A STUDY ON THE ROLE OF TECHNOLOGY MANAGEMENT

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Abstract: In today's world, companies face a variety of challenges. While business administration can enable companies to develop rapidly. One main thing that is required amid this environment is innovative business management and it could give full of its confidence to the development of enterprises and has also become the trend today. When it comes to Technology and software, the biggest problem is to select which one is to be used, as most of them are easily available but come with different advantages. This paper is used to search and understand the existing software and business models used in industries/startups and the impact new technologies have on them. It will focus on finding the issues and reviews concerned with different software used in technology Management and analyze different technological innovation.

Keywords— Python, Java, Technology Management, Sustainable, Innovation, Business Management, Development Of Enterprise, Business Conceptualization, Decision Making

I. INTRODUCTION

Due to market uncertainty, it is difficult to start a business and keep it sustainable over the long term. You never know when and what can happen. To be sustainable, they must adapt to innovative technologies. Technology and innovation businesses are used to cover a variety of industries. These companies can focus primarily on activities such as long-term research and development of new products. It can also provide innovative solutions to existing processes. [1] Knowing that market competition is fiercer at this stage and to seize opportunities in fierce market competition, companies need to pay attention to the application of innovation and raise the level of their scientific and technological innovation. Computer science has become an important part of science over the last few decades [2]. The most used languages for any company in the field of developing are python and java. A study conducted by Coding Dojo [9] reveals the most popular codebase languages used by the world's top technology companies, with an estimated market value of over $ 1 billion. These companies primarily use Python and Java as their code base languages. According to the Tiobe Index [10], Java is preferred at 16.61%, and Python is ranked third at a whopping 9.874% based on its popularity, programming skills, and most important performance. When checked on google trends worldwide for both the code-based languages, there arose a minor distinction between Python and Java.

Certain blockchain based solutions are also used to reduce the amount of risk and mitigation in the process of handling data. The rapid progress done by blockchain is showing absolutely no signs of slowing down. Blockchain technology is a chain of blocks that contain transactions and build up the chain one by one. All the transactions that we do with cryptocurrencies or other assets are recorded and validated in the form of blocks and then they build the chain. The advent of Blockchain Technology in the past few decades, has changed the world in a positive way. It is one-of-a-kind technology that has a huge potential to do a lot of good for society. Blockchain is a growing list of records, which is protected from any kind of tampering and is always updated. Blockchain has gone beyond just cryptocurrencies. It is now being used in other fields like healthcare, finance, supply chain, etc. With the help of smart contracts, the blockchain can be used in complex processes. Blockchain Technology can be used in the creative industries. The remaining part of the paper flows in the following directions: The first part provides detailed information about the Review about Technology Management in Business Models, followed by Product categorization and innovation management. Then we describe the different software technologies and programming language used, followed by the result and the conclusion.

II. RELATED WORK

In recent years, research in the field of technology management has progressed, and technology is constantly increasing as the company grows. Because new innovations are often used for the growth and sustainability of one's business.

Another similar model, Proposed Sustainable Technology Management Model [1] has been proposed by Nida Hussain, Dr. Shahzada Alamgir Khan, and Komal Jamal. This model is flexible and easy to adopt and can be used in new businesses. This model consists of two environments: the internal value of the organization and the external market value known from the competitive environment. These values exist in parallel to process the transaction in real time. There are many platforms for sustainability technology models. Some principles, such as technology, innovation management, and leadership, fall into the "mention principles" category and are valuable as the primary support system for organizations, SMEs, or start-ups.

A recent study by Haixing Ni [4] selected a fairly new operational structure for the flow of business management projects in Chinese companies and used it to understand the effective allocation and management of corporate resources. In this structure, the company's resources are part of the capital and the project management mode is all the elements the company needs.The centralized use of this company must be carried out professionally for professional reasons, followed by the better development of the company's activities in the market and its economic activities. It is the company's duty to guarantee this activity.

III.   REVIEW ABOUT TECHNOLOGY MANAGEMENT IN BUSINESS MODELS

After Market competition is intensifying every day in every field. To raise the level of science and technology innovation, great attention must be paid to the application of technology innovation by companies. Inevitable problems arise in this process, but if companies can solve them by integrating sustainable business practices into their businesses, they will enable self-development, sustainability, and new technological advances in the distant future. Therefore, keeping up to date on new technologies is paramount to the survival of any business. Therefore, it is very important to constantly update business management concepts for technology management to have a significant impact on business models and to enable enterprises to achieve sustainable development in a market economy. This is how a company can differentiate itself from its competitors. Because the market economy is constantly changing, technology management improves the efficiency of enterprise management, increases the operational efficiency of enterprises, and contributes to the long-term development of enterprises [4]. There are different business models in today's times, but only those that take technology management into account will remain in the distant future.

