

Analysis of interconnection between Concurrent Engineering and Human Resource Management

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Abstract—In today's global economy; the competition in market among various organizations has been increased by great extent. The success in market is depending upon innovative research in product design and development as well as its quick launching in market. Thus the main aim of the concept of Concurrent Engineering is to speed up the every process that occurs during production and reducing the new product launching time in the market. But at the same time the impact of human resource management on all the activities from hiring new employees to achieving the organizational goal can't be neglected. The above mentioned activity of concurrent engineering is only possible if there is proper co-ordination and co-operation among various organizational departments and effective communication in employees. Also proper training to the employees for improving not only technical skills but also interpersonal skills of employees will lead towards successful achievement of an organizational goal. Hence Human Resource Management undividable interconnection with Concurrent Engineering if properly understood and studied. Thus, implementation of both concepts give rise to long term benefits to organization in terms of customer satisfaction and improved interest of shareholders as well as stakeholders. Using proper methodology it is easy to implement Human Resource Management based Concurrent Engineering to be a market leader in today's cut-throat competition in this world.

Keywords—Communication, Concurrent Engineering, Co-ordination, Human Resource Management, Product design and development, Technical and interpersonal skills, Training.

I. INTRODUCTION

1.1 Concept of Concurrent Engineering-

A concurrent approach for the product designing is termed as concurrent engineering. It is also called as simultaneous engineering as it invariably involves doing several activities pertaining to different functions simultaneously. The concurrent engineering includes several elements for integration and tries to reduce

product launching time. The following figure shows the exact concept of concurrent engineering.

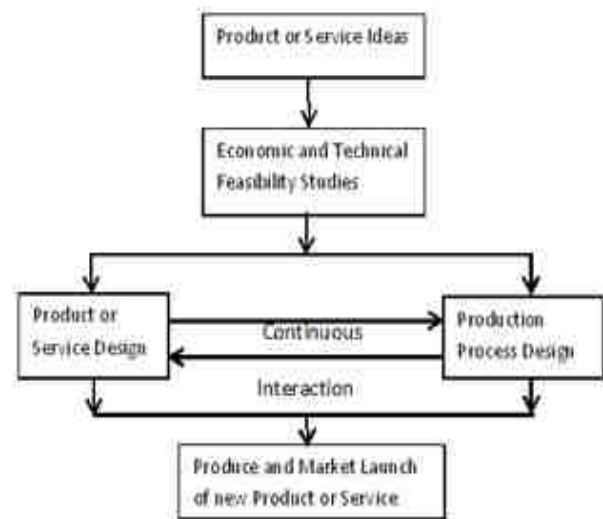


Fig1- Concurrent Engineering- Process and Product/Service Design.

1.2 Concept of Human Resource Management-

The concept of HRM deals with planning, organizing the human resource and controlling them to achieve the organizational goal in effective and efficient manner. Concurrent Engineering may involve cross-functional teams (like 'Strategic Business Units') to solve any problem that may affect the new product design and development project in the company. Thus a cross functional team approach places greater demands on the members in terms of "Learning the new skills" like technical as well as interpersonal skills. Here it is the main role of HRM that to train the employees as per necessity and develop their capabilities which ultimately reflects into improved performance and hence achievement of organizational goal. Hence HRM is acting as concrete in between all the bricks required to build the building of Concurrent Engineering.

1.3 Need for interconnection –

In the process of design of any product, the launching time plays vital role. It is necessary to reduce the time due to many reasons. i.e. to sustain in the market competition,

stock information, report of currently available products/ services in the market etc. It is observed that any selected department may not be aware of the problems with the other departments. So these difficulties may lead to a longer launching time of a product/ service.

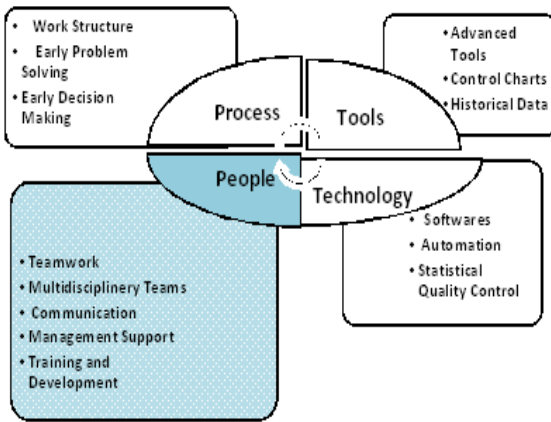


Fig.2 – Basic Principles of “CONCURRENT ENGINEERING”.

