian and conservative cultures.

Re-designing organisation: Innovativeness is not easy for enterprises, major organisational re-design is needed involving big mindset changes and major changes in strategies, structures, human resource management (HRM) systems and practices and style of management. Innovation is a superior option because it is home-grown and confers the first mover advantage.

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61 Seshadri, D V R and Tripathy, Arabinda, Vikalpa, IIM, Ahmedabad, January-March, 31(1), 17-29
If the enterprise learns to be innovative, it can harvest sustainable competitive advantage and grow and thrive even in hyper competitive environment. The major blocks to enterprise innovativeness are internal:

- Conservative and bureaucratic cultures and structures,
- Communications problems, and
- Administrative inflexibility.

Sixteen management tools have been developed to deliver these benefits are:

1. Creativity training: Many people think that creativity is God-given gift.
2. Innovation training: It is not enough for an enterprise to generate many creative ideas. These have to be transformed into useable innovations giving training.
3. Creative thinking network: A creative thinking network can quickly spread the culture of creativity and innovation throughout an enterprise.
4. Creative scenario building- Stretch vision that spurs innovativeness: A challenging but believable future scenario can galvanise many innovative options to respond to it.
5. Creative surveys - Creative surveys are those that either solicit rarely gathered information and/or use that information innovatively. Feedback as a result of surveys provides management instigated many changes and innovations.
6. Creative experiments: Pilot studies or projects can be turned into creative experiments to yield reliable and novel intelligence, such pilot experiments can reveal pitfalls to be avoided before full scale up.
7. Creative benchmarking: Enterprise compares themselves with industry specific standards or the standards of leaders such as the number of employees needed to produce a unit.
8. Reverse brainstorming: In this, the accepted option is attached from the competitor’s point of view through a brainstorming process. Many weaknesses may come to light.
9. Exnovation: Old, large enterprises also suffer from obsolete, needless regulations and policies. Exnovation is a good way of identifying and deleting such junk regulations that the organisation presently has that have outlived their utility so that space is created for new and innovative policies (Drucker, 1985).
• In the UK, ministers for deregulation were appointed to identify damaging or unnecessary regulations and simplify or eliminate them. Nearly 900 such regulations were dealt with.

• Continental Airlines, a dramatic example, following losses in the early 1990s, a new management, burnt the 800-page book of rules and replaced it with an 80 page manual.

10. Multiplication of change agent-Bringing about widespread change: Many enterprises in the third world have been saddled with a large unfinished agenda of change and innovation. Many change agents are required to bring about the needed innovations.

11. Kaizen-Continuous Small Innovations: Kaizen facilitates little changes and innovations for continuous improvements in products and operations. Kaizen is a potent source of innovations.

**Work Improvement Teams:** The Singapore Government initiated Kaizen in the form of quality circles called Work Improvement Teams. Hundreds of WITs were started. Several thousand innovations and improvements were suggested and implemented and have contributed to administrative excellence of the Singapore government.

12. Creative Overload: Many a management creates an overload on the staffs through overly ambitious targets but then does not apply creativity in achieving them. Often, these targets are not met and there is much fault-finding, responsible in shrinking, and a pervasive sense of failure.

**Case:** Lakhanpal National, an Indian producer of batteries and a subsidiary of Matsushita Electric Japan, used overload creatively. It decided to double its productivity in just three years. To be able to do this instead of focusing only on the output of batteries per employee, each department / section undertook to double its performance in three years. Over 70 different challenges were identified. Such diverse areas were targeted as reduction by half in the rejection rate of good battery cells, manpower employed in the parts section, rate of falling of the battery jacket on the floor, water consumption, level of inventories, etc. This sends a powerful signal throughout the organisation for speed up new product innovation. Thus, the way overload can be made creative.
13. Data mining - High potential new leads: *Knowledge discovery* is a method for *creative data mining* that seeks to uncover innovative new uses of information. The idea is to identify previously unknown patterns.

14. Stakeholders’ Councils: The stakeholders are encouraged to make suggestions; feedback, meets and identify the area of improvement.

15. Entrepreneurship-Securing ‘break through’ innovations: In a turbulent, competitive, but opportunity-rich environment, the development of star potential products on a fairly constant basis is necessary for sustained competitive advantage and rapid, profitable growth. If the idea is seen to have high future potential, the proposed of the idea is given a budget and modest facilities to work on the idea for high potential growth products.

16. Parallel groups: Parallel teams can be set up for designing highly innovative products, projects or activities. The idea is to find out which product morph the customers may be willing to pay for most profitably.

To survive and prosper in such economies companies need to catch up rapidly with international standards of productivity, product/service quality, customer orientation, ethical conduct, and corporate social responsibility.

Japan borrowed quality control from the US but conceptualised it and developed a number of culture-specific tools like the ringi system of decision making, Kaizen, and Kanban that helped it catch up rapidly with western productivity and quality standards and even go beyond some of them. Learning to be innovative, can translate into sustainable competitive advantage and rapid growth in a very competitive environment.

The author suggests some other approaches that becoming much more innovative area of top priority for the third world enterprises are:

1. Enterprise innovation is applied creatively and useable for pursuing the enterprise’s goals.

2. Technical innovations can be product-related or process-related. Thus, while micro processor is a technical process innovation, word processor is a technical product innovation. Technical innovations may have contributed a very substantial position as much as 40% improvement in productivity and, therefore, in living standards in the west.
3. Management innovations are those relatively novel changes in problem-solving, decision-making or implementation procedures that improve one or more functions such as better control of operations, greater efficiency, and better coordination, greater capacity to cope with environmental changes, better staff motivation, greater accountability, and better mission accomplishment.

4. Management by Objectives (MBO): Since many management innovations are hard to assess in profit and loss terms, they are hard to introduce in a commercially oriented enterprise. Too tight a control could obstruct creativity; too slack a control could result in runaway costs.

5. Resistance to change: Management innovations are difficult to implement and institutionalise, that is, get the whole-hearted acceptance of the stakeholders.

6. Organisational design for innovativeness: In a hyper competitive environment, it is not enough to institute an occasional innovation. Competitive advantage can be sustained if the enterprise comes up with a continuing stream of successfully implemented innovations. For this to happen, the organisation needs to be designed for innovativeness.

7. Tools for Innovativeness - Management tools that stimulate innovativeness: Tools have been developed that enhance an enterprise’s innovativeness.

8. Reinvention-Organisational renewal: The intrapreneurs, play a key role in keeping employees motivated and open new avenues for them to bring their vision and creativity into reality for the benefit of the organisation, by removing “unproductive layers” of bureaucratic hierarchy, harnessing the power of technology, proper delegation of authority and power or find other ways to improve efficiency and effectiveness.

4.3 Turnaround excellence

Organisations are mortal. They can fall sick and die or recover. They can starve to death. They can bleed to death. Even when they are healthy, they may die if the external environments turn hostile. They however have an option that other mortals do not—they can reinvest themselves and take another lease of life. They can get a new soul while retaining their old names. This fundamental process of corporate renewal is Turnaround Excellence. The researcher has been studying sick organisations for couple of years.

62 Maheshwari, Sunil Kumar, Turnaround Excellence, Vikalpa, 32(3), July-Sept, (2007), 149
He looked for symptoms of sickness, found out why certain companies fall sick, what medicines are administered, what impact each intervention has, and how they recover or die. Their attempts to provide a comprehensive managerial framework to study it. It has been an attempt to sensitise managers to early symptoms of decline so that they can figure out the disease and try to cure it before it becomes fatal.

Managers had better be trained to do so because organisational inertia, the main villain behind the failure of many organisations to respond adequately to changes – some quick, some deceptively slow, some cataclysmic – in their business environment.

