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End to End Technology Management

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Abstract: ***An effective technology management is vital in all organizations whether they are developers or user. Many new ideas, innovation and technologies are being launched every day, not all might gain expected profit. The problem here is not necessarily with the technology but with the way technology is managed. It is necessary to conduct proper technology management that include stages such as technology forecasting technology strategy technology planning technology development and technology transfer. From these technology transfers is the most important as this incurs the profit of a system hence this should be done in a strategic way. Technology managers help to make a successful technology transfer. One of our system which is successfully transferred into the market is Tele-Ecg system, this system is developed specifically for use in rural areas where people over there can get an on-spot first-aid though it can be also used by general physicians for preliminary diagnose in heart diseases . Several surveys were done from manufacturers, license holders, and physicians for determining the success of the system in live market. This paper highlights two important points of technology management one is the importance of a technology manager and other is what is the perspective of a technology manager for a commercialization of a system.***

Keywords: Technology Management, Technology Manager, Strategic Technology Transfer

1. Introduction

In today's environment technology is the vital element that can give an organization its required competitive edge. Aligning Technology Management with business strategy is a critical factor to increase the organizational stability. Acquiring a state of art technology makes the project a high-tech project and organizations that are able to identify and upgrade technology for potential competitive advantage will emerge as winners in the global market. So, the technological work of the project is the principle area where project management has to endeavor to encourage the highest creativity from project team members. Management by technology is one of the key factors of success or failure of a project development phase because it provides a foundation for customer base development. That is, it involves developing goals and plans for project activities, establishing and using defined development life cycle phases in the project activities, measuring and analyzing the effectiveness, implementing effective improvements in project phases and also identifying and evaluating new technologies to implement the most promising ones in the project in a structured manner more over communicating the defined factors mentioned clearly to customers and stakeholders.

2. Definition of Technology Management

The word Technology Management can be bifurcated in two ways first Technology and second Management. Hence for an optimum technology management one should have knowledge of both technology and management

2.1 Technology

Before directly studying technology management we will first focus on technology. A technology can be defined as:

All the knowledge, products, Process, tools, methods and systems employed in the creation of goods or providing services. In simple terms, technology is the way we do things.

We can say that technology is the practical implementation of knowledge, a means of aiding human endeavor. It is common to think of technology in terms of hardwere, such as machine, computers, or highly advance electronics gadgets. However, technology embraces a lot more than just machine. There are several technologies enlisted besides including software including human skills. Zeleny (1986) highlighted that technology has three independent classification

1) Hardware: - the physical structure of logical layout of equipment or machinery that is used to carry out required task
2) Software: - The knowledge of how to use hardware to carry out required task
3) Brainware: - The reason for using the technology in particular way. This also may be referred to as Know-Why

2.2 Management

Our second bifurcation is management, it can be so explained as, an art or to some extent we can say as it as a technology. It is the art of carrying on a business. It involves directing and controlling an organization and steering it towards achieving its objective. It draws on knowledge, experience and understanding of human and organizational behavior.

2.3 Management of Technology

Management of technology is an interdisciplinary file that integrates science, engineering and management knowledge and practice. The focus is on technology as the primary factor in wealth creation. Managing Technology implies managing the system that enables the creation, acquisition and exploitation of technology. It involves assuming responsibility of creating, acquiring and spinning out technology progress. A customer is a beneficiary and could be an individual, a corporation or a government contributing

to wealth. An idea that emerges and is not exploited, even if it was patented, does not bring monetary returns

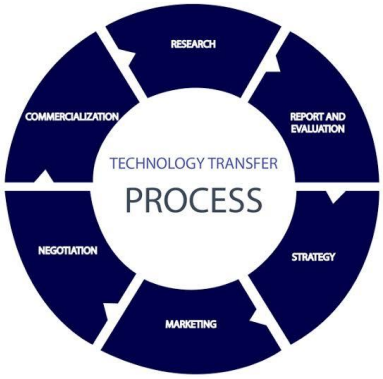
3. Essentials Activities of Technology Management

Strategic Technology Scanning: -. Strategic technology scanning is needed to strengthen the link between technology and corporate strategy. This link is ever present although not always explicitly managed. Scanning enhances technology foresight by seeking major distinguishing features in the technological landscape. These features are termed landmark technologies and serve as indicators of evolving technological and economic potential.