From above figure; it is clear that the factor “People” is important principle in CE which is the building block of HRM. Hence without HRM we can’t imagine foolproof system of CE so that HRM is unavoidable aspect of CE.

II. INTERCONNECTION BETWEEN CE & HRM

The basic interconnection between CE and HRM can be explained with the help of fig.2. There are lot many factors those are act as interlinking or interconnecting elements in between Concurrent Engineering and Human Resource Management. These various factors are as shown in the following figure followed by detailed explanation.

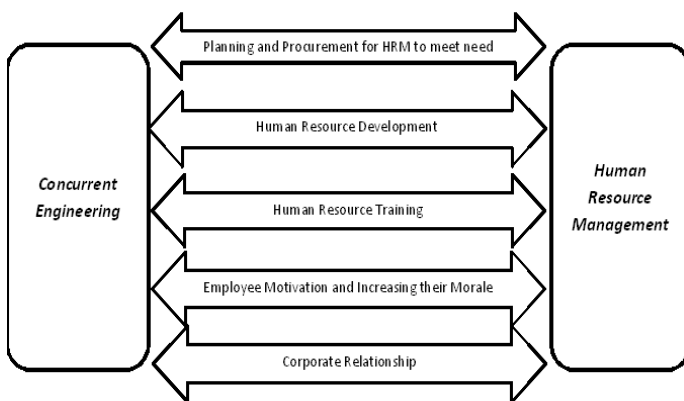


Fig.3 – Interconnection between CONCURRENT ENGINEERING and HUMAN RESOURCE MANAGEMENT

2.1 Planning & Procurement for HRM to meet Need-

To fulfill the market demand in as less as possible time one must possess appropriate number of manpower in hand so that easily can meet the contingencies. Thus to carry out working of Concurrent Engineering; sufficient manpower is always required and can be achieved by planning and procurement of human resource by HR department.

2.2 Human Resource Development-

Development is long term process of permanent change creating among the employees. In CE, organizations need fully trained and developed workforce in terms of carrying out all the tasks to speed-up the product design, development and production activities. If manpower is not developed ethically, morally, socially and technically; it will be very tough to speed –up all the operations to reduce the product launching time.

2.3 Human resource Training-

In CE; there is formation of cross-departmental groups for exchanging the information and carry out all the processes smoothly. We generally call it as “Strategic Business Units (i.e. SBU’s)”.The properly trained workforce will help in Concurrent Engineering as-

- Improved level of knowledge, skills & abilities.
- Improved employee productivity.
- Improved motivation & confidence in working.
- Improved chances for career advancement for every employee.

Thus the training may be technical, administrative or interpersonal type as per the requirement.

2.4 Employee Motivation and Increasing their Morale-

All the success of Concurrent Engineering for shortening the product launching time is mostly depends upon – Organizational policies, Management Decisions, Employee dedication towards work and Motivational factor also effective and efficient utilization of resources. If all the above factors came together then it will be very easy to achieve the goal of Concurrent Engineering.

2.5 Corporate Relationship-

During the working of “CE”, there is direct or indirect contact or communications between various departments take place. In such conditions; due to own self-perception; one may hesitate or be reluctant in keeping contact with each other, which collectively results in collapsing the whole system of Concurrent Engineering. Hence role of HRM in such cases of CE is – to keep reduced span of control in the management, effective delegation of the work can be done, reduction in conflict like situations etc.

III. FACTORS BEHIND CO-RELATION BETWEEN “CE” AND “HRM”

There are various factors that we found during our research which has huge influence on the co-relation between concepts of Concurrent Engineering and Human Resource Management. The following figure (Fig.4) will focus on all those factors in sequential manner. Those all factors are necessary for eliminating the waste processes which are not necessary or are huge resource consuming in nature due to which huge loss has been incurred by an organization. The detailed figure is as under-

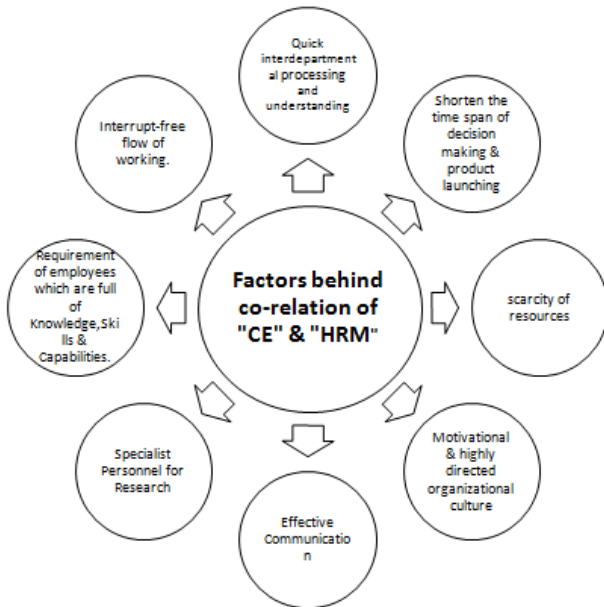


Fig.4: Factors affecting the co-relation between Concurrent Engineering and Human Resource Management.

