CHAPTER-IX
CHAPTER - IX

TOTAL PRODUCTIVITY MANAGEMENT : SOME DIRECTIONS FOR STRATEGIC PLANNING

9.0. INTRODUCTION :

The economic competition is intensifying across the globe. As firms compete in a global environment, the need for integrating functions in organisation is being felt more than ever. Firms are realising that to sustain long term competitive advantages, competitive business strategies have to be linked to the functional strategies.

The world competitiveness report (1993) has reported a formula that forms the basis for assessing countries. This formula defines competitiveness as the ability to increase market share, profit and growth in value added, and to stay competitive for a long duration. As shown in FIG. 9.1, it focuses on the possession of factor inputs and the process in which the inputs are transformed to improve competitiveness. It also indicates that internationalisation accelerates the competitive process.

According to Ramasamy (1993), the world competitiveness formula provides a framework for countries and companies to focus their attention on the factors that affects competitiveness. The first half of the formula comprises of competitive assets. Traditionally, competitiveness was viewed as being dependent on possession of abundant natural resources and labour. This theory of factory comparative advantage rooted during 1800s to mid 1990s explain the growth of western developed countries.
INTERNATIONALISATION

(AGGRESSIVENESS’ & ATTRACTIVENESS)

<table>
<thead>
<tr>
<th>COMPETITIVE ASSETS</th>
<th>COMPETITIVE PROCESS</th>
<th>WORLD COMPETITIVENESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure</td>
<td>Quality</td>
<td>Market Share</td>
</tr>
<tr>
<td>Finance</td>
<td>Speed</td>
<td>Profit</td>
</tr>
<tr>
<td>Technology</td>
<td>Customisation</td>
<td>Growth</td>
</tr>
<tr>
<td>People</td>
<td>Service</td>
<td>Duration</td>
</tr>
</tbody>
</table>

FIG. 9.1: THE WORLD COMPETITIVENESS FORMULA
has now become practically defunct. This theory is now unable to explain the more recent economic performance of many countries.

During the last four decades, Japan, Hong Kong, Singapore, South Korea and Taiwan achieved impressive economic growth of more than 6% a year despite their dearth of commercially exploitable resources. According to a study done by Asia Week, business weekly, Singapore is now 18th richest country in the world in terms of per capita income adjusted for purchasing power. Switzerland and Sweden have according to the World competitiveness report (1993), the highest nominal per capita incomes among OECD countries, despite their small and expensive pools of labour. The vital link between the possession of natural assets and competitiveness is the transformation of the natural assets into competitive assets. This is achieved through high productivity by optimising the use of the resources.

The second half of the formula comprises of competitive processes. From the business point of view, customisation of product, and service, is of vital importance to competitiveness. The concept of business reengineering advocates the idea of radically redesigning or transforming processes so as to achieve dramatic improvements in performance. Essentially this means achieving high productivity from a company's business process.

In short, from both the view points of assets and processes, high productivity is vital for competitiveness. The various facets of productivity and competitiveness can now be integrated into a comprehensive framework showing their dynamic linkages. Ramasamy (1993) has developed this
framework which is depicted in FIG. 9.2. When assets and processes are efficiently managed and transformed, high productivity is achieved. This lowers the cost and produces products that meet or even exceed customer requirement. The consequence is greater competitiveness and larger market share.

The cause-and-effect relationship is not unidirectional, running from productivity to competitiveness. Instead of a static relationship, there is in fact a dynamic feedback loop as greater competitiveness leads to an enlarged economic pie for distribution. At the national level, this takes the form of a high GDP per capita, made possible by a high productivity-fueled GDP growth.

A high GDP per capita enables higher and better standard of living for the populace, the greater amount of wealth generated in the economy increases companies' profits. More profit leads to more investment in assets with better process and investment in productivity measures to obtain best results from them. The cumulative effect leads to even greater productivity growth and ultimately results in greater competitiveness.

Such a dynamic link has been shown to be particularly strong for the manufacturing sector.
Note: Thick line indicates link from productivity to competitiveness.

Slim lines indicates feedback loop from competitiveness to productivity.