Most of top managements of organisations in decline blame everyone except themselves for the mess their organisations are in. Stakeholders re-assess their relationship with organisations in decline.

**Prescription to save dying organisations:**

It depends on what has caused the infection and the extent of the infection. The following turnaround prescriptions of treatments as the most common in the action choice framework are:

- Change in leadership
- Re-orientation of strategy,
- Reduction of costs,
- Retrenchment of personnel,
- Up-gradation of technology
- Financial restructuring, and
- Reallocation of the people who have been retained.

Most turnaround interventions are painful. Therefore it is not surprising that organisations balk at the prospect of going in for them until they are left with no choice.

### 4.4 Supply Chain Management - The last frontier in competitiveness

Dr. Thomas W Speh in this article centring around the concept that, Supply Chain Management (SCM) is a constantly evolving area. In the 1970s, SCM signified merely physical distribution and logistics management. Today the goal is to reduce the amount of time it takes to move that product – through the integration of business processes.

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Today’s goals are waste elimination, time compression, unit cost reduction, ultimate customer satisfaction, flexibility of response and consequently-growth in revenue and increasing industrial performance to boost industrial productivity.

Dr. Thomas highlights the factors for harvesting fruits of SCM:

- A different way of looking at things.
- Performance measures.
- Stop taking shortcuts.
- Share the Wealth.
- Finally, “breakdown” is called border functional silos or barriers in the firm.

As India liberalise its economy and strives to become competitive in the global market to become competitive in the global marketplace, there are many supply chain deficiencies that it will have to contend within the coming years. The supply chain is evolving as the most significant value driver for companies to drive competitive advantage. These trends have brought in their wave enormous profit bearing avenues for global supply opportunities and enhance competitiveness. India is to chase this race to increase industrial productivity to have better tomorrow for all. Agenda of improving the competitiveness of Indian industry and it is believed that the SCM is the last frontier in competitiveness.

4.5 Case Study Analysis

Cases are effective instructional tools. Cases are like telling a story, reflect problem situations in real life and create an authentic learning environment for researchers and students. It is an effective simulation to develop knowledge base, sharpen skills and apply theoretical tools and techniques. The case method persuades active participation in learning process. The case method aims at developing understanding on a framework of experience to encourage learning by doing. In this section world giant companies’ efforts to improve quality and hence performance leading to higher productivity to remain competitive in the era of globalisation are presented.
Case-1: Bajaj auto engineering capability - Wheels of change

Rahul Bajaj, who has been its public face for decades or even his sons Rajiv and Sanjiv, a nimble team has built capabilities to power the motorcycle maker. Bajaj Auto has continued to ride forward on the wheels of innovation, keeping alive its hopes of closing the gap with - and - overtaking - arch rival Hero Honda.

Rahul Bajaj was the most outspoken member of the Bombay club demanding a level playing field in the face of India’s globalisation policies. Bajaj Auto has since reinvented itself and thrived on liberalisation. “But it was not shortage alone that took us to the top”, says Bajaj.

If that was the only criterion, why did all the other scooter manufacturers die out? Now, it’s the turn of the Rahul Bajaj’s sons to take the company forward. MD, Rajiv Bajaj describing him as using “advanced muscle in a bid to reclaim leadership in the land of two-wheelers”. “We are competing with the best in the world in technology”.

ED, Sanjiv Bajaj, who looks after finance and the overseas drive, agrees that their Pulsar (which he launched in Indonesia in end – 2006) is the best in the world, thanks to the engineering capability and productivity. It’s here:

In 2000, Bajaj Auto made one million vehicles with 22,000 workers. In 2004-05 it made 1.8 million vehicles with just 11,000 workers. Therefore worker’s productivity worked out as:

1. Worker’s Productivity (2000) = \frac{100000}{22000} = 4.54 \text{ Vehicles / Worker}

2. Worker’s Productivity (2004) = \frac{180000}{11000} = 16.36 \text{ Vehicles / Worker}

As such Productivity levels at Chakan Plant, where a third factory with a totally new workforce and work culture is being set up, it can make as many vehicles with 7000 workers.

3. Worker’s Productivity (2004) = \frac{180000}{7000} = 25.71 \text{ Vehicles / Worker}

It is a result of innovative approach, adopting advanced technology, awareness of all workers; involvement of all employees with systemised training, leadership with high morale and motivation resulted in higher performance - cost effective with enhanced

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64 Seshan, Sekhar, Bajaj Auto – wheels of change, Business India, 8 April, (2007), 76
productivity. Worker’s productivity has increased from year 2000 by 11.82 Vehicle / worker (260.35%) in the same plant and at Chakan plant increased by 21.17 Vehicle / worker (466.30 %) in 2004.

Any organisation facing highly competitive challenges and continuous changing global scenario can keep pace with adopting technological change, technological upgradation, and adopting innovating approaches, involving all employees from top to bottom without barriers or bias and with freedom to suggest one’s own innovative ideas even from worker level.

**Case - 2: Bharat Forge - Cross Country Capabilities**

Baba N. Kalyani is on his way to realising his global vision of running India’s first manufacturing multinational company Bharat Forge. Thinking global is something this “small town” manufacturer began long ago. The aim is not to achieve numbers, but to be a significant player in each area, says Kalyani.

Pune based Kalyani Group is planning a Greenfield project abroad as it continues to expand its global footprint to truly manufacturing, without borders. With six plants abroad and four companies in India led by the Rs.3085 crores flagship Bharat Forge Ltd, and employing a total of 8000 people, its CMD says, “Seven or eight years ago, I wouldn’t have believed that we would be where we are now”.

“Owning companies in developed countries like Germany, Sweden, and the US, global company, fairly well known globally in the auto world”.

The group now has its footprint on every continent, thanks to its acquisitions over the past two years.“China was the last part of completing our global strategy. You can’t be a global leader without being there. The country has more than 5 million vehicles and is racing towards 8 million by 2010, and we need to be there too, to service them, says Kalyani.

**Skill Manpower:** But- and its’ a big but- the acute shortage of skilled manpower is a major area of concern. “There is an urgent needs to modify the (education) delivery system”, Kalyani says. So he is talking to other industrialists in the area to set up a technical institute for the high quality human resources they need.

Manufacturing industries in Pune alone will need 5,000 to 8,000 engineers every year by 2010; but not even 1,000 are generated today – and they are snapped up by the

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65 Seshan, Sekhar,  Business India, Anniversary Issue, 8 April, (2007), 78.
Information Technology (IT) companies. *The message today from original equipment manufacturer in the world is clear: Manufacture less in-house.*

So, Kalyani is developing strategic relationships with key suppliers who have a global footprint while at the same time building a strong technology base to move forward. We can use our knowledge, relationships, facilities, and engineering strengths to start making many other products, says Kalyani.

Bharat Forge implemented the *six sigma project* to bring down the rejection of crankshafts for an export line. At the time of initiating the project, the prevailing rejection rate was 5.9 per cent, within six months this was brought down to 3.2 percent. *As a result re-work reduced quality and productivity increased with saving of Rs.23 lakhs annually. It has positive financial impact.*

**Case - 3: Larsen & Toubro (L&T) - Going Global** 66

The construction and engineering major, L&T has been busy capitalising on the domestic infrastructure and industrial boom, with large orders pouring in by the day. To sustain a 9 percent plus GDP growth rate, India needs a larger contribution from the manufacturing sector and investment in infrastructure, As infrastructure is set to be the driving force, nuclear energy are expected to add momentum, says CMD, Naik.

