

Technology management assignment

[Business](#), [Management](#)



Introduction

The emergence of new technologies has made a big impact on business management. Technology applications have been proven to enhance the acquisition of information and resources. Technology has also become an important element in decision making and product innovation. As such, without technology management, organizations cannot survive in the current business environment.

Technology management has also been proven as a key component in the creation of wealth. Therefore, the management of technology, especially for technology intensive firms, is essential for their survival and to maintain their competitive advantage.

Technology management is a multi-disciplinary field, which works as a bridge between engineering and business disciplines. The importance of technology management cannot be overlooked. In recent years, all leading developments in the global business environment are the result of the application of technology management (Khalil, 2000).

Technology management is related to innovation (Mortar et al., 2009). In the current business and technological environment, corporations and SMEs must be able to adapt and evolve if they want to survive and expand their business. The ability and willingness to change is essential to survive in today's highly competitive environment. As such, innovation has become an important aspect in the culture of an organization and is seen as a driving force in achieving growth (Trott, 2005). Innovation, in turn, is recognized as one of the results of efficient technology management.

Technology management is a dynamic tool that can be utilized for various industries, both in the private and government sectors. The education sector is one of the areas where technological improvement is needed. This can be achieved through the use of online learning software and other related tools. Online learning communities are a growing feature in the landscape of educational technology. These tools and technology-oriented software are the key improvements in the education system and this has been proven with the passage of time (Herrington & Oliver, 2000)

This essay analyses Pakistan's education market to find the gaps in the use of technology in the country's education sector. To illustrate the importance of technology management, the essay also discusses its application in relation to the development of new software targeted for the education sector in Pakistan. The development of the new software is carried out with the guidance of an appropriate technology oriented-business model and business plan. This is done to minimize the risk and uncertainty involved in the product development process.

Literature Review

Benefits of Technology Management

Looking at the economic history of the UK, technological management has been recognized as one of the key factors in the birth and development of the industrial sector during the nineteenth century (Trott, 2005). Since then, technology management has been an important aspect in economic and business growth.

Technology management is recognized as an important element in business management. Firms have utilized technology management in their operations and have adapted it to suit their business needs (Pilkington & Teichert, 2006). Many organizations are going through radical transformations due to technological changes that are happening on a global scale (Levin & Barnard, 2008). In this scenario, technology management is seen as playing an important role in managing organizational change.

Over the years, many authors have focused on how to manage technology resources (Cetindamar, Phaal & Probert, 2009). Technology management involves processes to enhance performance and utilization of resources. It involves the acquisition and integration of existing knowledge into the creation of new knowledge. This is an important factor for an organization to survive in the current competitive environment. Every organization must have the flexibility to change and create new knowledge by adapting to the changes in the market. This will lead to higher performance and sustainable competitive advantage (Liu et al., 2006).

Technology management is identified as a crucial factor for the long-term success and profitability of an organization. Technology is considered as one of the core assets that a firm relies on (Cockburn & Henderson, 1998). Technology management enables an organization to utilize its resources in creative ways in order to enhance performance and increase profit margin and market share. The company can also acquire and manage resources with the help of technology management.

Challenges in Technology Management

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One of the main difficulties in business is to manage uncertainty. This is the same challenge in technology and innovation management. New product innovation is a complex process. There are numerous factors and risks involved in innovation. The organization has to manage internal and external risks. Some of these are manageable while others are beyond their control. The management of the innovation process, which is a subset of technology management, involves trying to develop the creative potential of the organization. It involves the fostering of new ideas and generating creativity. Managing uncertainty is a central feature of managing the innovation process and managing technology (Trott, 2005).

When there is new product innovation related to technology, the chances of uncertainty arises. Different experts have worked on these issues and have developed theories to avoid uncertainty or to create a better understanding of uncertainty, which occurs from new innovation. One of the theories in avoiding uncertainty is Pearson's Uncertainty Map. This was developed after extensive analysis of different case studies of major technological innovations, including Pilkington's float glass process, 3M's Post-It Notes, and Sony's Walkman (Pearson, 1991).

Establishing something new is the essence of product innovation and this process necessarily involves risk. Therefore, early risk identification and management is required by innovative firms. Risk and uncertainty usually occur at the beginning of a new innovation process. It is important to note that innovation is not just about opening up new markets. Innovation can also present new ways of serving older and established markets.

Technology Management and Innovation

In today's fast changing business world, innovation has become a fundamental component in organizations. The speed of innovation has changed the nature of global economic growth – made possible by the rapid evolution of technology, shorter product lifecycles, and a higher degree of new product development. Additionally, the availability of more knowledge to firms has made innovation even more complex (Du Plessis, 2007). From this perspective, innovation is undeniably a product of technology management.