FIG. 9.2 DYNAMIC PRODUCTIVITY COMPETITIVENESS LINKAGES.
It is now quite clear from the above discussion that productivity is the key to competitiveness. In FIG. 9.3 factors determining high productivity has been shown. Broadly the extent of productivity that can be achieved depends upon two major factors. The first factor is capital intensity, that is, the amount of capital (machinery and equipment, and physical facilities) available to each worker. The second factor is the quality of labour and capital inputs and the efficiency with which they are used or in other words it is the total factor productivity, the magnitude of which is determined by five major sources as follows:

(i) Education and Training (Skill level of work force)
(ii) Capital structure (Amount of physical assets)
(iii) Industrial restructuring (Value added activity)
(iv) Intensity of demand (Capacity utilisation)
(v) Technical progress (Advancement in knowledge innovation, qualitative improvements like work culture).

When an economy matures, total factor productivity will become the critical determinant of productivity growth. The "law of diminishing return" states that a continuous infusion capital beyond a certain point will lead to decreasing rate of contribution to productivity growth. Hence for productivity to grow at a steady state there must be an optimal capital - labour ratio supported by improvements in TFP (Total Factor Productivity). So it can be summarised that TFP growth is the
FIG. 9.3: FACTORS DETERMINING HIGH PRODUCTIVITY.
prime factor in improving total productivity growth and sustaining competitive advantages.

Total productivity management models developed so far are strategy deficient. The models available in literature are primarily appropriate for measurement and evaluation of productivity efforts initiated in an organisation. In this era of competition, most organisation are seeking for futuristic vision oriented business solution. Therefore, it has become imperative for many organisations to formulate and implement strategic total productivity management models which can facilitate corporate decision makers to plan, organise and execute such models.

In this chapter we have made an attempt to suggest a time based strategic total productivity management system to be applicable for the cement industry in India.

9.1. NEED FOR STRATEGIC TIME BASED TOTAL PRODUCTIVITY MANAGEMENT INITIATIVES:

The emerging views on total productivity management according to Mohanty (1997) characterises the following basic features.

* Organisations are adopting to a future of real-time strategic changes. These changes have many modalities such as inside-in, inside-out and outside-in. Inside-in changes emphasise on improving the existing products and services, reducing cost and improving productivity by way of minimising inputs. Inside-out changes bring the human system to challenge the existing rules of interaction within the organisation and with the outside environment. Outside-
in changes call for a whole review of the total business philosophy and processes both in the content as well as context (Mohanty 1996).

* Organisations are accepting the important behavioural role of multiple stakeholders in the process of adaptation and transformation.

* Organisations are attempting to create a culture for an open system learning.

This change in philosophy form an emphasis on stability and predictability to one of change and learning needs to be structurally interlinked. They refer to an organisation wide management system that emphasises on continuous strive towards improving values of processes and products to exemplify excellence and to provide competitive advantages.

He has presented a model which in its totality demands the following managerial emphasis.

* Recognition of the market forces.

* Understanding of the stakeholders expectations.

* Analysis of the relationships between the various processes.

* Identification of process change issues.

* Specification of the change parameters.

* Creation of an affirmative participative work culture.
Design of Total Cost Management, Total Capacity Management and Total Quality Management Systems and establishment of structural and temporal linkages between them.

In this present dynamic environment of business a production line performing at 110 per cent capacity or a brand name that generations are familiar with are no more the passports to profit. None of these makes for a competitive advantages any more. For none of them offers a way to captivate today's and tomorrow's customer. That's why there are many companies today who have woken up to the reality, that to be competitive, have become time based customer focused.

For a demanding, choosy and unforgiving customer whose priority is not to buy your product, but to find the most cost effective way of fulfilling her needs. How must companies respond? The answer is by attending on the customer, understanding customer's overt need, psychoanalysing customer for innermost secrets, intuining their slightest whims and then bring every available resources to bear on meeting those needs and even surpassing them meshed with a time based strategy.

It's the confluence of several economic forces that has made the customer the arbiter of corporate destiny, The choice empowered customer is now in a position to dictate terms. Particularly since consumer earning are rising rapidly and the saving rate dropping sharply-generating increasing amounts of disposable income, to be lavished on consumer products and services. However, the customer is spending wisely, not indiscriminately. Changing personal, social, familiar and cultural
influence for instance the advent of satellite TV and the information age bring with them rich, real time images of and data about global life style have made the customer an individualistic, iconoclastic and irreverent wielder of authority over the fate or corporates' attempt to fulfill their needs. In this new buyer's market the marketer has no choice but to make time based strategies, focused in three important areas such as customer, suppliers and competitors.