Technology forecasting :-attempts to predict the future characteristics of useful technological machines, procedures or techniques. Researchers create technology forecasts based on past experience and current technological developments. Like other forecasts, technology forecasting can be helpful for both levels of technical performance, like speed of a military aircraft, the power in watts of a particular future engine, the accuracy or precision ofa measuring instrument, the number of transistors in a chip in the year 2015, etc. The forecast does not have to state how these characteristics will be achieved public and private organizations to make smart decisions. Primarily, a technological forecast deals with the characteristics of technology, such as Technology Entrepreneurship: -Technology entrepreneurship lies at the heart of many important debates, including those around launching and growing firms, regional economic development, selecting the appropriate stakeholders to take ideas to markets, and educating managers, engineers, and scientists. Unless a generally accepted definition of technology entrepreneurship is established, however, these debates lose their focus Technology Entrepreneurship can be defined as: -

Technology entrepreneurship is an investment in a project that assembles and deploys specialized individuals and heterogeneous assets that are intricately related to advances in scientific and technological knowledge for the purpose of creating and capturing value for a firm.

Technology Transfer:- Technology transfer, also called transfer of technology (TOT), is the process of transferring (disseminating) technology from the person or organization that owns or holds it to another person or organization. It occurs along various axes: among universities, from universities to businesses (and vice versa), from large businesses to smaller ones (and vice versa), from governments to businesses (and vice versa), across geopolitical borders, both formally and informally, and both openly and surreptitiously. The process to commercially exploit research varies widely. It can involve licensing agreements or setting up joint ventures and partnerships to share both the risks and rewards of bringing new technologies to market. Technology transfer offices may work on behalf of research institutions, governments and even large multinationals



4. Need of Technology Management

Technology management aims at maximizing the cost effectiveness of investments in technology development which contributes to the value of an organization. If an organization fails to plan for its technology, it might encounter issues like data loss or misuse of that technology by its employees. But if the organization creates a framework and plans for its technology, its output will increase. **Some of them are listed below: -**

Growth of the Firm: The process of managing technology involves organizing, coordinating, and managing activities. If technology is well managed, an organization will improve on its operations and reduce on operational costs of the organization. The technical staff will have a challenge of analyzing what customers need and specify which technologies are supposed to be implemented as well as spot the ones to be stopped. After this process of analyzing what is necessary, both the organization and its consumers will benefit which will lead to the growth of that organization.

Eliminates Duplication: If technology is well managed, it will automate information flow in an organization. In this case, the technical team will set up a management information system (MIS) which provides periodic, predetermined and ad-hoc reporting capabilities. In most cases the MIS reports summarize or aggregate information to support decision-making tasks. So, MIS's are systems that have information-processing responsibilities that include information through online analytical processing **(OLAP)** and conveying information to whoever needs it. To a small organization this process might be expensive, so people in charge must calculate return on investment. **MIS's** are commonly known as 'management alerting systems' because they send alerts to management concerned to the existence or potential existence of problems or opportunities. A **management information system (MIS) p**rovides reports in many different forms. Its reports can be periodic reports, summarized reports, exception reports, ad hoc reports and comparative reports.