In the 1990s, L&T’s clients, mostly Indian companies expected product deliveries 16 months after placing an order. But after the opening up of the economy, L&T realised that most international company expected delivery within 12 months. Hence, all the departments began promoting an efficient delivery cycle. This brought down the deliver cycle to around 12-14 months, but then customers began to expect delivery within 10-11 months. Implementation of a Product Life Cycle Management tool has now improved the company’s delivery time by another 30 percent has improved industrial productivity with quality.

**Case - 4: Sundram Fasteners Ltd. (SFL) - Quality without boarders** 67

Sundaram Fasteners, with a series of quality and vendors recognitions, SFL is a Rs. 1063-crore international company with operations in the US and China besides India. SFL has set up a warehouse hub and dispatches are made from here. Technology up gradation zeal is in the fore front of incorporating the newest technology for its products, which has recognised it with ‘the best of the best’ supplier awards three years in a row.

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66 Babani, Anoop, Business India, Anniversary Issue,8, April(2007),80.
67 Padma Ramnath, Business India, Anniversary Issue, 8, April, (2007), 82.
The company has never looked back since it went public in 1982. It was time to look for an overseas presence to go beyond the supplier tag to become a manufacturer overseas.

The SFL entered the China market to supply to auto companies. The Chinese domestic market too has excellent potential, says Suresh Krishna, CMD of Sundram Fasteners. All this success overseas and drive for quality on its way to becoming a world class company has, however not translated into shooting for the prestigious Deming award, which its sister company Sundaram Clayton was the first Indian firm to win.

One of the pioneers of the Total Productivity Management (TPM) movement in India, he explains why SFL is not looking at the Deming award; Both TPM & TQM aim to reach the same destination. SFL have received various awards in the arena of Total Productivity Management (TPM).

The plant was able to achieve appreciable improvements on the quality cost and delivery parameters whereas its productivity levels, including labour productivity, raised, substantially. Similarly SFL’s of excellence and consistency awards honouring its productivity related enhancements.

As Krishan says “The requirement of a global player is to have the right product at the right time and at the right price with quality of the product ensuring customer satisfaction while being the lowest cost producer”.

**Case -5 TPM & Quality**

*Sundram Fasteners:* Global quality means zero defects for the Rs.326.18 – crore Sundram Fasteners. It is achieve this objective-essential for meeting the requirements of its biggest customers. Sundram Fasteners also uses TPM to inculcate the essence of TQM into its people, which dictates that quality stems not from reworking of defective products through quality checks, but from eliminating the possibility of defects altogether, says Suresh Krishna, CEO, Sundram Fasteners.

"The quality movement within the company is symbiotic. One high forces us to strive for another. TPM is the driver.” And zero is the basis for the company’s quest for 100 per cent quality.

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Case - 6 TPM & Innovation

**Hindustan Lever:** The continuum stretches from TPM at one end to company-wide innovation at the other the Rs.8, 574. 90 crore Hindustan Lever, whose manufacturing processes follow the systems and benchmarks lay down by its self-developed. The techniques that it uses to meet these goals make full use of the quality manager’s toolkit: TQM, Total Cost Management, ISO 9000, JIT, 5-S et al. And TPM, which propels the entire workforce towards a culture of autonomous maintenance, multi-skilled teamwork, and performance improvement, plays a crucial role by compelling people to innovate.

Says S.M. Bhinde, Technical Director, “TPM, with its focus on hardware and technology, is an easy-to-digest, practical, preparatory, and motivating tool” That’s why it is the principal driver in the company’s meeting with WCM. Moreover, the productivity leaps made by the early converts should convince the unsure. HLL, which has deployed TPM at 6 of its factories, has reported a 30 per cent gain in product-defect control, and a 20 per cent increase in productivity ever since. The major strength of TPM is that it is more than just a tool. It’s a holistic productivity system that can drive your entire factory and workforce. As our benchmarks are the world’s best, TPM proves to be a very motivating instrument for us, says Kumar Manglam Birla.

Case – 7 TPM & Profitability

**SAMTEL:** The Rs.650-crore Group is extending the scope of the P of TPM to include all its activities from productivity, through product and process, to profits. In this scheme of things, a single team will be responsible for not just machinery productivity, but also for the entire product. The principles, however, will be the same as for TPM.

In the next stage, the concept will be extended to the process, and, finally, to profits, where every employee will be personally responsible for making the use of every resource: from cash to intellectual capital. Says Satish Kaura, CEO, Samtel Group. In the 1980s, TPM was essentially a shop floor initiative with little or no business linkages. But now, it’s a focused and integrated endeavour with bottom-line implications.

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Case - 8 TPM & Value- addition\textsuperscript{71}

Marico: One of the axes around which the Rs.491.60 crore industries' drive for reduced costs, faster cycle-times, and higher quality revolves is TPM. Since 1997, Marico has been linking its management initiatives into the concept of value analysis, which involves finding ways to increase the total value being delivered by a process. Wherever the company discovers that the value it is creating is less than optimal, it applies a structured problem-solving approach improving them. And the tool that Marico uses to inculcate this ability in its people—besides TQM—is TPM. “TPM is a hardware-oriented tool, which bolters other practices and helps build our work-work-culture”, says Rakesh Pandey, V.P. (Quality & HR), Marico.

However, TPM is a technique whose time has come. For, it can yield even greater benefits when companies are trying to combat an economic downturn by eliminating costs. Since TPM enables shop floors to multiply their output without adding to existing equipment.

Case – 9 TPM & Hindalco\textsuperscript{72}

At Renukoot, U.P., where Hindalco manufactures aluminium metal, wire rods, and rolled extruded products—with facilities for fabrication, reduction, and power generation—the primary fuel is coal. TPM team used the principles of TPM to identify ways in which the machine could be made to deliver more at the same, or lower, cost. Three significant reasons for machine downtime were identified, and corrected.

- The first factor involved the replacement of gaskets in the poking system for the reject coal, which is guided through a valve into a tank. The solution lay in modifying the system, making 36 gaskets-replacements unnecessary in each mill adding up to 1152, thus boosting productive machine time a total of 3,744 hours.

- The second factor, the failure of the seal of the knife-gate valve which directs the flow of the reject coal, was rectified by making changes that eliminated 12 oil-seal replacements a year, boosting total machine time by 1536 hours.

- The third factor, by developing insulation at the cost of Rs.1786 per year, fuel saving worth Rs.4,150 were generated besides eliminating painting-costs worth Rs.1500 per mill body. \textit{TPM ensures, the total effectiveness of the plant by tackling utilisation, quality, and downtime.}

\textsuperscript{72} GSFC, (Business India) Training Bulletin, Vol.XXXII (2), Dec. (1999), 54-60
Sums up Kumar Mangalam Birla, Chairman, Aditya Birla Group, TPM and world class manufacturing are very motivating instruments for us.” Since its scale of operations and its cost-based competitiveness make it essential for Hindalco to keep its productivity levels high by the fulfilment of that strategic objective.

**Case - 10 TPM & Crompton Greaves**

Crompton Greaves (1987) has been one of the pioneers of TPM in the country, rolling it in 10 of its 29 plants.

The focus of TPM, introduced in 1992, was on reducing downtime at its chilling plant besides eliminating breakdowns at its pre-treatment plant. Says M.M. Shirode, TPM Team Leader, Crompton Greaves: “Earlier, the chilling plant would break down every second day, leading to huge slanging matches between the production and the maintenance staff.” “Machine operators were taught to maintain threshold levels of maintenance, with, attention shifted to the details.” Within 3 years, breakdown time at the chilling plant had been reduced from 1400 hours to 45 hours; from 180 shifts a year to 1.20 shifts.

Similarly for CNC machining centre: downtime at the CNC-turret punch press fell from 38 hours to 2 hours while at the CNC-turning centre, it dropped from 66 hours to 5 hours.