Today it's an era of fast moving consumer tastes, so the time based customer focused company will leap ahead of competitors in its ability to match its product specifications to what the market wants. And in order to do that, it must develop a flexible marketing system that can respond in real time to its perceptions of changes in the market place.

Focusing on three dimensions cost, quality and speed of implementation can help a company add value to the consumer.

Focusing on the customer will compel companies to create value with out over stretching their resources. And that will generate saving that can effectively transform them into cost leaders.

Quality as perceived by the customer, will lead the company to re-benchmark all its product, services and processes.

The time based competitors speeds up the implementation of new product to reduce the cycle time of product development. Thus they offer more new products in less time so that it can
quickly discontinue those that are discarded by the customer. This generate saving of the company.

In strategic planning literature much attention has been paid to the process of planning the way that objectives, policies and plans are formulated and then linked across levels of an organisation. A similar approach can be developed for total productivity management strategy. First however a new concept must be introduced called strategic time based total productivity management initiatives.

Strategic time based total productivity management initiatives - A strategic time based total productivity management initiative (STTPMI) is a major productivity effort that seeks improvement over a specific time period. It includes both quantitative goal and specific milestone: equally important, it can be applied to the entire organisation. Examples of STTPMI are “to improve quality by introducing statistical process control by 1998” and “to improve productivity by cutting work-in-process 20% by 1997”.

STTPMI should not be confused with productivity policies. Although both affect the productivity as a whole operates and address similar kinds of decision they differ in one aspect i.e. “time”. In many productivity strategy ‘time’ is the missing link to better strategies. First strategic time based total productivity management initiatives drive improvement and are inherently dynamic. They move the company as a whole in a specified direction and a quantifiable end. For example an STTPMI in the area of volume of production might be to increase facility utilisation rate to 90% by 1997. The corresponding policy might
be to add capacity increment that lag, rather than lead demand. So policies are static in nature and are little more than yes/no decision rules.

Second, while policies exist in every decision category STTPMI are more targeted. They are ranked and selected from a broad array of possible initiatives, pursued until the stated ends have been achieved, and then replaced by new efforts.

Finally STTPMI and policies differ in organisational impact. STTPMI can be used to involve all levels of the organisation. STTPMIs are more inclusive. For example, an STTPMI "to lunch a new product model by end of 1997" would require the active participation of all organizational level from top management to the shop floor. STTPMIs thus serve two critical roles. They provide a mechanism for changing policies that are not consistent with productivity improvement strategic priorities, and they drive continuous improvement. The first role links STTPMIs with the existing models. If for example a company's primary priority is high quality but its pay system is keyed to the quantity of product produced then an STTPMI can be used to better align the compensation system and productivity needs. Such an STTPMI might require the adoption of quality based piece rates with in a specified time period.

STTPMI also ensures the improvement efforts continue over time. In the example above, the new wage policy meshes well with the objective of high quality required for productivity improvement. But other STTPMI aimed at adjusting the compensation system so workers are paid on a term basis or are rewarded for multiple skills might advance quality still further. The existing approach to improve productivity would not require
these efforts because its ultimate goal, alignment was already obtained through the new piece rates.

9.2. OVERVIEW OF THE INTEGRATED FRAMEWORK:

The existing approach to total productivity improvement strategy can now be combined with STTPMIs to form a more encompassing, integrated framework (FIG. 9.4). The new framework also incorporates ideas from the strategic planning literature to ensure that sufficient attention is paid to the process of planning.

Like the established models this approach begin with business strategy which is time based and customer focused and then moves to the choice of competitive priorities which are again customer oriented and time based. At this stage the difference is due to customer oriented and time based approach. All the priority like quality, cost, delivery, flexibility services remains same as the traditional model but priorities are time based and customer focused. In the next step however priorities are defined more narrowly and precisely. Each is expressed in disaggregated form. Polices to improve productivity and STTPMIs then come into play. Both operate a level below strategic priorities. Policies are decision rules, they provide overall alignment and are changed frequently. STTPMIs however, are developed and implemented continuously, new ones are introduced and others are completed. They serve as foundation for planning. STTPMIs are linked in two ways. First when productivity policies fail to support organisational strategy, STTPMIs are used to correct the misalignment. This is improvement because it ensures that there is a vehicle, aside from sweeping policy pronouncement and broad strategic
FIG. 9.4 AN INTEGRATED FRAMEWORK FOR TIME BASED TOTAL PRODUCTIVITY MANAGEMENT STRATEGIC PLANNING
directives that brings productivity policies in line with business needs. It also provides the explicit link between current and expanded productivity strategy. Second when policies and priorities are consistent STTPMIs are used to improve further areas that are critical to maintaining competitive advantage.

