OPERATIONS MANAGEMENT SYSTEM ENHANCEMENT THROUGH INTEGRATION OF ORGANIZATIONAL PRACTICES

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ABSTRACT

Production and Operations Management Systems (POMs) is about the transformation of production and operational inputs into outputs that, when distributed, meet the needs of customers. The process is referred to as Conversion Process. POMs incorporate many tasks that are interdependent, which can be grouped under five main headings: Product, Plant, Processes, Programmes and People. This is a conceptual paper based on relevant published theory and research works along with the author’s experiential learning. In this paper an attempt has been made to bring out an integrated system approach to lead to improved effectiveness of POMs systems. The focus is to achieve integration at all levels that eventually leads to optimization. The goal is to keep achieving optimization at each of subsystems level and then finally leading to the total integration and then total optimization. Despite having suitable Technologies, if Methodologies are not proper, the firm may not be able to achieve desired results. Here the concept of Methodology has been explained. Practice of appropriate Methodologies would enable the firm to achieve synergy. In this context, the desired role and interface of some important functions and systems such as: organization structure, marketing, MIS, supply chain, transformation processes, with POMs are discussed. A selected list of recent trends in POMs has been presented for appropriate consideration.

Key Words: Integration, Optimization, Synergy, Process, Transformation

1.0 INTRODUCTION

Operations management is an area of management concerned with overseeing, designing, and controlling the process of production and redesigning business operations in the production of goods or services. It involves the responsibility of ensuring that business operations are efficient in terms of using as few resources as needed and effective in terms of meeting customer requirements. The production system is ‘that part of an organisation, which produces products of an organisation. It is that activity whereby resources, flowing within a defined system, are combined and transformed in a controlled manner to add value in accordance with the policies communicated by management.
POMs are the processes, which combines and transforms various resources used in the production/operations subsystem of the organization into value added product/services in a controlled manner as per the policies of the organization. Therefore, it is that part of an organization, which is concerned with the transformation of a range of inputs into the required (products/services) having the requisite quality level. The set of interrelated management activities, which are involved in manufacturing certain products, is called as production management. If the same concept is extended to services management, then the corresponding set of management activities is called as operations management. Various sub systems and the constituents of POM are largely technology driven. Technology is available. There is no dearth for various production related and operations related technologies in the market. Relevant technology is selected, acquired, adapted, and managed. All that is important but Technology is one part of the totality of the master system and the sub systems. More important balance part of the systems is Methodology.

Operations Management (OM) and POM
While Operations Management is about the administration and planning of the business operations in the production as well as the service of goods, Product Management is the organizational life cycle procedure inside a company that is concerned with the prediction, planning and marketing goods at all phases of the life cycle of that particular product or products. In this paper the focus has been on operations management (OM) and in a broader sense, the terms OM and POM are used interchangeably.

2.0 METHODOLOGY

Methodology is the systematic, theoretical analysis of the methods applied to a field of study. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge. Typically, it encompasses concepts such as paradigm, theoretical model, phases and quantitative or qualitative techniques.

Constituents of Methodologies
The important constituents of Methodologies include: strategies, tactical approaches, operational plans and schedules, decision making processes, policies, procedures, norms, core believes and values and organization’s culture. All those constituents in various combinations of synthesis and chemistry influence and play major role in: planning, executing, monitoring, feedback and control of organization’s business operations and task performance at all levels. They also influence and contribute to behavioral approaches of individuals, groups, learning methods, knowledge management and training / development components of the firm.
While Technologies are what they are and available with equal opportunities to all the players in the market, it is the Methodologies which are internal and firm’s own creation that make significant impact and contribution to its existence and growth or downfall. It must be the endeavor for the firm’s management to make design to keep achieving efficiencies at task levels,
functional levels and achieve effectiveness periodically at subsystem and system level by proper management of methodologies.