One of the primary roles of technology is as an enabler – it ' encourages the constant need to evaluate, update, and employ changing job descriptions and business processes' (Savino 2009, p. 1). Technological advancements have significantly changed how businesses operate and how employees go about doing their work. The new paradigm in business organizations is the continuous demands for improvement and the acquisition of knowledge in a very dynamic and constantly evolving environment. The catalyst that enables constant improvement and innovation is technology (Savino 2009). As such, it is highly important to manage technology in the pursuit of innovation.

Researchers have recognized that large multinational firms are one of the key drivers for the globalization of research and development (R&D) and innovation activities. A study by Gerybadze & Reger (1999) found that R&D and innovation strategies have changed over the years. Since the mid-1990s, multinational corporations have been inclined to consolidate and

streamline their operations. This shift in technology management strategy is due to the failures of distributed R&D activities and globally-dispersed innovation processes, which have led to highly complicated and unmanageable organizational structures. Consequently, firms have opted for leaner and more effective types in managing the portfolio of innovation activities.

Using Business Models for Product Innovation

One of the ways to manage risk in new product innovation is to come up with an appropriate business model or business plan. A business model helps in making the innovation successful and avoiding the chances of failure, which is one of the risks of innovation. Although creating and implementing the business model for a small firm is not an easy process, many firms utilize this in order to minimize the chances of failure (Lindgren, 2011).

Business models have been the focus of both the academic writers and practitioners. Creating a business model is now a part of the innovation process (Zott, Amit & Massa, 2011). Researchers found that most firms have a variety of activities and corresponding business models. As such, a firm can use different business models to suit their various activities or a multi-business model approach can be used. Carrying out the perfect business model is not an easy task especially for the SME's because they have limited resources; lack knowledge about the business; and have few business tools to support their activities (Neffics, 2010).

Developing a new software for Pakistan's education sector

There is an existing gap in the use of technology in Pakistan's education

sector. Although there are some online tools that are used to manage online data and news, the information is usually found and managed in university websites only. There are currently no private providers of online learning software in universities in Pakistan. The new ruling of the Higher Education Commission (HEC) requires all education institutes to set online databases. As such, universities need to develop online learning software to fulfill the requirements and facilitate their students into using these new tools. This represents a good opportunity for the development of e-learning software for use in universities and colleges in Pakistan. Our plan is to develop software similar to “ Moodle” for use in universities.

Industry and target market

A few years ago, Pakistan had no framework for the use of technology in higher education. This meant that the country’s education standards and quality were not at par with the rest of world. Pakistan was unable to make any progress in the education sector until 1991. There were only 34 universities serving a population of over 100 million and from 1997 to 2002, only 10 private universities were added. However, the rapid growth of the education sector resulted in the establishment of 53 private institutions by 2004. There are currently more than 74 universities across the country (HEC, 2012).

Product Description

The software that will be offer to customers is similar to “ Moodle,” which is the acronym for Modular Object-Oriented Dynamic Learning Environment. Moodle is an open-source course management system (CMS) / learning

management system (LMS) / virtual learning environment (VLE). It is used as a tool for creating online dynamic websites for students (Moodle 2013).

Recent surveys show that it is considered as one of best e-learning software used by educators and is used by several primary and secondary schools in the UK (The Guardian, 2008).

The software is customizable and there will be some modifications depending upon the circumstances and requirements of the clients. Using Moodle, the teacher can upload data from anywhere and student can access it instantly (The Guardian, 2008).

Our aim is to introduce Moodle and to customize the software according to the needs of the higher education system in Pakistan. The software will allow tutors to manage their courses according to their requirements and students will be able to access available data from anywhere. University administration will also be able to upload news, results, and other related information using this software.

There are various benefits in the application of the e-learning software in Pakistani universities. These include increase in availability of information, quick feedback, and better communication.

The Moodle e-learning system provides users with an online platform for communication and sharing of content, information, and news.

Communication – is the basic function of the Moodle e-learning software.

Professors can post any course-related announcement for students.

Students can chat with other students in real time.

Discussion threads can be created. Students and teachers can participate in the discussion.

Content – is the second core function of the software

Teachers can post lectures, articles, assignments and other related information.

Teaching calendar of the year can be included.

Teachers can post quizzes and exams and allow students to access them via the internet.

Students can submit their assignments online.

Business Model

A business model serves as a guide to help businesses create, deliver, capture and exchange value (Trott, 2005). There are main four components of a business model.

Source: Trott, 2005

Core Strategy

Core strategy is the first component of business model. It describes how a firm competes with its competitors. The core strategy involves customizing the software according to the needs of the organization and to set an optimum cost. Initially, we are targeting one university only, which is the Bahira University Islamabad. Other education institutions will be approached later on.