Eventually programs and projects are required for effective implementation. Programs are tactical initiatives that support STTPMIs, projects are the building blocks of successful programs. Both provide additional detail and directions. For example an STTPMI to reduce defects 50% by 1997 through the introduction of statistical process control is likely to require extensive education and training programs. Such programs will usually have to be tailored to individual section of the plant and rolled out on a project by project basis.
9.2.1. PLANNING METHOD:

At the heart of the model is a simple goal the selection and development of an effective STTPMI for a given time period. The process is complex. It involves four stages of distillation or filtering: disaggregation, decomposition, translation and evaluation.

Disaggregation is the process of refining the traditional strategic priorities into more focused categories. Decomposition is the process of specifying the activities or practices those are likely to contribute for improvement in each refined priority based on cause and effect relationship.

Translation is the process of developing a list of potential STTPMIs using the points of leverage identified during decomposition.

Evaluation is the process of company and assessing all potential STTPMIs to determine the ones that will actually be pursued. Once STTPMIs, have been selected the same four steps are repeated to identify supporting programs and projects.

9.3. IMPLEMENTING TIME BASED TOTAL PRODUCTIVITY MANAGEMENT STRATEGIC PLAN IN THE CEMENT INDUSTRY:

In this section a clear guide line for the practitioners is given to implement the time based total productivity management strategic planning in a cement industry. The following analysis will apply the STTPMI to a process industry manufacturing a single product i.e. cement.
* **Describe the business strategy:** Cement industries are in the business of manufacturing a single product and its variations i.e. cement. The company generally has a workforce more than a thousand and managers more than hundreds. The production process is labour intensive and worker and management skills are the prime determinants of success. The cement industries compete against larger, integrated producers by offering low cost, better quality, superior service and responsiveness. The strategy in this business has several elements, including quick turn-around on short notice and customisation.

* **Identify and rank the strategic priorities of the business:** A cement company's priorities can be ranked as follows. The priorities are all customer focused and time based.

  * **Quality:** For construction firms which account for 90% of the total sale, strength is most important.
  
  * **Cost:** The total cost is important to the customers. The customers are willing to pay a little more for superior service, responsiveness and quality. But this also within a limit.
  
  * **Delivery:** The cement users want a faster availability of the product in the market. Customer always wants to go for fresh cement to avoid any complications.
  
  * **Flexibility and Service:** These can be further defined as rapid responsiveness and customisation. This should be available on short notice.
  
  * **Disaggregate the top two or three priorities:** In a cement industry first strategic priority is quality. So the cement companies are to satisfy the customer about the performance of
their product. The customer wants reliable and durable products from the company so the quality control is to be given first priority and sales persons are to be technically skilled to satisfy the customer.

Cost is also an important competitive priority. Here cost includes initial cost, operating cost and maintenance cost. All these costs are to be kept low for achieving an edge over the competitors.

* Reviewing existing manufacturing polices for consistency with the disaggregate priorities: In the cement industry the existing current manufacturing strategy is as follows:

* **Capacity:** In cement industry capacity is added in chunk because the investments are high.

* **Facilities:** Usually cement industries are located nearer to the raw material source and as far as practical closer to market.

* **Technology:** Cement industries conducts little or no basic research, but does research on quality control of their product. Cement industries borrows freely from technology developed by other manufacturers.

* **Vertical Integration:** Integration is limited since it is a process industry and produces cement. Backward integration is possible towards raw material supply.

* **Sourcing:** Cement companies usually are owned by groups like Birla, ACC, L&T and so on but some state managed firms like IDCOL (Hira) also exists. So many companies in India have an
arm's length relationship with other companies in the larger group to which it belongs.

* **Production planning and Control:** Scheduling and planning should be done in a scientific manner to avoid large scale loss due to poor planning.

* **Quality:** Cement being a chemical the proportions and quality is to be maintained properly to maintain its homogeneity. Quality control in and quality tests are must for cement industries.

* **Work force:** Motivation and retention of skilled work force is most essential in the cement industry. Innovative shift schedule and overtime is to be used judiciously to meet the demand.