- 3.1 Shorten the time span of decision making and product launching in market for processing and to be a market leader.
- 3.2 Scarcity of resources, hence optimum utilisation is important
- 3.3 Motivated and highly directed organizational culture to achieve the goal of an organisation.
- 3.4 Effective communication for smooth and interrupt free data transfer and sharing.
- 3.5 Specialist personnel for research to be familiar with latest technology and current need of market.
- 3.6 Requirement of employees which are full of knowledge, skills and capabilities to improve employee productivity and to reduce span of product launching in the market.
- 3.7 Interrupt free / smooth flow of working to meet the delivery dates and hence to improve customer satisfaction.
- 3.8 Quick interdepartmental processing and understanding of all the occurring problems during production processes.

IV. METHODOLOGY FOR EFFECTIVE IMPLEMENTATION OF “CE” & “HRM” APPROACHES

The following figure (Fig.5) ensures that; the utility of those factors lead towards successful result for CE in market as well as in the organization for improving the productivity with great efficiency.

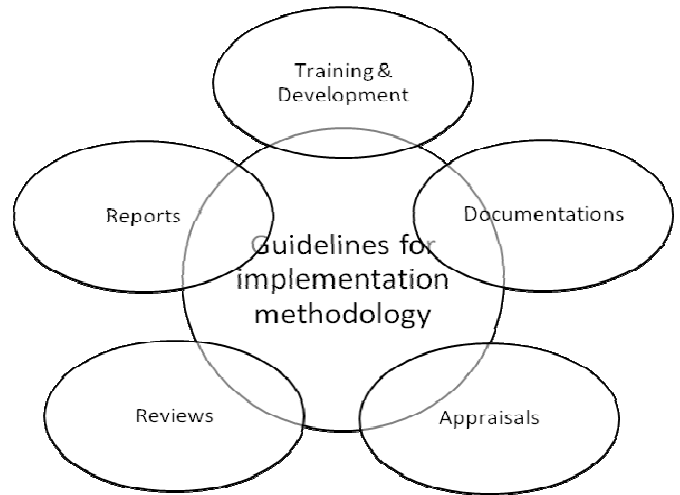


Fig.5: Guidelines for effective implementation of CE & HRM

- 4.1 Training and development programmes for improvement of existing skills, knowledge and capabilities etc.
- 4.2 Documentations related to decisions, about new research, about committed changes, about strategies and policies.
- 4.3 Appraisals / Audits which may be Internal (i.e. for each department) and external (i.e. for sales staff, for customers, for supply & distribution chains.)
- 4.4 Reviews that give ideas about status of work, resource consumption, forecasting for new materials and about changing market conditions.
- 4.5 Reports which give information about specific area like production status, design of products, process report, utilisation of materials, material requirement report, production performance report and also interdepartmental meeting reports etc.

All the above instruments / methodologies will help in effective and efficient implementation of both the approaches to speed-up all the activities in organisations to reduce the product launching time.

V. EVALUATION AND CONTROLLING PROCESS FOR EFFECTIVE “HRM” BASED “CE”

If the whole production system is running under pre-defined guidelines then; it is necessary to take periodic review regularly to check / evaluate the whole integration process and if any deviation occurs; then taking corrective

actions will lead towards proper working of concurrent engineering.

The following flow chart (Fig.6) will clear the concept of controlling process that carried out during our research for evaluating effective production in CE with the help of HRM.