*This movement has tremendous potential to enhance the total productivity of manufacturing organisations as the basic resources are attended to in a structured approach. But planning is important.*

**Case-11 TPM @ Larsen & Toubro**

**Larsen & Toubro:** The problem of oil leaking from the vertical borer installed on the assembly-line for machining large equipment with vertical axis rotation at L&T unit equipment division in the Powai, Mumbai has been solved in only one day.

The workers would simply top up the oil-levels to compensate for the leakage.

But company hired the Chennai-based consultant, N.S. Narsimhan, for the purpose, the factory began to apply the principles of TPM to improve machinery performance.

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73 GSFC, (Business India) Training Bulletin, Vol.XXXII (2), December, (1999), 54-60
74 GSFC, (Business India) Training Bulletin, Vol.XXXII (2), December, (1999), 54-60
And the prevention of the leakage was important simply because their TPM drive had told the workers that the machine was performing at a productivity level of only between 30 and 50 per cent.

And solving this would contribute to their goal of lifting to 70 per cent. TPM teams gathered as much information as they could. TPM team focussed on some key problem areas to begin with. Such as:

- First, the availability – time of the machines was calculated, after subtracting the time lost on breakdowns, and on waiting for raw material and instructions.
- Next, the actual operational performance of each machine was compared to what its design claimed it could deliver.
- Finally, the quality of the output was considered.

“We have already moved from breakdown to preventive maintenance, and are aiming at proactive maintenance. We have identified TPM as a major initiative”, Concludes S.D. Kulkarni, CEO, L&T. It will not only boost our productivity levels, but also augment employee involvement in improvement activities.”

To enhance the quality of life of people, certain hard steps need to be appreciated.

4.6 Planting Success, Exploring Future

- Challenges for India and perspectives on tackling them in the context of industrial competitiveness and productivity scenario.

In this issue, challenges for India and perspectives on tackling them are presented by eminent industrialists / businessmen of India.

There is a new buzz about India in the international business community, emerging as a preferred destination for foreign investors. India is considered as one of the fastest growing economic of the world.

The stock market shows no sign of stopping as it reaches new heights (2006). But all this good news sometimes masks some of hard realities and a deeper dissatisfaction.

India’s infrastructure deficit is gigantic, Country needs to $ 10 billion over the next 10 years to get its infrastructure unto acceptable levels. Indian companies pay thrice as much for power as their competitors in China, yet suffer more outages. According to an estimate by the Confederation of Indian Industry (CII), it is cheaper to import steel from Europe to Mumbai than to transport it from Jamshedpur.

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The benefits of the telecommunication and computing revolution that has taken urban India by storm over the past five years.

There are other such statistics, most of which serve only to scatter the perception that India is on the way to becoming the economic, intellectual and cultural powerhouse. In other words, India is one Big Challenge.

*Creation of income is essential for the creation of markets. Taking this analogy further, the creation of markets is sine qua non for a vibrant economy. But the policy planners often had seen to lose sight of this tautology.*

Charity isn’t a sound business model, but development is. And in this, 21st century, profit no longer comes with innuendoes of exploitation. Some of the suggestions are radical in nature and others are delightfully simple, says Arun Purie, Chief editor, Business today.

In this issue, some of the finest Indian minds, in the world set out their own blueprint for achieving these goals that were once considered impossible. It is heartening that most of these visionaries are from the world of business. Some of the themes in this issue are discussed here and indeed, to the very basic issues of development.

### 4.6.1 Issue: An economic super power

Many Indian companies are winning international recognition for manufacturing excellence and in information technology; India has become a brand to reckon with. Most global corporations have established a presence in India, either for manufacturing or for research and development (R&D). A lot of groundwork still has to be done. Exciting as the prospects are, the road ahead is extremely challenging. India certainly has the luxury of having the essential endowments and competencies that go into building a successful, global economic power. What India doesn’t have is the luxury of too much time, Says- Kumar Mangalam Birla, Chairman, Aditya Group.

### 4.6.2 Issue: Globally competitive Indian company

A liberal economic environment has seen phenomenal growth rates over the last decade and at half. Indian companies have started making their mark on the world map. This ensured that they could respond to challenges of new technologies, trends and changing customer needs.
Toyota Motors, through a constant focus on quality, innovation and process efficiency is close to reaching the summit of international auto industry.

Several Indian companies will have acquired a considerable level of scale and competitiveness on the world scene and is destined to be the growth engine of the world economy.

Globalisation has changed the current economic landscape and while it has opened up a box of opportunities, it also exposes us to several challenges.

With trade barriers continuing to evaporate and access to new technology, getting simpler, the world, in the not too distant future, will become a common market place. Everyone will compete for the same market and the same consumer and only the fittest would survive. The key, however, will be innovation and a global mindset.

Companies will need to invest more and more in research and development and acquiring business know-how.

Indian companies that can acquire knowledge quickly and adapt to or create new technology will have a clear advantage. Companies that move into completely new product categories and business segments and create new demand will be able to seize growth and profit opportunities.

Last, but not least, Indian companies must be able to create powerful global brands which are one of the key drivers of growth for a top company. The government will play a critical role in this by providing adequate policy support and checking the infrastructure in efficiencies. Indian dream into reality is only a matter of time, believes that there are exciting times for the Indian economy, says Sunil Bharti Mittal, C& MD Bharti Enterprise.

4.6.3 Information Technology Era: Future hope –Impacts and Implications

At the stroke of a computer key people can enter into a transaction for goods, services, stocks, financial and currency deals from one corner of the globe to any other corner of the world.

Boarders and time zones become irrelevant with the new communication revolution. The rapid technological advances have created new opportunities for trade that no country can afford to miss. As trade barriers shrink, and trade policies disappear, most

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76 Khaddar, Dr. Jameel Ahmad, Synergy, S.P.University, V.V.Nagar, 3(1&2), (Nov.’98 –Dec.’00), 1-10
countries find integration of their economies with rest of the world economy beneficial, heading towards *borderless world* with free flow of trade and resources.

The rapid industrialisation and increased production, improved quality and services helped these economies achieve an enhanced exports initially to part balance the imports and ultimately to have a positive trade balance.

There exists a strong positive correlation between economic prosperity of a country and its stock of large companies. These large firms are primary engines of economic progress. They create and distribute a nation’s wealth, innovate, trade and generally raise living standards.

Dr. Jameel Ahmad Khaddar in this study tries to analyse the reforms process and its impact on *industrial economy* both domestically and internationally, while integrating own economies with the *world economy*. The domestic firms are also benefited from the presence of MNCs, have access to latest technology and management practices which help firms *improve productivity*, develop new products and create competence.

### 4.7 Technological Innovation and Competitiveness

Changes in technological environment have a significant impact on overall functioning of the firms. Technological changes offer opportunities for improving industrial productivity / goal achievement or they might pose threats to the existence of a firm.

It is an ongoing process. Constant innovations are taking place all over the world that have a profound impact on products or services being offered. These changes also affect the use of raw materials and procurement process; have different impact on different stages of industrial evolution. The active R&D efforts to bring about product improvements, innovations, or technological breakthroughs can play a vital role in extending the life cycle of a product.

The author notes that technological changes may improve the overall functioning of some firms by extending their product life cycle or improving the productivity or by improving the level of services to the customers.

They can also cause an altogether new industry to emerge. For example, CNC machines and use of industrial robots have changed the structure of the industry / firms and have industrial productivity tremendously.

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It is therefore imperative for a firm, to be prepared for the ongoing and future technological changes to remain competitive in a highly volatile business environment, whether technological change comes; fast or slow depends on multiple factors, which influence the pace of innovation. Accept the technological change and innovation for attaining competitive advantage.

