

A Study on “Technology Life Cycle in Business and its Management”

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Abstract

In Technology there are many life cycles from various aspects and classified into different categories. Product life cycle is simple and basic life cycle for any product. This is the base for development of many other life cycles. But in literature different life cycles like Product life cycle, Technology life cycle and Industry life cycles are often considered as interchangeable concepts though it is inappropriate. So, this paper enlightens the differences between these concepts. This study tries to understand some theoretical insight of Technology life cycle. This Study also focuses on different steps for effective technology Life cycle in Business and its Management. This research paper acts as a unique source for technology life cycle and management.

Keywords: Product Life Cycle, Technology Life Cycle, Industry Life Cycle, Business, Management.

Introduction

In Business there are many life cycles which are necessary to provide direction for better decision making. The simplest life cycle is product life cycle, it is a pathway for any product beginning from its birth to death. The stages of product life cycle are introduction, growth, maturity and decline. To start production of any new product or to invest in any product development the technology life plays vital role. If any company is implementing any new technology or new product based on the technology then it has to identify the position of technology life cycle whether it is in beginning, growing or ending stage. Also, should estimate the future position of the technology. The concept of Technology Life cycle originated from Product Life cycle. The stages of technology life cycle are Research and development phase, Ascent Phase, maturity Phase, Decline phase. Market life cycle describes the market behaviour with new technology. The customers in various stages are classified based on their behaviour towards technology buying and satisfaction.

Objectives of the Study

- To Understand the concepts of Product life cycle and Technology life cycle.
- To analyze and study the effective Technology life cycle management.
- To give suggestions, if any.

Research Methodology

This paper major part is based on Secondary data. It was taken from various online and offline sources. Online sources like Journals, websites and various e-papers. Offline sources like some text books, magazines and various newspapers.

Review of Related Literature

Martin Kalthaus, (2020) in his research paper, he tried to bring different kinds of knowledge changes in technology life cycle.

Bok Hyun Lee (2018), In his Research paper he tried to find out the relation between technology life cycle and stock market performances. The results of this study has been used to distribute their R and D budget in the related field.

Jeongeun Byun, Tae-Eung sung and Hyun-wooPark (2017) In their research paper on technological innovation strategy: how do technology life cycle change by technological area, they discussed the patterns of technological innovation implications in terms of distribution of national research and development and corporate managerial strategies.

Marzieh Shahmarichatghieh, ArtoTolonen, HarriHaapasalo (2016) in their conference paper they reviewed about three important life cycles like product life cycle, technology life cycle and market life cycle. They differentiated these three life cycles with elaborate explanation. They explored these concepts mostly based on the high-tech industry specifications.

Angelo Corallo, Maria Elena Latino, Mariangela Lazoi, Serena Lettera, Manuela Marra, Sabrina Verardi (2013) In their paper of product life management, they analysed different studies and integrates different authors point of views using face groups, blogs and face to face meetings. Also, their paper is useful for managers and academics who want to understand product life cycle using unique sourceto understand product life cycle concepts.

Taylor Margaret and Taylor Andrew (2012) in their research paper they explored the inter-relationship between related concepts of life cycles for both industries and products. A conceptualization of technology life cycle is also proposed in their work.

Product Life Cycle: Conceptualization

According to some authors, Product Life Cycle is based on the fluctuation of Sales of product from start to end. But some other authors describe PLC is based on the market fluctuations during the existence of the product. Additionally, some others mentioned PLC is vital factor in product planning and controlling. The different stages of PLC are Classified and described as below.

Introduction

The product is new in the market. It is the result of the product development. Customers are unfamiliar with its application also company will keep on tracking its defects and faults. So, feedback plays an important role in this step, however companies try to advertise the product and create awareness about the product to the customers.

Growth

After introducing the product to the market, customers will increase at the same time competitors will start entering as everyone is aware about the product. So, company should keep developing its

supply chain, technology and product variations. Advertising also an important factor to increase the sales. Advertisement should emphasise on advantages of its products over the competitors.

Maturity

In this stage the product attains its maturity stage. It means customers are completely familiar with the product. So, company should concentrate on product variations. Production efficiency should be increased, supply chain should be maximised, cost reduction, better promotional strategies, better services, good quality could gain better market share for the company. There are number of competitors in this stage, the company has to fight with the competitors by providing at cheap cost.

Decline

Decline stage is the final and saturation. It is the end or market death. The sale revenue decreases. The product will become obstacle to the growth of the company. The company and its competitors try to shift to anew product.

Technology Life Cycle: Conceptualization

The technology life cycle is nothing but how technology and its process affect the entire life cycle of a product. It is completely different from product life cycle. Life cycle of a product deals with performance of a product in the market, where as the technology life cycle deals with various stages of technology in the development of the product and use of technology in business process. The life span of a technology majorly depends upon nature of the product and business process. Technology is one of the factors contributing competitive advantage.

