

NEED OF HUMAN RESOURCES IN PRODUCTION

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ABSTRACT

In life, it is usually easier to say 'no' than 'yes', but in product development, the opposite is more likely true — it's hard to turn down a major customer asking you to add more features to your product or asking you a new model product (Silverthorne, 2007). Despite substantial prior research on new product success, there are still high failure rates (Gima, 1996). In response to the competitive pressures to meet the expectation of the customers, companies are focusing on reengineering of operations – covering all the areas. (Fox, Chionglo, & Barbuceanu, 1993). This needs a network, a network that covers the span of enterprise functions from new product design, new product development – from concept proto manufacturing till mass production readiness covering supplier selection, process design, validation and stabilization, continued with mass production ordering, receipt of raw materials, transform them into intermediate goods, final products and deliver the products to customers through a distribution system. Improving performance in new product development has become one of the critical issues for gaining competitive advantages for companies (Cai, Liu, Xiao, & Liu, 2009). In order to operate efficiently, the design, development, testing, purchase, quality, manufacturing, plant engineering, finance and human resource functions must operate in an integrated manner. Providing quick and quality responses to new product development events requires the coordination of multiple functions across the enterprise (Fox et al.,1993). This paper is an attempt in examining the factors that a development engineer should possess when inducted as techno-commercial for new product development in automobile industry.

Keywords: Competition, Development, Human, Management, Organization, Product

I. INTRODUCTION

New product development management has been a major component of competitive strategy to enhance organizational productivity and profitability. The strategies and technologies for effectively managing a new product development is quite a vast area to be worked. In recent years, organizational performance measurement and metrics have received much attention. Performance measurement and metrics pertaining to new product development management, specifically covering new product development have not received adequate attention (Gunasekaran, Patel, & Mc Gaughey, 2004).

Life time employment with a single employer as a career pattern is declining because today's contemporary careers are increasingly pursued in economic and organizational settings that are significantly different from those in the last two decades. Challenging realities of the new economy, increased global competition and uncertainty, rapid technological advances and shortened product cycles creating pressure for lower costs, higher

productivity and high energy team have forced many firms to change their structures, processes and human resource practices in significant ways (Colakaglu, 2005); (Allred, Snow, & Miles, 1996).

The turbulence and uncertainty of the new economy has forced organisations to adopt leaner, flatter and more customer driven structures (Colakaglu, 2005), (Parasuraman, Greenhaus, & Linnehan, 2000). Success in new product development is from self managed, cross functional teams working collaboratively with greater employee involvement in decision making (Colakaglu, 2005).

Global competition, rapidly changing technology and shorter product life cycles have contributed to making the current manufacturing environment an extremely competitive one. Organisations face significant uncertainty and almost continuous change. Organizations must develop new methods and perspectives to effectively manage their supply chains to meet the market needs in a timely and cost effective fashion. The supply chain capabilities is a firm's ability to build, integrate, and reconfigure its upstream supply chain, internal operations, and downstream supply chain to address rapidly changing market needs (Koste, 1999).

Traditional manufacturing approaches, such as mass production of a few standardized products, are no longer sufficient competitive weapons by themselves. In more and more markets, customers are demanding a greater variety of high quality, low cost goods and services (Pine, 1993).

Innovation in product and process development is regarded as a key avenue for growth, profitability and competitive advantage in many industries. With lifetime of products shortened by both the accelerating pace of technological change and global competition, firms are forced to invest continually and ever-increasing amounts to maintain their competitive edge. However, due to increasing complexity of offerings and intensifying competition, successful innovation depends not only on a firm's capabilities but also on the strength of its alliances (Nair S. R., 2006).

To enhance the performance in new product development one of the ways may be a refinement in the induction of people for new product development. An appropriate identification and understanding of the factors in selection development resource for successful new product development will enhance quality, cost and delivery of the new product.

I. NEW PRODUCT DEVELOPMENT

There are many different types of new products; indeed "newness" can be defined in terms of two dimensions. New to the company – in the sense that your business has never made or sold this type of product before, but other companies might have. New to the market – the product is the first of its kind to the market. This is the traditional definition for new product. There are six categories of new product – New to the world products, New product lines, Additions to existing product lines, Improvements and revisions to existing products, Repositioning, Cost reduction. (Cooper R. G., 2005)

II. SUCCESSFUL NEW PRODUCT DEVELOPMENT

Successful new product development is a scalable proactive format where success in all aspects, from concept to delivery is spread across to blend the expertise of the engineers and to develop a new product conceptually and commercially viable for the end user segment, more specifically to the automobile industry.

Successful new product development focuses on identification, integration and application of set of factors that are vital in engineers working for new product development and align all the resources to meet the exact requirements of the industry in a better way.

III. FACTORS

Factors are contributing elements to complete any task when identified and efficiently deployed in areas such as production processes, employee management and technological advancements. The factors listed and nurtured greatly contribute to the success in design, development and delivery of automobile new products. Embracing these factors with proper alignment of human resources will result in extremely desirable products.