**L&T** for example has adopted “Kaizen” as company-wide exercise to introduce newer ideas of routine work. The management asks for suggestions from the employees and tries to implement them wherever possible. “Kaizen” means “suggestions for improvement”. It is quite possible that for the creativity of the employees of the firm could result into potential innovation of the future. Firms will have to use their management skills to remain competitive in the rapidly changing technological environment.

### 4.8 Literature Review: National Scenario

Productivity enhancement means and measures

In this section various sources of literatures, and previous work carried out are reviewed to help draw conclusion in the context of enhancing Industrial Productivity to draft road map for the industrial estate considered for research study approaching the future improvement potentials.

#### 4.8.1 Technology helps to improve the quality of life: e-Learning model-

*Virtual learning facility*[^78]

Sanjeev Shah, ACA, on the ‘e-learning’ model of Gujarat discussed at a global forum. One major advantage of the *e-learning model* is that a large number of participants from across the state can interact on the same platform. It was a case study based on Valmiki Ambedkar Awas Yojana “VAMBAY”, which has been successfully implemented in Gujarat through that *e-learning model* says, Hiral Dholakia the author.

The implementation of this model was an apt example, which could be replicated elsewhere too. The scheme was meant to provide housing finance to urban poor but it was not popular with the masses. (Recall, Nobel laureate Mohmad Yunus’s micro-finance- micro-credit model). It was a joint venture by ISRO and the state government and expertise were invited for live interaction. Also there is a better transmission of the message through this medium. Moreover, it helps to save travel cost, time and energy of functionaries. Also there is a better transmission of the message through this medium. Moreover, it helps to save travel cost, time and energy of functionaries.

This system further helps to ensure transparency and provides necessary information to all. Thus it helps enhance performance of the system and increased productivity to improve the quality of life.

4.8.2 Most productive work day - Manic Tuesday

Surbhi Gupta reports on ‘Manic Tuesday’ in this article by referring various survey conducted in different parts of the world has come to the same conclusion: that Tuesday is the most productive work day of the week and Friday, the least. Tuesdays give enough energy to complete the week’s everyday jobs in one day and so Saturdays make think of late mornings and social visits.

A Canadian research firm found that Tuesdays are most productive- from nation’s 1,000 largest companies, US website: careerwomen.com reached the same conclusion and added that 5 am to noon was the ‘most productive’ seven hours.

Accountemps put the figures of productivity of 54 percent for Tuesdays and only two percent for Fridays.

- Chairman of Accountemps said, “Mondays can be hectic because there are frequently more meetings scheduled. By Tuesday, employees may be better focussed on day-to-day responsibilities”.

- Bank- employee Dhara Shah for one admits as much. “By Friday, my work tempo completely goes down as I get busy- making plans for the weekend”.

- Siddhartha Singhee, head, an educational enterprise adds, “By Saturdays, I start feeling bahut ho Gaya”. I even try to wrap- up early so I can go out in the evening.

- Mondays, too, are spent in meetings and fixing up schedule for the rest of week. So basically it is from Tuesday that I get back on track”.

- In India, we don’t have a five-day week like in other countries. So here, the weekend mood sets in by Saturdays.

- Malti Mehta reacts in these words “meanwhile, there are the ‘creative’ exceptions, literally. “Jab mood hota hai tab kar lete hain”, is how Malti Mehta replies to worker productivity. A television producer, she further says, “It is the mindset which makes you work in a pattern. While on the job, I look forward to rejuvenation over the weekend.

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4.8.3 Poor diet at workplace affects productivity: Food for thought-A study

Kounteya Sinha explains the importance of ‘food for thought’. A new study by the International Labour Organisation (ILO) has found that poor diet on the job is costing countries up to 20% in lost productivity, either due to malnutrition or excess weight and obesity. The study says India loses $10 to $28 billion or 3% to 9% of Gross Domestic Product (GDP) due to low productivity, illness and death.

The ground-breaking study, the first to examine workplace eating habits, also says that better nutrition in the workplace can raise national productivity rates, while workplace meal programmes can prevent micro nutrient deficiencies and chronic disease and obesity.

According to ILO, all these can be achieved by workplace managements with modest investments that can be repaid in reduction of sick days and accidents. “Poor meal programs and poor nutrition underlie so many workplace issues: morale, safety, productivity, and the long-term health of the workers and nations. But few workers are happy with their meal arrangements” said Christopher Wanjek, the author of the study. He added: Too often, food-at-work is seen as afterthought or a hindrance by employers and is often a missed opportunity to increase productivity and morale. Canteens, if they exist, routinely offer an unhealthy and unvaried selection.

Vending machines are regularly stocked with unhealthy snacks. Local restaurants can be expensive or in short supply. Street foods can be bacteria laden. Workers sometimes have no time or place to eat or no money to purchase food.

*Developing nations need to break the cycle of poor nutrition, It is important to note how prevent iron- deficiency is and how cheaply it can be remedied. Low iron, which affects up to half the world’s population, is tied to sluggishness and diminished cognitive ability and thus accidents and low productivity.*

4.8.4 Job analysis - Improve Industrial Performance

Arvind Deo explains how job analysis can help improve performance. Job analysis involves a systematic study or analysis of each job in the organisation.

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81 Deo, Arvind, Times of India, Ahmadabad, 30 October, (1997), p.v
It aims to find out the content of the job, how the persons on the job is performing, and also what are the best qualifications needed to perform the task and the optimum conditions required to get the best out of the person entrusted with the job.

- According to Michael Jucius, “Job analysis refers to the process of studying the operations, duties and organisational aspects of jobs in order to derive specifications, or as they are called by some – Job descriptions”.

- According to Flippo “Job analysis as the process of studying and collecting information relating to the operations and responsibilities of a specific job”.

- According to the “United States Department of Labour, job analysis is a process of determining by observation and study, and reporting pertinent information relating to the nature of specific job.

- Job analysis is detail scanning of the job to know the duties and responsibilities associated with the job. The basic purpose of job analysis is to distinguish jobs in terms of responsibilities, duties, skills, and educational level, material needed and also to analyse the relationship of the job under study and other jobs in the organisation. Identification of the job enables one to trace different features associated with different jobs and enables fixation of payment.

**Methodology:** The method of questionnaire provides employees set objectives through well-structured questions. They are needed to give their answer precisely in the form of “Yes” or “No”. The interview and observation methods are blended together.

The information is obtained by observing the employees during their performance to assess the skills demanded, acceptable level of tolerance, work type, duties and responsibilities. Short questions can be asked to gather more information personally from the performance.

**The author’s observations and suggestions are:**

a) The comprehensive data collected in the course of job analysis becomes the input for improvement in the organisation. It enables manpower planning as job analysis defines the duties and responsibilities associated with each job.

b) Job analysis determines the standard level of performance for every job, thereby, training absorbs skills enabling the organisation to improve productivity and creating a strong platform of employees to grow and to prosper in their jobs.
c) Performance appraisal can be done when a job analysis is carried out as output in not only the norm to assess the effectiveness and efficiency of employees.

d) Job analysis provides a package of comprehensive details to carry out the performance appraisal to the satisfaction of jobbers.

e) Job analysis segregates the type of jobs, the hazards involved, and the risk associated with the work, enables better layout of the organisation to safeguard the health of the employees, help reduce the frequency of accidents, mishaps in the organisations.

f) Job analysis also helps to reduce internal conflicts with management, enables matching jobs, so duplication of services and escalating costs can be saved.

g) Job analysis also provides data for motion study, time study, and work-study, used to improve the motions, to reduce the time to complete the job effectively.

h) Job analysis describes the work contents, duties, and responsibility performance, enables improvement in jobs by introducing novel and creative, ideas.

i) The analysts should be expert persons having the skills to grab all information relating to jobs and also to probe into the employees' psychology to know his emotional behaviour.