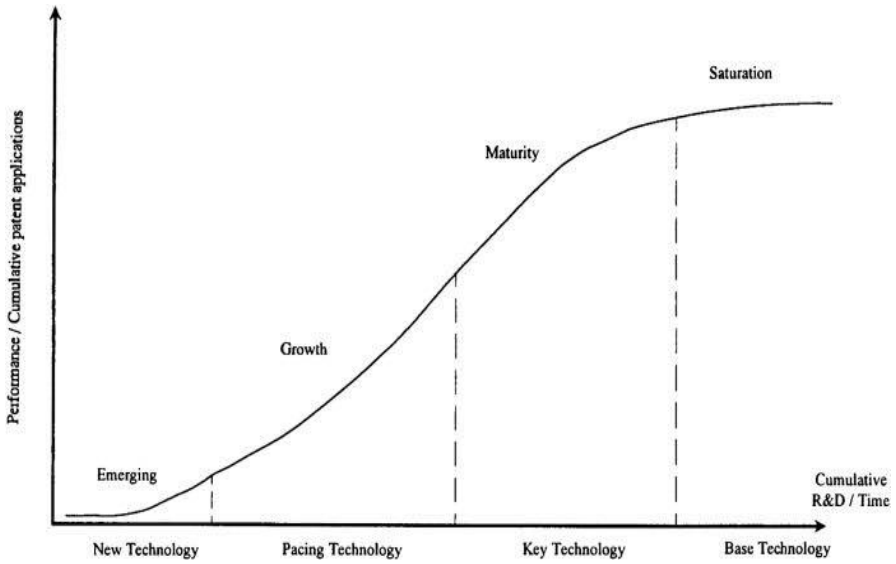
- **Periodic reports**: Are reports that are produced at a predetermined time interval such as daily, weekly, monthly or yearly.
- **Summarized reports:** These are reports that aggregate information from periodic reports.
- **Exception reports:** These show only a subset of available information based on some selection criteria.

- **Comparative reports:** These show two or more sets of similar information in an attempt to illustrate a relationship.
- **Ad hoc reports:** These are reports you can generate at any time. They are just the opposite of the periodic reports.

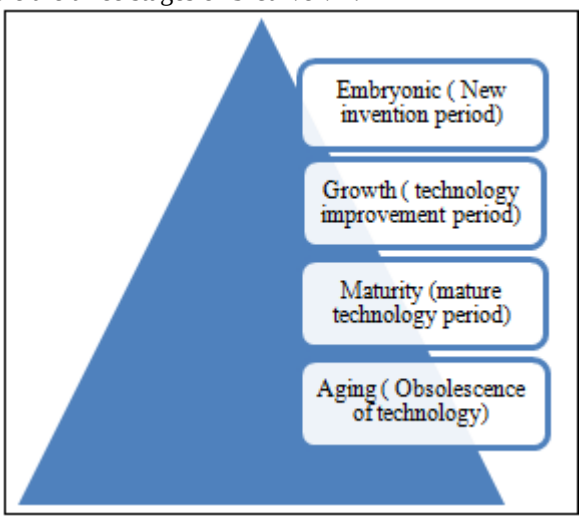
5. Technology Life Cycle

When the technology performance parameter is plotted against time the characteristic which is obtained is called as S-curve. Ideally, it resembles 'S' shape and thus the name S curve. Technology performance is expressed in terms of any parameters for example-

1) Number of transistors per-chip (density in electronic industry)
2) Aircraft speed in miles per hour



There are three stages of S-curve viz:



The above-mentioned life cycle can be conveniently explained with reference to keypad mobile phones

- **Embryonic Stage:** This is the infancy stage of technology where the technology is developed according to the market requirement. Example in the year 1995 spice company in India developed and marketed the first keypad mobile phone.
- **Growth:** As the need of mobile phones increased the rate of penetration of portable communication device and its cost increased which gave rise to new competitors in the market and thus growth of mobile phones started increasing.
- **Maturity:** In this stage the demand of respective technology slows down as there are new competitors who are developing new and advance technology than before. The craze of old technology will remain unless the new technology completely replaces the old one.
- **Obsolescence:** This is next stage of maturity in which the old technology is completely wiped out as the demand of the technology and the system is absolute. The new technology developed is more advanced with respect to functioning.

6. Conclusion

Technology management education is important now days. All the industries and companies are hiring a technology manager so that the product is developed in a strategic manner. Technology Readiness level which is one of the parts of technology management was first developed by NASA and now a days there are immense research going on in this field. Every product a technology has a life cycle unlike living beings there is probation stage, growth maturity and ageing stages, one of the role of a technology manager is to suggest and find out the optimum time when the technology can be placed in the market so that maximum profit can be incurred. Once a technology is developed by the developer, in order to get a good exposure of a product proper technology transfer should be done, in simple terms we can say that the pathway , launch time and market demand should match with the technology developed.

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