One of these proposed models is the Sustainable Technology Management Model [1]. This model is flexible, adaptable, and adaptable to your business. There are two environments in this model: the internal values of the organization and the external market values known to the competitive landscape. These values exist in parallel to process the business in real time. There are many platforms for sustainable technology models. Several principles, such as technology, innovation management, leadership skills, etc., fall into the category of "mentioned principles" and are valuable as key support systems for any organization, small business or startup.

Another such structure is the Enterprise Business Management Structure [9]. In this structure, the capital can be made by that company, and the only element required is a project in managed mode. Basically, the company has the right to carry out a centralized application of the company's capital. They can also check and see if their economic activity exceeds the current level of development. However, some companies stick to the traditional approach. If a company isn't well established on its own, it usually won't work in the distant future.

IV.   PRODUCT CATEGORIZATION AND CUSTOMER ENGAGEMENT

The first thing to check is that each business needs knowledge of the customer types. In many terms, this is called customer segmentation or segmentation. Knowing who your product's target audience is is very important. In this way, customers are classified in the same way, and products can be divided into two types. A simple business model that describes these types is the "taxi bus system".

Taxi belongs to the category "customisable", whereas Bus belongs to the category "one size fits all". Let's start with giving an example here, most of the Companies regarded as consulting firms use the taxi business system to create it's standing in the market by communicating with specific clients to solve specific problems.

On the other hand, most of the companies, falling in the category of assemblers of automobile parts, make use of the said bus system business model. They manage to make an addition to their value by going into production of "one-size-fits-all" items and/or services in a constant attitude of items in the following manner, in comparison to a more standard, mass- production format.

4.1 Linkages

The set of relationships between customer group identification and customer needs recognition is part of this component. It is very important for developers to understand the types of clients they build systems/software on. Sometimes clustering groups of customers to create a product is also an important part of a product's success. Some Java frameworks do not provide this kind of clustering, but most Python frameworks do. Therefore, the programming language also depends on the system, and therefore it is a prerequisite for building the system.[10]

4.2 Refinement in innovation performance

Strategy professionals have taken the action of choosing their business model, while also considering the established link between technological innovation and their personal competitive advantage [9]. A certain technology hardly works independently of other technologies; therefore, interoperability is required to produce the desired result. This is a generally accepted relationship. However, in today's times, due to the sophistication in the field of information technology and the proximity of platform technology, it is becoming more dynamic, intense, and unsafe. Those who are accustomed to guessing the very simple relationship between effectiveness and technology development will provide results to the company or company and ignore the moderate impact of choosing a business model. According to recent research and analysis, the competition between platform companies for the survival of the entire platform depends on the support of offerings, which depends on technology, interoperability, and capabilities. These interactions are much more complex and dynamic in a two-way business model.

V.   THE DIFFERENT SOFTWARE TECHNOLOGIES/PROGRAMMING LANGUAGES USED

Most of the Aspiring software developers are always curious about which programming skill they should use and learn. So many languages are available but it's important to learn the right one. Everyone will often want to know about which languages are being used by top companies so they can try and get a job there. Some languages are often in more demand compared to others. The platform Uphill was successful in finding which 15 most important languages are, Objective-C, Golang, Windows PowerShell, Excel VBA, Kotlin, VB.NET, Ruby, Java, Swift, C, ASP.NET, C++, SQL, Python and C.The freelancing platform also found that despite Covid-19's economic impacts, developers are still "able to pursue high- earnings potential as independent professionals"[14]. The data gathered by Flyaps looks at the coding languages used by   the top companies. After going through their data, we can   say that the most used languages are java and python and are the languages used in most sectors. According to coding dojo, as of 2021 Python, SQL, Java, R, Visual Basic, JavaScript, C++, C, Objective C, Ruby is the