Job analysis is a descriptive, wide in its coverage, can be used on day-to-day operations from systematic planning, improvement and reshuffling of responsibilities duties and provide scope for innovativeness.

4.8.5 Ergonomics can reduce employee breakdowns - Ergonomics at work help increase productivity

Raheel Dhattiwala explains ergonomics at work. “Do you feel like flinging chair out of the office window? Or perhaps crush the mouse after an eight-hour shift?

The reason may not be that your demanding bosses breathing down your back, but the old fashioned furniture and hardware that you are forced to use. In short, they are not ergonomically designed. Ergonomics is the engineering science working on the physical and psychological relationship between machines and the people who use them.

Ergonomics aims at improving efficiency at work by taking into account an average person’s stature, physiology, speed at work and stress factors. If this sounds good, then why, most offices shy away from investing in ‘scientific furniture. ‘Ergonomics increases the cost of a workstation so drastically, because it requires the services of an ergonomist which raises the overall cost, says Prabir Mukhopadhyay, an ergonomist and faculty at National Institute of Design (NID).

82 Dhattiwala, Raheel, TN N, The Times of India, Ahmadabad, 16 December (2005)
The main factors that make ergonomically designed furniture dearer are the mechanism and material used in customising a workstation.

Industry experts estimate that only 30 percent of the total BPOs in Ahmadabad and Gandhinagar give importance to ergonomics while setting up their office furniture—because of the cost. Production of ergonomically designed workstation will take into account not only the anthropometrics dimensions (measurements of the human body) of a worker but also the material used.

Ergonomics can reduce employee breakdowns and can perform consistently to achieve highest level of productivity that the workstation provided to work comfortably and conveniently with higher performance with less or without fatigue and body aches.

4.8.6 Designed to Enhance Productivity: Small steps, big profit- Improving office productivity was never so simple

We live in a time when cost and space constraints are on the rise. But cutting corners should not come at the cost of hampering the functionality of office environment, especially because the office environment contributes substantially to the productivity of individuals working in it.

Building an office will require you to manage the two aspects of cost and design. The best deal you can strike is building an office that is cost effective, and yet is ergonomically designed to enhance productivity.

*Productivity refers to the useful output generated by an employee in the workplace.*

A workstation designed with the right thought, will help in increasing the efficiency and thus productivity of the employees. This will reflect in the organisation’s profits. Ergonomics at workplace help increase productivity. Planning an office calls for:

- Careful planning of office layout,
- Understanding the profile of the user,
- Space required per person,
- Desired level of privacy and interaction,
- Comfort in planning with elements like the telephone and the computer/ laptop.

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83 Outlook, Godrej Interio ‘Improving office productivity was never so simple’ 26 February (2009)
Furniture is an important part of office environment. Consider this: We spend about one third of our lives at our workplace. Therefore, an office that is planned to enhance comfort and provide a safe work environment will ultimately contribute to increased efficiency. Furniture elements like, workstations, chairs, desks and storage options have a strong link to employee health and productivity. Ergonomically designed workplace solutions examine the worker’s relationship to the work environment. They take into account physical, biomechanical and psychological needs. Elements like screens to provide the right degree of privacy, seating options that reduce back fatigue, attractive colours, finishes and profiles enhance the aesthetics, ergonomics consultants also work on the light, ventilation and acoustics of the space, add to the comfort and optimise efficiency.

**Small steps, big profit: Ergonomics at work and Human comfort**

In the long run, it is the employee who will laugh all the way to the bank. Better working conditions mean less chronic health problems, which in turn reduce absenteeism, and increase **efficiency** and **productivity**. The net result will not only reflect on your balance sheets, but also in the **goodwill** you generate among your employees.

*Ergonomics can reduce employee breakdowns, increase productivity and improve organisation’s balance sheets and goodwill.*

**4.8.7 Flexible Timing at workplaces- A radical practice**

Rahul Siddhu in his article argues on *flexi work timing*, “Let’s get flexible!” as most bosses are just looking for just a reason to blast for being late to work! Checking in late could just add to the heat and make life worse. But there are some companies that offer a novel solution. They call it “*flexi work timing*”.

What they propose is that come into work when you wish to, as long as work gets done. This concept has been successfully adopted in the west, as most employers abroad are more concerned about the end of result, irrespective of the number of man-hours spent in the process of achieving the same. Increasingly, workers want to balance their work and personal lives in new ways. Therefore, organisations are exploring ways of being more **flexible** and **competitive** in the current socio-economic environment. Flexi-time allows employees to work for the same number of hours each week but their schedules are modified according to their convenience, explains Sunanda Raman, Manager, HR, Indian sub continent.

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Is the Indian workforce mature enough to adopt such a radical practice? The answer to that may not be completely positive, as most employers in India perceive their workforce to take advantage of this by showing up late everyday and disregard their duties and responsibilities.

This is possible only when:

• The concept of flexi timing practically works only when the criteria are well defined and the employer is able to brave the cumbersome process of managing flexi-time workers.

• There are times, however, in companies that follow normal working hours, where many employees feel guilty of not having worked enough in a day. In such companies, flexi-timing can never be incorporated; as they may not be able to accept such a change, answer to this is proper time management and rotation.

Arunisha Sengupta, V.P. Corporate Tops Group, explains they adopted flexi-work timing, about a year back but not for special cases. The muster signing culture still exists. In fact swipe cards have just reinforced the need for spending a certain number of hours at work. Adopting a flexi work culture we are not mimic the west talk about. Since personally feels that there is a global need for such a practice and it won’t be long before most organisations will have to adopt this practice.

“Being in this office does not necessarily mean working all the time. First one has to become productive and measure productivity in 9 to 5 jobs, before it can actually consider such flexible practices”, says Zainul Abdin Khan Business Head, Consortium Executive Search Pvt. Ltd.

At the end of the day, it is the employee’s output that matters to all, so why not give them the freedom to choose their work timings, says Rahul Nanda Tops Group.

Challenges: Considering the fact that every new concept has its own share of problems in implementations, this one is no different.“The benefit of flexi-timing is that it helps in improving the productivity but the downside is that since the resource is not always physically present, it could delay crucial decisions”, explains HR team Kalpataru Constructions.

The challenge lies in how to extract ultimate productivity and how to make employees perform at par if not better than those who aren’t allowed flexi-work timings.
However, one school of thought believes that we need to have traditional working hours to maintain discipline in offices because if we do away with the fixed working hours then employees may take advantage of this, defeat the purpose of introducing such a practice. The concept of flexi work timing is gaining popularity at workplaces in India; whether Indians are mature enough to adopt it, finds Rahul Siddhu.

**Merits of flexi timings:**

- Helps in making employees responsible
- Curbs attrition
- Helps attract and retain talent
- Helps to create and foster a work culture that encourages employee empowerment.
- Enhances job satisfaction

**De-merits of flexi timings:**

- Employees may misuse this freedom
- Employee absence may affect the team’s productivity during core hours

**Do you think flexible timings should be part of the corporate world?**

- Yes, times have changed from the prototype of nine to five working hours. If the employees are ready to adopt flexible timings then it is in the interest of the company too, says Apoorva Ekbote, (21) student.
- Yes, as at times there are other important incidents that become your priority, say looking after your family. In such cases, flexible timing can be of a great help, says Arpit Ashok Dube (18), BBA student.
- Yes, because long and odd hours at the working place can affect people’s personal and professional lives, says Bhavesh H Thakar (29), Bank Cashier.