**Ingredients of POMs**

POMs incorporate many tasks that are interdependent, which can be grouped under five main components: Product, Plant, Processes, Programmes and People. The important ingredients of these components are as follows:

**PRODUCT** - The role of product in POM therefore concerns areas such as: - Performance; - Aesthetics; - Quality; - Reliability; - Quantity; - Production costs; - Delivery dates.  

**PLANT** - This will comprise the bulk of the fixed assets of the business; management must consider areas such as: - Future demand (volume, timing); - Design and layout of factory, equipment, offices; - Productivity and reliability of equipment; - Need for (and costs of) maintenance; - Health and safety (particularly the operation of equipment); - Environmental issues (e.g. creation of waste products).

**PROCESSES** - Processes Management must choose the best process, or series of processes. They will consider: - Available capacity; - Available skills; - Type of production; - Layout of plant and equipment; - Safety; - Production costs; - Maintenance requirements.  

**PROGRAMMES** - The decisions made about programme will be influenced by factors such as: - Purchasing patterns (e.g. lead time); - Cash flow; - Need for / availability of storage; - Transportation.  

**PEOPLE** - Key people-related decisions will consider the following areas: - Wages and salaries; - Safety and training; - Work conditions; - Leadership and motivation; - Unionization; - Communication

### 3.0 INTEGRATION

Integration is aimed at creating Synergy. Synergy has to be the motto. The results of work outputs, collective efforts of individuals working as groups / teams in the organization, should result to achieve a final quantum of output which is greater than the arithmetical sum of the individual efforts of the individuals in the group. Synergy describes a situation where different entities cooperate advantageously for a final outcome. Simply defined, it means that the whole is greater than the sum of the individual parts. It must be the result and contribution of the methodologies of the firm. Such practices and systems have to be institutionalized, ably supported by Management Information System (MIS)

### 4.0 MIS

All the optimization processes and the optimized results would be made possible only by the able support of appropriate use of MIS. Care has to be taken to differentiate information generation from information management. As per the management level and application, the use of information could be in the form of: MIS, DSS, ESS, or Transaction processes. MIS for
manufacturing: Outputs of the manufacturing MIS subsystems monitor and control the flow of materials, products, and services through the organization.

**Inventory systems:** Inventory control programs are one component of a manufacturing MIS that relies on the production schedule. Inventory control programs can forecast future production, automatically reorder items when a certain threshold is met, determine manufacturing costs, and develop resource requirements plans from the production schedule.

**MRP:** Manufacturing Requirements Planning (MRP) programs help coordinate thousands of inventory items when demand for one item depends on demand for another. MRP systems determine when finished products are needed, and then work backward to determine deadlines and resources needed to complete the final product on schedule.

**JIT:** A Just-in-time inventory approach ensures inventory and materials are delivered only when they are needed. This maintains inventories at their lowest possible level.

**Computer Integrated Systems:** software for control manufacturing equipment. Computer-integrated manufacturing software connects all aspects of production together, including order processing, product design, manufacturing, quality control, and shipping. They include CAD, CAM, CIM and others.

**Quality:** MIS supports quality control and quality assurance in enhancing manufacturing efficiencies.

**Inputs to Manufacturing MIS:** Strategic plans, corporate policies. Details such as: Order processing, Inventory data, Receiving and inspecting data

**Outputs of Manufacturing MIS:** Design and engineering, Master production scheduling, manufacturing resource planning, Just-in-time inventory, Process control, CAM, CIM, Quality control and testing, Material requirements planning (MRP) -Determine when finished products are needed; Determine deadlines accordingly Manufacturing resource planning (MRPII) :Network scheduling; Improve customer service and productivity

### 5.0 STRUCTURAL ARRANGEMENTS

Organization structural arrangements are discussed here. Creation of product and service is the very purpose for which the firm exists. The strategy transactions, planning transactions, information and decision support transactions and data processing transactions that happen at all the four levels of the organization, have to be linked to POMs within its own structure. Overlaps with other related functions such as technology management, materials management and Marketing management by POMs department have to be appropriately included and linked to the internal decision making processes of POMs department at all stages. This arrangement will increase the effectiveness of the MIS through which POMs performance can be enhanced. The organization and management structure within POMs department should provide suitable framework, structure and interlinks correspondingly with that of the overall firm – to generate strategy and long range planning, to create tactical support for technology and other major resources, to guide operational plans, schedules, budgets, revenues, and customers’ inputs. This approach is
suggested for increasing the effectiveness system integration of POMs. Further success of POMs depends on management of the related supply chain.