The management of Technology life cycle is one of the crucial steps in any business. The development, implementation, adoption are the important things to be managed. Some time it is difficult to maintain the intellectual property rights, licences etc., The shape of the technology life cycle is in s shape. It has the following important phases.

Research and development: At this phase the investments are huge for technology development. Mostly the investment is from companies own pockets. There is a high chance of failure of technology in this stage. So, it is very important to get feedback to match novelty and innovation of the industry.

Ascent

It is an important phase in technology life cycle, company starts to recover the expenditure being spent on technology development. Also, technology being accepted by markets, company creates all the hype and promotion, innovation to grab attention of the customers.

Maturity Stage

In this phase technology gains stability. The technology developed will be accepted by public and also competitors were well aware about the technology. Slowly the technology attains saturation point. The revenue will be decreased slowly. In order to stay in the market, the technology should be updated and upgraded. company should keep track on Competitor's technology.

Decline Stage

This phase is inevitable and companies witness decrease in the sales and new or replacement of technology is necessary. The best solution for this step is to move out of the existing technology and start initiating funds on the new technology.

4 Stages of Technology Life Cycle

- **Innovation Stage:** The first stage of technology life cycle is which leads to the birth of the new technology. This step takes more time as Research and development department has to plan, develop and test the new idea.
- **Syndication:** In this stage of technology life cycle companies R and D concentrates on commercialization. Many technologies end up here. Only a percentage of technologies are commercialized. The results are depended on the economic, technical and non- technical factors.
- **Diffusion Stage:** In this stage, the technology diffuses into the market. The new technology may widely be accepted by the market. It will increase the brand value of the company, can generate more revenue, it can become the market leader.
- **Substitution Stage:** This is the last and final stage of technology life cycle. This stage represents the technology decline in the use of technology due to replacement with other technology.

Steps for Effective Technology Life Cycle Management

Many growing organisations are focusing on Technology Life Cycle Management. The chief executive officers are usually directing the business strategy, evaluate the growth, opportunities, threats etc., but they do not concentrate on necessary upgradation of technology. IT professionals focus on the operations, maintenance, data storage, analysis due to demand in data security, technology upgradation. So, organizations are looking for technology life cycle management.

There are so many benefits for the organization in investing technology life cycle management. Some of them are like, it provides relationship between technology and industry, cost saving from bundling of services, regular reviews, monitoring, replacement, updating and need for final disposal etc.,

Each component of TLC provides value to the organisation. In order to get most value from the technology life cycle the following steps has to be included in the plan.

Identify Needs and Solutions: The important step to examine current business needs, future growth plans which accommodates the technology. The key elements include acquisition plan, financial plan, supporting and implementation plan, retirement plan.

Acquisition: This involves procurement of technology, logistics and financing.

Implementation: This involves the deployment, integration into IT environment.

Management: It tracks the technology, purpose of serving, ownership etc., It is one of the challenging steps as complexity of workers in remote areas.

Support: It is comprehensive support for maximum performance of the IT environment. Monitoring of events, support over call, evaluating the extensions of product warranties, periodic reviews, performance measurements etc., are included in support.

Disposal: Technology life cycle management includes a plan for disposal of assets. Most organizations do not plan for this step. They do not get any benefit out of the retired product but it incurs overhead cost. This step takes the responsibility over the life cycle management and relieves the organisation from the retired technology.

If Organisations plan for the optimisation of technology ensures minimal downtime, removes unexpected expenses, anticipating the role of technology can play improvement in productivity, end user experience and driving innovation.

Challenges of Technology Life Cycle Management

Managing technology becomes more complicated to the managers. Here are some common challenges of Technology life cycle management

- When companies need new IT equipment then they have to spend significant time has to be spent acquiring new technology. Cash reserves also depleted.
- Maintaining single view of IT devices becomes an administrative burden.
- When equipment needs replacing users face disruption. Asset disposition also takes time.
- Retired equipment left un monitored can cause data protection risk.
- The management and maintenance cost 80% while ownership costs only 20%.
- Data Security is primary challenge for any manager.
- The disposal of retired equipment is costly and also time consuming.

Suggestions

There is growing need for technology life cycle management. With proper technology maintenance and managing enterprises can benefit in many ways like cost management, easy way of retired equipment disposal. Technology life cycle management allows organisations across industries to develop strategies that anticipates future development strategies to reach the goals of the organisation.

Conclusion

The value of technology life cycle management is rooted over entire IT industry. IT departments in large enterprises will take the role of managing and maintaining technology. While small industries do not have resources in the organisations to guide properly regarding the technological decisions. It has huge impact on the business and its budget. Technology providers are offering support to the organisations to maintain and manage the rapid changes in information technology and its life cycle. Technology life cycle simplifies all the steps, process in IT.

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