There is now a considerable body of research that shows how the introduction of mutually beneficial flexible work arrangements can improve organisational outcomes while providing a better work / life balance. This is why organisations are developing new ways of working to help the business, and its employees achieve their goals.
4.8.8 Virtual workplace wave: The Future of work shifting patterns

Work in the future which means more **flexi-hours, part-time assignments** and **home offices**. There is a change happening in the workplace. Some call it the coming revolution, a post industrial phenomenon where work is no longer confined to fixed office hours. The new possibilities opening up are of working from home, flexi hours and part-time work.

The vehicles for this new dispensation range from companies involved in Business Process Outsourcing (BPO) and the more recent Knowledge Process Outsourcing (KPO) to agencies that will provide temporary staff at even very senior and technically qualified levels, so that companies are not burdened with a large permanent labour force. The most visible change in the nature of work and the one with the greatest effect on the Indian economy are of course, outsourcing.

The outsourcing of software development work and later BPO moved jobs from the US and Europe to Bangalore and Hyderabad.

The boundaries between work and non-work have become very blurry, in part because of organisational “reengineering” (the need to do more with less) and in part because tools such as email and mobile/wireless devices have made it relatively simple and inexpensive for people to be accessible for all of the time”.

**Microsoft:** Business week reports that “Microsoft has embarked on a programme aimed at getting more employees to work from home and other off site locales joining the growing ranks of companies to catch the Virtual–Workplace wave. About 14 % of the US workforce gets its job done at a home office more than two days per week.

**IBM:** At IBM about 42 percent of the company’s 3, 30,000 employees work on the road, from home, or at a client location, saving the computer company about $100 million in real estate related expenses a year – “It’s a cost effective.” These all largely because of developments in technology the possibilities of work are changing even in India.

For example, in the print media, reporters meet the people, conduct the interviews, doing home work on internet and typing out their stories on their laptops before e-mailing them to office. It saves time on unnecessary travel, which reduces the travel cost and hence cost effective.

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85 Agrawal, Yogi, Business India, 8 April, (2007), 133-134.
Employers have to provide for practices like flexible work timings, part-time work and working from home.

**Fortis Health Case:** At Fortis technologically, widespread use of tele-medicines is likely to have significant impact on the delivery of health care and therefore, will have implications for people in the industry. The great change came with industrialisation.

Now, in the post industrial age, the possibilities of where and when to work are changing, the change has begun to be felt in India. We have provided opportunities to people to work from home, usual flexible timings to align to people’s life needs and also for part-time working, Says Anand of TCS.

Even at ITC, which is generally much more conservation in changing work practices, the need for change is acknowledged. The company sees the trend towards part-time jobs is likely to increase in future, Says Prabhakar.

However, Hazuria of Forties does not yet – see a great boom in such trends. She feels that working from home would be limited in India. “It requires a major mindset change among employers and employees, as well as work places”.

**Contract Work:** One innovation that has been tried and has huge potential is contract work/labour or “temping”. The health care industry is also moving the value chain to higher value added services being out sourced. Working from homes and flexi timings could see an increase in industries like; IT, consulting and BPOs.

**Scope:** There is not much scope for such shift to self employed people in industry since the capital costs are high and the value added low. The major change taking place is in the services sector whether it is salesmen connected to office by Mobile and Internet. The workplace is changing and companies that seize the opportunity will see its advantages both for them and for their employees.

**4.8.9: Globalisation leads to better jobs**

Sarang Panchal, ACNielsen, South Asia executive director – Research firm reported that, Globalisation has not only made it a small and better world to live in, it is also providing better job opportunities for the people – an idea that has been vouched for by more than three-fourths of Indians in a recent survey.

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In a global consumer opinion survey conducted by research firm ACNielsen, Indians have emerged as the strongest proponent of the theory that “globalisation means better job opportunity”.

As many 78% Indians agreed that globalisation helps them to shape their careers better, followed by 73% in Philippines and 71% in China. Over half of the consumers surveyed in Latin America (57%), and Asia Pacific (53%) said global businesses in their markets bring greater job opportunities and better working lives.

While six of the top 10 countries in agreement to globalisation bringing increased job and career opportunities hailed from the Asia Pacific, people in Greece and Thailand were comparatively sceptical, ACNielsen said.

Today, globalisation and in particular the internet, has transformed commerce tremendously, creating new ways for retailers and businesses to market their products and interact with their customers, and for job seekers and recruiters to seek each other out” ACNielsen Director Sarang Panchal said.

The report points out global integration has impacted every sector and every aspect of today’s lifestyle as it provides increased access to products, services and opportunities to people in relatively less developed but fast growing markets. While, Indians said globalisation was improved the standard of their lives, they also believe that it has had an adverse effect on the value system. Globalisation can improve industrial productivity to a large extent if adopted whole enthusiastically.

4.9 **Productivity is the key to competitiveness**

The processes of economic reform have created greater compulsions for India to be productive and competitive than ever before. in certain sectors of the economy. Rapid advancement in technology, operations management, and the techniques of productivity has undergone a change over time; N.P.C. of India has made several impacts, by creating productivity awareness. Promotion of productivity, its awareness creation and benefit able implementation should be the corner stone of productivity movement. Productivity in its new manifestation as a culture of accepting and bringing continuous change through team work having continued focus on the customer needs.

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It is necessary that the message of productivity of percolate down to every section of the society. The attempt should be made to galvanise to bring out the best of the people as well as of the institutions. Basic to the productivity approach is the conviction that there is no limit to improvement and that even the best can be improved. Increasing productivity has to emerge as a new national priority, where the efforts of all converge to accelerate the process of economic growth and raise the standards of living of people. India’s business organizations will have to improve their performance to ensure their survival and growth in highly competitive world, with focus on production of quality goods, in a cost effective manner and by generating enough surpluses to plough back into the business to further improve productivity.

The crucial ingredient is the preparedness of the human agent to change. Productivity is the key to competitiveness, which in turn is an indicator of a country’s potential for economic growth in the short to medium terms, says the authors.

4.10 Literature Review: International Scenario

- Productivity enhancement means and measures
Managing and improving productivity is about meeting the underlying processes, the development of technology and the motivation of the entire work force to achieve higher productivity levels in key result areas. It ensures that all inputs and resources are directed to maximum effect. The issues addressed include those related to organisational culture, productivity management processes, technology levels, measurement systems, product and process design, quality system, reward systems and the competencies that are fundamental to achieving optimum performance and improved productivity.

4.10.1 Measuring sectoral productivity across time and across countries [2]

Arcelus F. J.and Arozena P., the authors analyse the evolution of total factor productivity (TFP) changes over time and across the 14 countries included in the OECD’s International Sectoral Data Base of two sectors considered essential to the economic growth of any nation, namely manufacturing and services. The basic unit of analysis is associated to the various sources of productivity change and included here are productivity fluctuations due to economics of scale, being constant of variable, to technical change and technical efficiency change. This paper has examined the evolution of productivity growth rates in manufacturing and services for various OECD countries during the 1970s and 1980s. In conclusion, the objective here is to
ascertain the adaptability of various growth strategies to countries at different levels of development. The study of these and other issues justifies additional research.

4.10.2 Exports, Imports and Productivity in Indonesian manufacturing sector [48]

Sjoholm Fredrik in this paper carried out the studies of Indonesian manufacturing sector and participation in international trade and its effects on productivity. The mechanisms by which technological change is achieved are: Increased competitive pressure, picture in imports, and Knowledge transfer through commercial contacts. There is a general belief among many economists that participation in international trade increases productivity. The available theoretical framework has long predicted that increases in exports would increase productivity.

Increases in exports, it was argued, increased the level of productivity through, for instance, utilisation of scale economies. Recent theoretical framework suggests that trade may increase not only the level of productivity but also the growth rate through its effects on technology. Firms may have to invest in training of the labour force, new machinery or own R&D to be able to use the foreign knowledge. The larger such costs, the smaller are the productivity gains. The results concerning the effect of imports on productivity growth are mixed. Indonesian establishments exporting parts of their output have shown comparable high productivity growth.