IV. MANAGING THE HUMAN RESOURCE

“Live in the world like an ant. The world contains a mixture of truth and untruth, sugar and sand. Be an ant and take the sugar” (Ramakrishna, 1836).

There is an influx of resource. Practicing good induction process becomes essential and refinement in the induction process is indispensable. To ensure quality during induction, factors needs to be instilled to avoid wrong person in wrong place and get maximum efficiency and achieve successful new product development.

V. QUALITY IN ENGINEERS

To manage the new product development activities we need engineers who have a distinctive attitude. Apart from their basic qualifications and their experience, when it comes for handling the new product development, it requires specific quality and special set of factors. The challenge lies in bringing out the factors that are inherent within the engineers and apply them effectively in their career as well for successful new product development.

VI. PIRSIG’S METAPHYSICS OF QUALITY

The Metaphysics of Quality originated with Pirsig’s college studies as a chemistry student. In the late 1950s, Pirsig decided to explore what exactly was meant by the term “Quality”.

“Quality,” or “value,” as described by (Pirsig, 1974), cannot be defined because it empirically precedes any intellectual construction of it.

VII. DYNAMIC AND STATIC QUALITY

Dynamic quality cannot be defined (Pirsig, 1974). It can only be understood intellectually through the use of analogy. When an aspect of quality becomes habitual or customary, it becomes static. The dynamic beauty of a piece of music can be recognized before a static analysis explaining why the music is beautiful, can be

constructed. Static quality is everything which can be defined. Everything found in a dictionary, for instance, is static quality.

This deliberation from (Pirsig, 1974) directs the need for understanding dynamic and static quality in successful new product development. Human resource is a dynamic quality and induction of human resource for successful new product development needs a static quality pattern, meaning, it has to be continuously defined and redefined until the new product development team delivers the best possible results for successful new product development. Listing factors for successful new product development bestow an improvement in engineer's induction. A proper graphing of engineers will escort a better-quality automobile and achieve successful new product development.

VIII. APQP (ADVANCED PRODUCT QUALITY PLANNING)

APQP (Advanced Product Quality Planning) is a process for product development system developed in the late 1980s for General Motors, Ford, Chrysler and their suppliers. It is a framework of techniques and procedures used to develop products in automobile industry. According to the Automotive Industry Action Group, generally known as AIAG (a not-for profit association created to develop recommendation and framework for the improvement of quality in the North American Automotive Industry) the purpose of using APQP is to produce a product quality plan that will support development of a product which will satisfy the customer. APQP focuses on up-front quality planning, customer satisfaction evaluation and support continual improvement.

IX. APQP CONSISTS OF FIVE PHASES:

- Plan and Define Program
- Product Design and Development Verification
- Process Design and Development Verification
- Product and Process Validation
- Launch, Feedback, Assessment & Corrective Action
- Planning
- Product Design and Development
- Process Design and Development
- Product and Process Validation
- Production

X. THE APQP PROCESS HAS SEVEN MAJOR ELEMENTS:

- Understanding the needs of the customer
- Proactive feedback and corrective action
- Designing within the process capabilities
- Analyzing and mitigating failure modes
- Verification and validation

- Design reviews
- Control special / critical characteristics (AIAG-team, 2005)

XI. NEW PRODUCT DEVELOPMENT PROFESSIONALS

The new product development professionals are the one who are supposed to possess multi-faceted traits by which the organisation gets the benefit of demonstrating their skill to the external world – their customer as well as competitors, of their ability of being close to their customer by the development (physically making the products from drawing) of new and unique featured automobile products they were dreaming within them.

XII. ROLES AND RESPONSIBILITY OF NEW PRODUCT DEVELOPMENT PROFESSIONALS

Typical development professionals with an engineering qualification from 2 to 20 years experience in automobile original equipment manufacturers (OEM) and automobile ancillary generally takes a role of Engineer to Deputy General Manager. It is spread with partial responsibility from concept design, detailed design, product development and with full responsibility of process development, process and product validation and mass production. Their primary responsibility is to make the new parts physically from drawing with QCD targets.

The following are the few skills that are essential, though not exhaustive, but important to ensure optimum contribution in the above said responsibilities of development engineer:

1. Understand customer and customer requirements.
2. Understand and comment on design and design concepts.
3. Benchmark, compare and analyze concepts.
4. Ability of de-skilling from the concept stage of development.
5. Ability to understand and analyze business requirements & customer expectations.
6. Ability of working concurrently with design during concept development.
7. Knowledge in different materials being used.
8. Knowledge on ways of product development with minimal cost and precise quality.
9. Knowledge in process design and validation.
10. Knowledge of de-skilling of activities in process design and engineering.
11. Knowledge of various processes which are to convert the raw material to finished parts.
12. Ability to understand the jig, fixture and gauging design and finalization.
13. Knowledge in manufacturing and tooling technology.
14. Right time right decision making capability.
15. Skill on statistical techniques of solving problems during process establishment and bulk supplies.
16. Conversant with statistical process control and process stabilization.
17. Knowledge in systems implementation and checking – this includes APQP covering production part approval process, failure mode effect analysis, Control plan etc.,