6.0 SUPPLY CHAIN MANAGEMENT

The scope and detailing of other related operations around production / manufacturing tasks should get extended and broadened to integrate with internal processes of POM. The links of Supply Chain Management should cover beyond inventories, to include, from original suppliers to final consumers. Similarly it should be the endeavor to constantly explore possibilities and develop strategies for implementing backward integration, forward integration and vertical integration. Similar should be the treatment for customer relationship related tasks which will become primary focus of POM for necessary inclusion and implementation at manufacturing stage itself. It is well known that customer satisfaction is the quality guide and becomes the product / service specification. The long term success of POM in general and that of OM in particular is guided by the organizational appropriate strategies.

7.0 STRATEGY

The production firm will be orientated on competitive customer strategy. It means the firm must meet the needs of the customers. The following key aspects need to be considered during internal processes of POMs: - Core Competency: The resources and capabilities that have been determined to be a source of competitive advantage for a firm over its rivals; - Strategy: An integrated and coordinated set of actions taken to exploit core competencies and gain a competitive advantage; - Business Level Strategy: Actions taken to provide value to customers and gain a competitive advantage by exploiting core competencies in specific, individual product markets; - One Key Criterion is Cost Leadership as a Business Level Strategy. Requirements are constant effort to reduce costs through: Tight control of production costs and overhead; Minimizing costs of sales; R&D and service; State of the art manufacturing facilities; Monitoring costs of activities provided by outsiders; Simplification of processes and value creating activities. Periodical technological updating and implementation of OMs and change management practices needed to follow project management practices for gaining optimal effectiveness.

8.0 PROJECT MANAGEMENT

For some unique products and some type of customized products when uncertainty is high, complexity is more, control is low and outside variables are more POM systems have to adopt project management techniques. The techniques include: use of Work Breakdown System (WBS), three time estimates approach, critical path analysis, crashing, use of probability in estimates, higher degree of coordination management. Periodical monitoring is facilitated by feedback systems about the performance of the transformational processes.
9.0 FEEDBACK SYSTEMS

Numbers of steps have to be taken from forecasting product demand to delivering finished goods to customers. These include: - forecasting itself, the transformation process from labor and raw materials to finished goods; - scheduling production; - determining material and capacity requirements; - locating facilities; - enhancing productivity; - achieving quality goals, and managing inventory and distribution. They are not isolated tasks and topics; but to be practiced as synthesized and integrated topics, bringing out the interdependencies of the knowledge content as a resultant of unidirectional force. The other aspect is about transformation of approaches about core beliefs and values of people. Operations managers have to use their abilities to ensure the efficiency, effectiveness, and productivity of the workforce to save and strengthen manufacturing base. Technological change has to reflect in the nature of products and in the processes for making these products.

Technological Change through Feedback
Technological change has to become an effective barrier against erosion of markets and then strengthen, build and be a ladder to reach new heights. Educated workers contribute intellectually to help create a competitive advantage for their firms. This is the secret to success of the Japanese workforce. The Japanese workforce is expected to make intellectual contributions to improve the product or the process making a product, in addition to manning machines. Destructive competition and the beneficial aspects of the fair competition have to be clearly identified and separated in developing appropriate organizational strategies and business strategies. Workers have to contribute in the form of suggestions for improving the processes. Operations management is all about transforming raw inputs in the form of labor, material, and capital into useful goods and services. While output of enterprises is normally depicted as goods and services, there is also some waste. Waste adds to costs and detracts from a company's competitive advantage. Waste can be reduced by greater efficiency in the production process and by improving quality. Transforming waste into something useful is another way to enhance a company's competitive position.