* **Organisation:** Cement industry is characterised by a management with hundreds of managers and a large work force to command.

* **If priorities and polices are not aligned, develop strategic time based, total productivity management initiatives to ensure a better fit:** For example, if a cement company has a capacity too tight to meet the strategic goal of quick turn around, then to resolve the capacity problem, the company might add equipment and run at lower utilisation rate, develop semi automatic process, or introduce a continuous improvement program that reduces bottlenecks and adds to effective capacity every year. Each option can be framed as an STTPMI, with specific mile-stones and improvement targets. An STTPMI might also be developed to improve production planning and control. One possible formulation would be to introduce a
computerised order entry and scheduling system to handle 'X' percent of demand within five years.

* Once priorities and policies are aligned, develop additional STTPMIs to improve current competitive position:
As a first step, decompose the top two or three priorities so that cause and effect relationship are better understood.

In a cement industry quality depends on the production process and raw material used. The ability to quickly monitor the quality, during the process, high level of employee skill, instrumentation and process understanding and deep knowledge of the actual level of quality is needed. More refined analysis is needed to determine the precise contribution of each factor.

* Generate potential STTPMIs: One STTPMI might be to document and codify key manufacturing processes within the next five years'. With particular manufacturing processes (i.e. Clinker production) specified in more detail. This STTPMI would capitalise on the knowledge already in worker's mind, while further leveraging it to the company's advantage. Quality would undoubtedly become more consistent as well. A second possible STTPMI might be "to introduce inter organisational computer systems linking the company with key customers by the next two years." This proposal would tie the company even more tightly to its customers, ensuring that order information was timely and up to date. It would also capitalise on company's deep knowledge of customer's schedules.

A third STTPMI might to "to introduce semi automatic or automatic processes in some selected area by two years", while the forth STTPMI might be "to reduce waiting time by 20% within
three years at the most time consuming area. Both the later approaches are designed to compress cycle time, improve delivery performance and enhance flexibility.

* Select one or more STTPMIs based on their leverage impact on current capabilities and ease of implementation: Since the industry has long existed with limited automation and skilled workers, it might choose to rule out the two STTPMIs that involve computerisation and advanced technology. At the same time it might pursue the STTMI focused on ideal time. The potential advantage from reduced cycle time is very large and in addition it builds on the existing strength of a knowledgeable and skilled work force.

* Repeat the process at the program and project level: The company might begin in change over program by focusing on a particular area of the process, perhaps setting a 5 to 10% improvement goal for the year. The distillation process would then be repeated to identify the largest bottlenecks impending quick changeovers at that area. They would then be tackled directly through specific improvement projects.

9.4 IMPLICATIONS OF STTPMI:

Although putting STTPMI projects in right place is a long and complex process, successful efforts brings about very encouraging results in productivity improvement progress. Most Indian organisations had not thought about their business in these terms. Though proactive strategic orientation is a necessary condition for the successful implementation of STTPMI projects, it is not sufficient in itself. productivity culture must be permeating ethic for the entire organisation. It is the productivity
culture that can provide the deepest impulse to eliminate sufferings and miseries of human system.

We have made attempts in this research to provide a framework for implementing STTPMI in cement industry based on 'time' and 'customer'. It is difficult to extend the theory of this research to the population at large but if the motives evident in this research are extended to the general characteristics of Indian organisations, then there will be a considerable concern. This research only propagates the theory of STTPMI but is required to be tested and the results so obtained are to be continuously monitored for enhancing the organisational learning.

9.5 CONCLUSION:

In the present age of competitive and unforgiving market place, it is the choice empowered customer who decide the fate of an organisation. Competition, global quality and new economic realities are conspiring to limit success only to companies that are focused to the customer and are time based. For only these companies can continuously monitor and meet changing customer needs, streamline process, cut costs and restructure for quicker response to the customer's demand. The time based total productivity management strategies in line with the corporate strategy add up to an unmatched competitive edge, enabling the company to conquer tomorrow's market place today.

Strategic time based total productivity management according to our opinion can be initiated in any organisation under the following two basic premises (1) Pragmatic Acculturation and (2) Corporate Discipline. Pragmatic acculturation means training and developing human resources in
the emerging ideologies of productivity but by not abandoning own best cultural tradition. Corporate discipline is the voluntary compliance and commitment to productivity principles to attain corporate mission.

Once these two essential aspects are adopted, winning global competition will be much easier.