4.10.3 Productivity effects in Brazilian wage determination [6]

Carneiro Francisco G., the author in this article investigates the characteristics of Brazilian industrial wage determination using time series data for 22 sectors of Brazilian manufacturing sectors for 1985-93. The idea is to verify whether changes in sectoral productivity are relevant to explain changes in sectoral nominal wages. He has focused on the pattern of inter-industry experience regarding the relationship between wages and productivity in Brazil manufacturing. Recent work for a number of countries has found that wages do tend to differ between industries and firms even after one control for differences in skills and working conditions.

In conclusion: The overall result is rather important as it suggests that productivity gains tend to be appropriated at their source by strong trade unions. The econometric analysis provided some support for the finding of a positive association between changes in labour productivity and changes in sectoral industrial wages. Estimated
coefficients showed that changes in sectoral nominal wages are positively influenced by changes in prices, changes in the alternative wage, and changes in productivity.

4.10.4 The growth and convergence of manufacturing productivity in industrial and newly industrialising countries [25]

Lowe Poul and Elton Fernandez, the authors in this paper focus on the manufacturing sector of specific economies to examine “why their growth rates differ”. The technology gap approach is adopted to show the relevant role of technological change on national manufacturing productivity growth. The technological gap approach is adopted to show the relevant role of technological change on national manufacturing productivity growth. The innovation and diffusion are conflicting forces in the process of economic development. The former helps to increase the productivity gap between countries and the later helps to diminish this gap. This paper considers that these two forces might also act in the same direction as both help to improve the productivity of countries.

The assumption that technology is not a free good and that it depends on a country’s effort to acquire it has been confirmed throughout this investigation. In conclusion, the authors noted that the growth model tests support the assertion about the crucial role of technology in the process of economic growth. This investigation confirms that an open economy is very important for achieving a high level of manufacturing productivity.

4.10.5 The United Kingdom’s productivity gap - Its size and causes [20]

DMWN Hitchens and JE Birnie in this paper explain that the interest of economists, business people, trade unionists, politicians and other commentators in Britain’s comparative productivity is not a new phenomenon and has been present to some extent throughout the 20th century.

However, the recent attention to Britain’s comparative productivity performance in manufacturing is unusual in that it has broken with the traditional consent and proclaims that Britain is now undergoing a ‘productivity miracle’.

The U.K. labour force appears deficient in almost every dimension. British managers are more likely to be unqualified or, if qualified are unlikely to have any technical background, are translated into productivity shortfall.
Part of the problem is that questions of labour force training, and motivation and competence of management become mixed with those of the appropriateness and utilisation of machinery and plant size economies of scale, improvement in British labour relations and flexibility and hence in the prospects for productivity growth.

The authors concludes that UK productivity is substantially lower than that in the US and Germany. The productivity gap is correlated with deficiencies such as in labour training, the organisation of production and levels of managerial sophistication.

4.10.6 Economic reform and productivity growth: The case of Australia and New Zealand [14]

The authors Fare Ralf, et al explain the purpose of this paper is to study relative developments in Total Factor Productivity (TFP) growth between the Australia and New Zealand traded goods sectors. Authors use an approach that decomposes TFP growth into an Efficiency Change (ECH) and a technical change component. This decomposition provides extra insight on assessing relative productivity developments with the primary objective of modernising their economies, enhancing competition and improving productivity. Australia has generally recorded better growth rates than New Zealand in the post- reform period (as it did in the pre-reform period) as well as a better labour productivity record, similarly, comparisons can be misleading as no account is taken of the amount of capital per worker used in production. Labour productivity, output per worker, is the product of output per unit of capital per worker. In fact TFP is the engine that drives per capita output growth in the long run.

In conclusion, the results indicate that the primary sectors have achieved a much better productivity record relative to the manufacturing sectors of the two countries. The main problem with the productivity performance is a poor efficiency record.

4.10.7 Does productivity growth fall after the adopting of new technology? [21]

Huggett, Mark and Sandra Ospina they have provided micro-evidence on the question of whether productivity growth first falls and later rises after the adoption of new technology embodied in new equipment and micro evidence on productivity growth is key for issues related to aggregate productivity growth dynamics. This paper investigates whether or not this implication is a feature of plant- level data from the Colombian manufacturing sector. They focus on technology adoption embodied in new equipment. They find evidence that the effect of a large equipment purchase is
initially to reduce plant-level total factor productivity growth. These studies are part of a large literature on learning curves. They noted that existing studies have not focused on characterising falls in productivity growth at the time of an investment in information technology.

The findings imply that the adoption of new technology contemporaneously reduces total factor productivity growth and suggests that for aggregate productivity growth issues should concentrate on models where equipment investment occurs not only at new plants but also at existing plants.

4.10.8 Productivity growth and R&D expenditure in UK manufacturing firms [56]
Wakeline Kathanna in this paper analyses the relationship between productivity growth and R&D expenditure. A Cobb-Douglas function including R&D intensity is estimated for 170 UK firms. A positive and significant role is found for the firm’s own R&D expenditure in influencing growth. Many of the ensuing studies examined the determinants of productivity at an aggregate level, either by country or by sector.

*Inclusion, the R&D expenditure of other firms in the same sector does not improve the results - other sector-level influences may be more important. However, the relationship between productivity growth and R&D intensity was also found to be very sensitive to the inclusion of sector dummy variables, indicating an important role for different sector conditions in explaining variations in productivity growth.*

4.10.9 Policy reforms and productivity growth in India’s energy intensive industries [30]
Mongia Purna, Katja Schumacher, and Jayant Sathaye, in this paper, authors assessed the impact of policy reforms on total productivity growth in India’s energy intensive sectors. They relate changes in productivity indices to changes in technologies, processes and production conditions, which policy reforms helped bring about.

A major finding of this paper is that overall productivity growth in these industries was quite low during 1973-1994.

In conclusion, the results show that total productivity growth in these industries during the period 1973-1974 was insignificant, although productivity growth varied across industries. Overall; policy reforms did not go far enough to significantly affected productivity growth in India’s energy intensive manufacturing sectors. This is the challenge to policy-makers to face in the future.
4.11 Industrial Scenario - Survival and Prosperity

In fact, an organisation is nothing more than a group of people whose activities have been planned and coordinated to meet certain objectives to produce goods and services to have a good chance to survive and prosper if it consists of the right people, to serve better, achieve status or to stretch their capabilities. Such as:

- **Human Resources**: They are concerned with the most effective use of people to achieve organisational and individual goals.

- **Human Resources Management**: H.R.M. is concerned with the people at work and designed to make expeditious use of their capabilities in industrial sectors, helps employees to develop their potentially their best to the organisation.

- **Organisational work culture**: It may improve the efficiency of human resources. Time management can go a long way in improving the work culture.

- **Effective leadership**: The ability to convince others to seek defined objectives willingly; it is the human factor which binds a group, motivates it towards goals.

- **Technological up-gradation**: Technology is the key to growth and development of any nation. The transfer to technology for value added processes from developed to developing countries is of mutual benefits to both countries.

- **Performance management**: It aims to improve the capabilities, performance and effectiveness of the human resources.

- **Corporate culture**: There must be qualitative compliance, the organisational culture and the leadership to assure good governance. The basis of any governance is rooted in the organisation culture and ethics. In an organisation where everybody is involved, no clause is required for corporate governance. Governance is simple where it is self-governed. H.R. professions have to take care to achieve H.R. excellence in a true sense, these approaches may be utilised in the enterprise.

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