18. Understanding of testing conducted on the parts developed during product validation.
19. Selection of suppliers – right part with the right supplier – on various capabilities through supplier onsite audits.
20. Knowledge on costing and analysis of costing with competitor's system.
21. Negotiation with suppliers on tool cost and on part cost, part quality and part development time.
22. Strong communication, leadership and interpersonal skills.
23. Knowledge on project management.
24. Should be a team player and learner.

XIII. 6 HR FUNCTIONS THAT DRIVE RESULTS IN PRODUCTION

Many small to mid-size manufacturing companies have become increasingly aware of how an effective human resource leader can contribute to the success of the business's bottom line. The following points discuss how an effective HR leader and HR function can help a manufacturing company's bottom line, including developing a positive and engaging work environment for your company.

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XIV. COMPENSATION MANAGEMENT

Compensation expense is typically the second largest business expense next to raw materials or purchased goods. Competing for talent on the basis of wages alone is no longer cost-effective, and HR leaders must determine the right mix of base pay, variable pay and benefits that motivates and retains high performers, and aligning the salary program (as well as incentive programs) to performance markers for the Company, teams and individuals.

XV. BENEFITS EVALUATION AND ADMINISTRATION

Managing and controlling the increasing costs of employee benefits while balancing the needs of the employees has become a very sensitive issue, especially with respect to health insurance. There are basic questions to answer, such as whether to offer multiple benefit options, how funding for the plans should be split between employer and employee contributions, and how much of the benefit plan administration should be handled internally.

XVI. RECRUITMENT/TALENT ACQUISITION

Declining interest in the manufacturing sector among the younger generations is partly due to the perception that manufacturing is not as cutting edge as other industries. The need to balance a permanent "core" full-time work force with temporary workers required to meet seasonal or periodic spikes in demand also makes manufacturing jobs look less secure to young people.

These are industry-wide challenges and it will take an imaginative, well-connected, persuasive HR leader to give your company an advantage. The ability to effectively recruit talent at all levels of the organization in a cost-effective and timely manner is critical.

XVII. TRAINING AND DEVELOPMENT

The degree to which employees are “engaged” (that is truly committed to an organization’s success vs. “doing a job”) has a direct impact on profitability. HR leaders need to effectively manage all areas of training and development, whether by mentoring, contracting for off-the-shelf programs and study courses, hiring outside consultants, or leveraging train-the-trainer programs offered by suppliers.

XVIII. PERFORMANCE APPRAISAL AND MANAGEMENT

HR can design and implement the formal employee appraisal programs internally or use outside consultants to assist with the process to insure that the process and tool are aligned with the organization’s goals and draw upon current best practices. In addition HR can provide line managers with the support and skills they need to effectively engage in these processes so the organization can achieve the desired results.

Effective performance management supports employee engagement; in turn, an engaged workforce is positively correlated to company financial performance.

XIX. EMPLOYEE AND LABOR RELATIONS

HR leadership in employee and labor relations is especially important in manufacturing companies. If the company is non-union, it typically takes much time and effort to sustain this status. If unionized, labor negotiations and on-going relations with the union have a key impact on company financials as many budget items are items for negotiation (benefits, merit, lay-off provisions, etc.). Company management should evaluate how well their HR function is prepared to deal with such circumstances.

XX. CONCLUSION

Organizations are trying to create as much competitive in the market, reaching to manage their human resources in achieving organizational performance required. Some of the goals are cost reduction, achieving sales levels, increasing the number of customers, increasing the market percentage, increasing product quality, innovative products, improve productivity. Human resources are playing an important role in achieving these performance indicators. But before that, organizations should realize the expectations required from employees and so the employees show their skills, be motivated and behave in the manner required by the organization to achieve performance. Strategic HRM is a detailed process for human resource management throughout the organization that it’s integrated with the organization's overall strategy. It enables the organization having employees with the right skills and putting them in positions according to the level of their qualification and skills. Different authors have tried to give different definitions for organizational performance. In general, organizational performance is related to the achievement of the objectives required by the organization. The achieving organizational performance is a result of the behavior of employees in the organization. Policies and practices of organizations motivate employees and they give impact on organizational performance. Some of these are: human resource planning, recruitment, selection, training and development, compensation, performance management and employee relations. A link between Strategic HRM and organizational performance has been developed by author Michael Armstrong. According to him, the performance is a function of the Ability + Motivation + Opportunity (AMO). By achieving the expectations of employees, it will be reached the performance required

by the organization. Organizations need to consider human resource as a tool to gain competitive advantage needed to create appropriate policies and practices.

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