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Research Paper

Measuring Technological Performance Through Technology Management Scorecard (TMSC)

Management

KEYWORDS : Technology Management Scorecard, Measuring Technological Performance

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ABSTRACT

Technology is a dynamic process. Technological impact on business performance is more in global competitive market. The organization need to manage the technology in best possible manner in order to compete and survive. Stronger the research and development (R& D) more fruitful will be the future.

Hence understanding the need the researcher had put an effort to developed a scorecard which deals with Measuring technological performance through Technology management scorecard.

Introduction

Scorecard is a tool for measuring the performance of business or process. We cone across different scorecard like balance scorecard , employee performance scorecard etc.The balanced scorecard is a strategic planning and management system that is used extensively in business and industry, government, and nonprofit organizations worldwide to align business activities to the vision and strategy of the organization, improve internal and external communications, and monitor organization performance against strategic goals. It was originated by Drs. Robert Kaplan (Harvard Business School) and David Norton as a performance measurement framework that added strategic non-financial performance measures to traditional financial metrics to give managers and executives a more 'balanced' view of organizational performance. While the phrase balanced scorecard was coined in the early 1990s, the roots of the this type of approach are deep, and include the pioneering work of General Electric on performance measurement reporting in the 1950's and the work of French process engineers (who created the Tableau de Bord – literally, a "dashboard" of performance measures) in the early part of the 20th century.

One more type of scorecard which we come across is employee performance scorecard. In both the scorecards which we had discussed involve various parameters and attributes. Today's competitive world is focusing more on technological aspect hence it is the need of time to focus on measuring the technological performance.

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Need of Technology Management Score Card (TMSC)

The world had become a competitive place. For survival innovation and technology is the key. Technology management plays a vital role in determining the future growth and existence. Hence it is important to do the technological introspection in order to pace the competitors and demanding market technological challenges. The art of measuring the technological status is a emerging area for researchers. In order to overcome the technological gaps or improvements in new product service or process by way of innovation we need to measure the technology management process. The technology management is a complex process which involves various parameters and attributes. In order to overcome this barrier the researcher had developed a technology management score card.

Measuring Performance through TMSC

The Technology management scorecard works on inculcating the performance of three major score indicators. The TMSC is prepared considering the total process of management of technology. The process of converting Idea into innovation (i.e , innovated product, service or process) is consider to be important since the company will have a technological edge in the Global competitive market environment. The major score Indicators are as fallows.

1. Research and Development stage indicator (First Major Indicator)

- Idea generation or Ideation is the creative process of generating, developing, and communicating new ideas, where an idea is understood as a basic element of thought that can be either visual, concrete, or abstract.[1] Ideation comprises all stages of a thought cycle, from innovation, to development, to actualization.[2] As such, it is an essential part of the design process, both in education and practice.[3]
- Incubation is one of the 4 proposed stages of creativity: preparation, incubation, illumination, and verification. Incubation is defined as a process of unconscious recombination of thought elements that were stimulated through conscious work at one point in time, resulting in novel ideas at some later point in time.
- Invention it is creation of new product service or process

2. Technology Development stage Indicator (Second Major Indicator)

- Technology Assessment Many innovations have failed not due to any deficiency in technology, but due to failure of total system for translating the concept into a successful operational product, process or service. Therefore it is important to assess the technology and the process of its translation into use/ applications. Technology Assessment means determining whether the technology development is meeting, or will meet, the organizational/project objective to justify/require the decision to commit enterprise resources. It includes the study and evaluation of new technologies. According to Benson & Sage, an individual technology must pass through three gateways to become commercially or socially embedded in its environment. These three gateways are market gateway, systems-management Gateway, Technology Gateway
- Technology transfer This phase leads to transfer of technology from external source to own research and development (R&D) ; and internally R&D to production.

3. Production and sales stage indicator (Third Major Indicator)

- Technology acquisition is the process of acquiring a new

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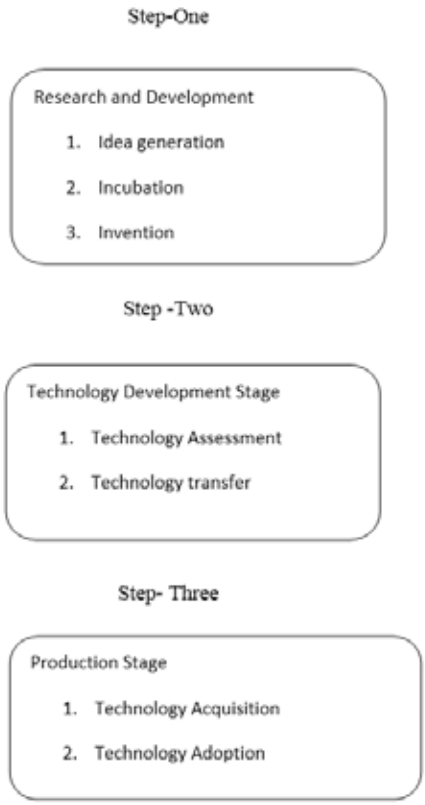
technology, new product, process or service by the efforts of an individual, or an enterprise, or any other macro entity. This process can be conducted either internally or externally. The key advantage of technology acquisition process is that technology already developed by others saves time and efforts and the risk which is involved in development can be avoid. The key disadvantages of acquisition process are: inappropriateness of technology, high costs associated with external acquisition and technological dependence on external source for gaining technological competitiveness.

- Technology Adoption Within this context, "adoption" refers to the stage in which a technology is selected for use by an individual or an organization. "Innovation" is similarly used with the nuance of a new or "innovative" technology being adopted. "Diffusion" refers to the stage in which the technology spreads to general use and application. "Integration" connotes a sense of acceptance, and perhaps transparency, within the user environment.

These three major score indicators are based on sub Indicators. The sub indicators are the parameters which actually governs the three major score indicators. If one sub indicator fails to achieve, the process of scoring will stop. While calculating the score of each sub indicators the allotted score for all is equal to score of one. The scale for rating a technology management scorecard will be maximum seven (one each for sub indicators). The first Major indicator will have maximum score of three. The second major indicator will have maximum score of two and the third major indicator will have maximum score of two.

After assigning the score for different product/process/services for a period of three years (short term) five to seven years for middle term and 10 years and above for long term, depending on the time frame of assessments we need to calculate the scores at different stages product and services.

Diagrammatic representation of Technology Management



Technology Management Scorecard (TMSC)

Major Indicator ----→	Research and Development (A)			Technology Development Stage (B)		Production Stage (C)		A+B+C= Total Score
Sub-Indicator -----→	Idea generation	Incubation	Invention	Technology Assessment	Technology transfer	Technology Acquisition	Technology Adoption	
Product - A								
Product - B								
Product - C								
Total Score								

Conclusion

Application of Technology Management Scorecard (TMSC)

It will be useful for measuring the technological strength and weakness. Research and development evaluation cab be made in terms of development of new product , service or process. The comparisons can be made with the help of TMSC between companies using hi-tech technologies.

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