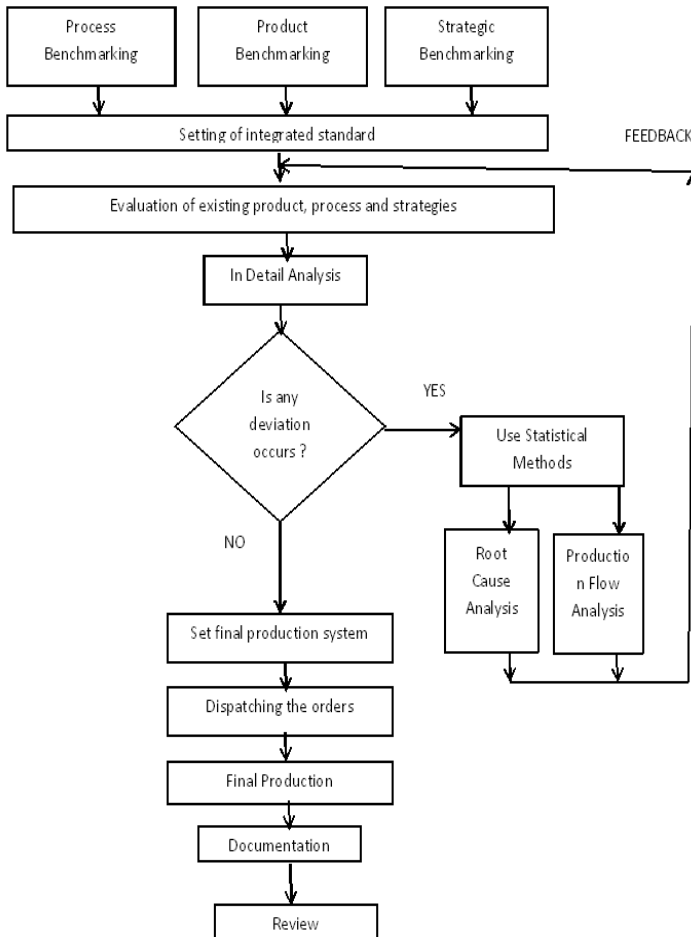


Fig.6- Controlling Process

VI. NEW ADVANCED WAYS TO BE ADOPTED TO IMPROVE THE PERFORMANCE OF AN ORGANIZATION UNDER “CE” & “HRM”

During the research work, we have searched some innovative ways to be adopted by any organization for improvement in performance of an organization. These are as under-

6.1 Concept of “Quality Circles”

Small teams may be formed among employees and meet together during free time or at weekends to discuss about their role in organization, various difficulties faced by them during working etc. so that solution can be obtained for efficient working also problem solving ability at individual level increases.

6.2 Concept of “Run Time Data Analysis”

In organization; strong net of internet connectivity is formed by either wired ‘LAN’ or wireless ‘Wi-Fi’ for continuous updating of data about inventory, production status or for quick communication during emergency condition. This will improve effective time utilisation and hence speed-up the production processes.

6.3 Formation of “Reserve Task Force”

There may be formation of the reserve task force for the purpose of carrying the production process work without any interruption. The main soul of “CE” is speeding-up all the processes, but due to failure of specific system or frequent absenteeism of employees; the purpose of “CE” may not be fruitful. So it may include- additional machine set for emergency, additional HR team for maintenance, troubleshooting or for regular proceedings and help can be taken from those employees who want to do overtime work for additional benefits.

6.4 Concept of “Daily Job Card”

A daily job card is maintained in which the particular work to be done by an individual employee is mentioned like daily targets for sales manager and at the end of the day or shift; it is evaluated by supervisor. If target is achieved then reward or benefits should be awarded and if not then there should be penalty in terms of fine should be taken so that every individual will be aggressively directed towards completing their target and thus speeding-up of all the production processes will be achieved.

VII. ADVANTAGES AND DISADVANTAGES OF INTERCONNECTION BETWEEN “CE” AND “HRM”

7.1 Advantages-

- Reduced cycle time for production system.
 - Improved knowledge, skills and capabilities of employees.
 - Helps in development of future leaders and strategies.
 - Risk of failure in CE implementation reduces.
 - Commitment of each and every employee towards organizational vision and mission improves.
 - Interpersonal relation among employees improves and thus conflicts may be avoided.
- Thus there are lot many advantages out of which we have seen some important ones.

7.2 Disadvantages-

- This point can be explained in different manner because there are no any disadvantages of this interconnection. But, yes, there are lot many obstacles; that may act as limitations for this. These are as follows(Fig.7)

- As we discussed earlier, generally this “CE + HRM” interconnected system gives only benefits but due to some inconvenience in system or human factors; the organization may face the difficulty or huge loss even after implementation of this CE with the help of HRM.