Feedback Mechanisms
The basis and criteria used for guidance and selection for necessary controls are regarded as Feedback Mechanisms. For example, traditionally profit is considered as an appropriate feedback mechanism and indeed it is. Profit means, the output of goods and services exceeds the inputs of labor, material, and capital. But short term profit may not be a universal signal for success or failure in operating a company.
10.0 CONTEMPORARY TRENDS IN POM

Following is a list of items that are considered to be categorized as progressive trends in POM. Their selection and further application can be taken up as appropriate. The selected trends in POM are: - Global Competition and Operations Strategy; - Flexibility and Cycle Time Reduction; - Business Process Re-engineering; - Lean Manufacturing and Just In Time (Inventory is waste); - Quality Assurance in processes; - Variety of products and High Volumes and Low Volumes; - Segregation of Value added and Non Value Added activities; - Supply Chain Management (original suppliers to final consumers); - HRM processes and Workers Involvement; - Total Quality Management

The selected goals can be realized by application the new trends in the area of POM, their application being in the practical side with professional skills. The implementation requires use of transformation processes. Every production process must be evaluated from the view of quality, quantity as well as client’s claims. Such tools are part of the management process of permanent improvement – kaizen, a Japanese business philosophy advocating the need for continuous improvement. Necessity of new trends in competitive environment is ever increasing. Evaluation of contribution of such trends is possibly to be made by the way of benchmarking.

11.0 CHALLENGES AND ISSUES IN POMs

Coordination
Coordinating the relationships between mutually supportive but separate organizations:
The implementation of global enterprise resource planning systems, now common in large companies, has challenged managers to use all of this information. This requires a careful understanding of where control should be centralized and where autonomy is important, among other issues

Optimizing
Optimizing global supplier, production, and distribution networks:
The implementation of global enterprise resource planning systems, now common in large companies, has challenged managers to use all of this information. This requires a careful understanding of where control should be centralized and where autonomy is important, among other issues

Co-production
Increased co-production of goods and services: The Internet has opened new ways for the customer to interact directly with a firm. Simple direct entry and monitoring of orders is only the first step in the progression of value-added services made possible through information sharing
Customer Touch Points
Managing customer touch points: As companies strive to become superefficient, they often scrimp on customer support personnel (and training) required to effectively staff service departments, help lines, and checkout counters.

Awareness as Competitive Weapon
Raising senior management awareness of operations as a significant competitive weapon: As we stated earlier, many senior executives entered the organization through finance, strategy, or marketing and built their reputations on work in these areas, and as a result often take operations for granted.

12.0 CONCLUSIONS

The need is to move focus of Traditional Operations Management from a single functional role of the organization to the supply chain, starting from suppliers of suppliers to customers of customers. Along the supply chain, not only goods and services but also all sources of cash, credit, and information need to be managed. Technological innovations are another facet and the real power behind the integration. It may not be wrong to express those trends in OM with a quotation as “Unite (integrate) and conquer”. We are now about to enter a new era where technology and high-speed communication tools will reshape almost all business applications. With increasing speed of technological advancements and data collection systems available, customer order fulfillment process is going to be redesigned and current body of knowledge on OM is soon to be renewed. The winning strategies for organizations are: strong benchmarking and competitive analysis, supplier and consumer partnership, global presence, extensive continues training, and highly involved employees skilled at getting things done right the first time. Under these circumstances, only way for operations managers to remain in demand in the new era is to learn how to learn and accept the change as a life style. Key competitive qualifications for OM practitioners are cross training on different functional areas of organization, team working, high communication skills, high intellectual ability, skills developed on continuous benchmarking and global involvement. The measures for customer satisfaction on cost, response time, variability, quality, flexibility and service in future’s operations are sure to be high and strict. To match the expectations, well-integrated technological solutions would be only aid of OM practitioners
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My Qualifications:

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