Mission Statement

Our mission is to provide excellent technology services to universities in Pakistan at the best cost.

Product Scope

The e-learning software will be developed by focusing on the needs and requirements of the clients. E-learning software is popularly used in UK schools. Teachers and students have given positive feedback on the use of e-learning software. We are expecting the same positive response from Pakistan's education sector.

Our focus is to develop the software based on some key points. Ease of use is one of the main objectives of the e-learning software. The product is new so we will ensure that it is easy to use and manage so that our clients will not have difficulty in using it. We will also ensure administrative flexibility so that they can manage it according to their needs. Our aim is to provide maximum value and optimize institutional investments to help them reduce their overhead costs and manage their finances better. We will also develop the software so that it is easily upgraded in the future should the client require changes.

Basis for Differentiation

There is currently no e-learning software in Pakistan, which is customized for the education sector and has excellent communication and content features. Most universities in Pakistan are using their websites for announcement and other news but they do not have a comprehensive software similar to

Moodle. Our core differentiation is that we offer a customizable, flexible and easy to use software for the education sector.

Strategic Resources

For the development of this software, we will hire the best software developer from Pakistan. The reasons for hiring the software developer from Pakistan are lower labor costs and familiarity with Pakistan's education sector. This will help us to minimize our costs and be more efficient in our product development. Our strategic asset is our developers and our business plans.

Technology Strategy

The technology strategy is part the overall corporate strategy takes into consideration the components of the core strategy. In pharmaceutical firms and high tech equipment manufacturers, it is common for the technology strategy to be related to the corporate strategy. This concerns the management and use of technology for further expansion and development (Burgelman & Doz, 2001). Our core strategy is to focus on innovation and excellent services for our clients. Our goal is also to build reliable and flexible software that is cost effective and sustainable.

The product we offer is based on Moodle. Although Moodle is already available in the market, we will develop a new e-learning software based on the Moodle framework. This new e-learning software will be customized to suit Pakistan's education sector. Our basic strategy is to understand the client's requirements and create products that will address all their needs.

The service strategy provides guidance on how to design, develop, and implement our service management plans. We will provide not only the software to our clients, but also services such as installation, customization, and post-sales support. We will also provide trainings to teachers and administrative staff on how to upload data and use communication tools. Trainings will also be provided for university students who will be using the e-learning software.

Financial Strategy

The financial strategy is an important component of any business plan. Initially, we are going to finance our business using our personal savings and from investments of our family and friends. Our initial capital investment is \$ 3, 000 to \$ 5, 000. For future expansion plans, we will loan from a bank or other financial institutions.

Partnership Networks

We are going to start with one project, through the help of a partnership with a small software firm. This will help to minimize our development costs. The partnership contract will be based on profit sharing. The reason for entering into a partnership is to allow us to offer our products to other universities in the future.

It is my responsibility to secure the contract from the university. It is my task to find out the requirements and needs of the university and to negotiate with them in terms of cost and other pertinent issues.

Customer Interface

Our target market is the Pakistani education sector. The main reason for targeting this market is the lack of educational software in Pakistan. Initially our target is one university, which will be Bahria University Islamabad. The motive for choosing this organization is the fact that some of our colleagues have studied there and are very familiar with the university.

According to students of Bahria University, the administrative system that their university is currently using is not user friendly compared to other well-known universities in the Pakistan. As such, it will be a great idea to offer the new e-learning software to this university. To get the contract for developing this service, we will talk to the university's management team. We will present them our product's features and offer our services to them.

Pricing Model

We are new in the market and we want to compete with existing players. Our main focus is to attract a lot of customers and this can be achieved by making our products affordable. We are applying a cost leadership strategy. We will offer the best products at low cost to persuade customers to avail of our products. This is an ideal market entry strategy.

maximum customers and for this out for going for cost leadership strategy. We will offer best low cost to facilitate our clients and make them comfortable to deal with us. Initially our motive is to adjust our self on low profit and gain market share.

Conclusions

Success of an organization depends on learning, innovation, and constant change in a systematic and scientific way. Every organization will constantly have to acquire new knowledge to remain competitive. Change and uncertainty is managed by having a plan for the future. With a business plan, uncertainty ceases to be a threat and becomes an opportunity. Different models must be used to avoid uncertainty and risk. In entering a new market, we will use a business model to avoid uncertainty and carry out the innovation process in a manageable way.

Being management student, we admire the importance of literature on technology management and new product innovation. On the basis of that literature and examples, we can conclude that if we ignore all those theories and models, product innovation will not be achieved. Our plan is based on the review of relevant literature and carried out through a business model.

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