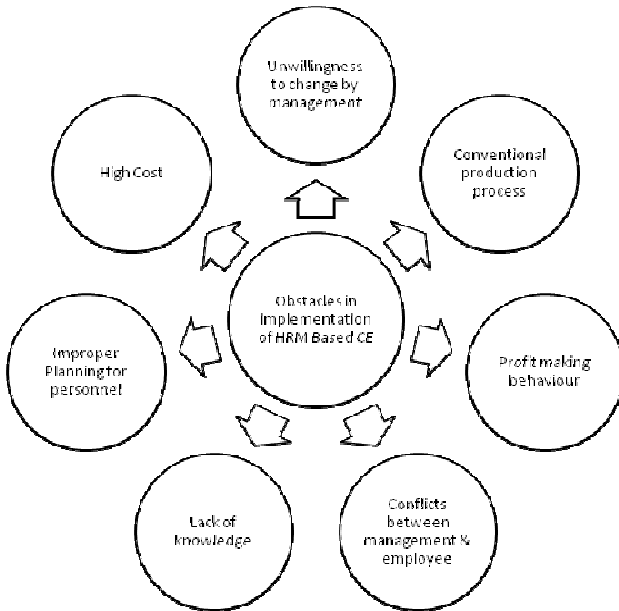


Fig.7: Obstacles in implementation of “HRM” based “CE”.

- 8.1 As far as, the range of applicability as concern, the same research concept can be implemented in ;
 - 8.1.1 Manufacturing sector (Foundries, Machine Shops, and Material Suppliers etc.)
 - 8.1.2 Service Sector (Hospitality Centers, Hospitals, Consultancy agencies etc.)

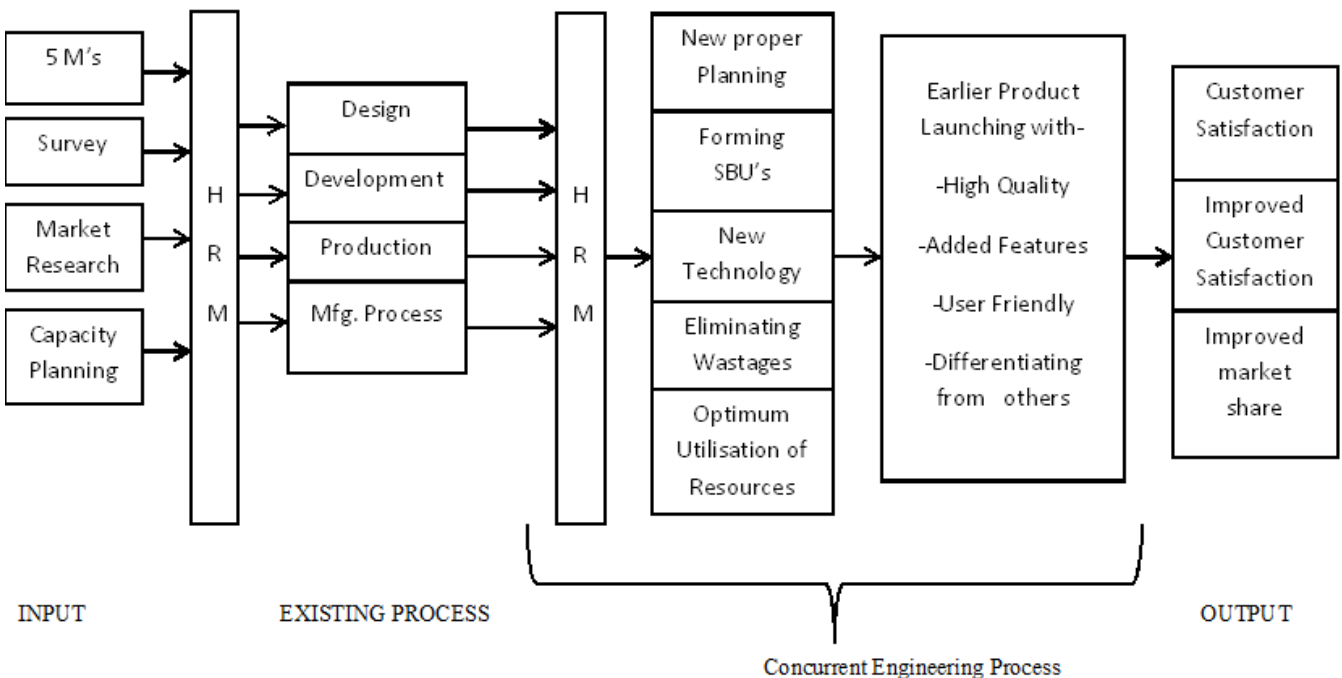


Fig.8- Analysis of Interconnection between Concurrent Engineering and Human Resource Management

VIII. CONCLUSION

At the end of our research; we concluded that the interconnection between Concurrent Engineering and Human Resource Management is undividable. Those who

have understood it; definitely they have taken taste of sweet success in terms of increased revenue and improved customer beliefs on them. Hence following figure (Fig.8) will give detailed concluder of our research wok.

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