10 most programming languages used [15]. The jobs have dropped but not drastically and at a slow rate, it's understandable. The programming industry has kept themselves stronger than people imagined, and the developers are still in demand. A bit of a basic knowledge of programming languages can benefit anyone, even if you're not looking to become a programming expert. Basically, grasping the basics of any programming language can help you get the right people for the job that business needs, good communication with the engineering team and also reduce any awkward misunderstandings. One of the most upcoming languages to learn is Flutter, Flutter is a free and open-source mobile UI framework created by Google and released in May 2017[16]. One of the best parts about flutter is, it gives us an incentive by allowing you to use native mobile applications which require only one codebase. This means that you can use one programming language and one codebase to create two different apps (for iOS and Android), which is very convenient. The best part about learning flutter is, you can join the growing list of organizations that build amazing apps easily with Futter. Flutter can be called a modern framework. If you've used programming languages like Java, Swift and many others, you'll understand how flutter is different. The main part about Flutter is that it allows you to create a real native application without a bunch of code. Technology, specifically Artificial Intelligence, Big data and Internet of things are helping the industry accelerate its ability to help businesses do more with less and provide better results. Costs are cut as automation and robots are replacing human beings who require wages and benefits. Whatever happens, human labour will be a decreasing driver of economic growth. Labour shortages for many work tasks are pushing technology ahead more way more quickly than anticipated.

VI. EVALUATING THE DISPARITY BETWEEN OBJECT ORIENTED LANGUAGE AND PYTHON

A major domineering factor of varied technologies is the shaping the competitiveness of an enterprise or organization, as it requires a keen insight into the company's scope of development. The importance of programming languages is imperative to any company. The world of technological ad- vancement and development is continuously and frequently changing, but one element has managed to remain static all throughout this evolution is the existence of a stable programming language, which is in turn used to build the foundations of any application of the world. Languages like Java and Python are some of the most popular object-oriented languages on the market. The most popular object-oriented languages on the planet, Java and Python are blindly the first call for many businesses looking to build a web or desktop application. As mentioned, the most used languages are Java and Python. Basically, Java is a statically typed and compiled language, whereas Python is a dynamically typed and interpreted language. Basically, Java is a statically typed and compiled language, whereas Python is a dynamically typed and interpreted language. This distinction makes Java faster and easier to debug at runtime, while Python is easier to use and easier to read. If someone has no idea about programming languages, then python might be an easier language to learn and is also better for lengthy programs. Python can often be used as support language for software developers, business applications, build control and management testing [7], whereas Java is used as a server-side language for most back-end projects developments, including those which involve big data and Android development. It's also commonly used for desktop computing, other mobile computing, numerical computing, and games [2]. The programming language used by developers cannot be ignored as it is an integral part of software development. There has always been a war between Java and Python first. Basically, Java is written with the intention of being written in any language without any dependencies or potential glitches. Python is a very dynamic language. Developers don't have to introduce variables when entering code. Runtime input. This makes Python a colloquially simple language like English. One of the other factors that makes working with the language easier is that it doesn't have indentation rules or curly braces around it. So, it can be said that Python is a beginner-friendly and easy-to-read language. Java, on the other hand, is the exact opposite in this respect. Java has very strict syntax rules where all variables must be entered, and if an error or anomaly occurs in the code, the program will not start at all. Let's look at a basic Java example. To define a multiline block or method, you must enclose the lines in curly braces. Python already allowed indentation when writing multiline blocks. Python is best suited for games, imaging and graphic design, language development, operating systems, prototyping, and machine learning applications. Whereas, Java is best suited for Mobile Applications, Enterprise Solutions and Embedded Systems, Desktop GUI Apps, Middleware Products.[12] Having considered both the languages against various parameters, it's hard to decide about which language trumps over the other one. Based on all the options discussed, Java may be the more popular option, but Python is the more popular. According to the survey, people outside the development industry have also used Python for a variety of organizational purposes. Finally, it depends on the type of program the developer wants to create. If you take the above parameters into account and your language matches most of the fields, you can safely use it. However, if you are just starting to develop, Python may be your best choice. On the other hand, Java is always the preferred choice for enterprise-class programs.
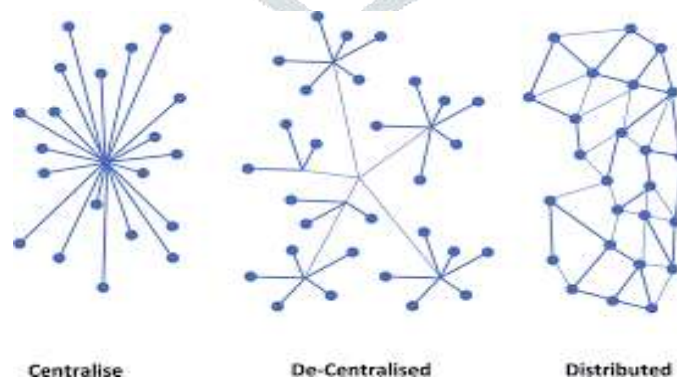
VII. ADDITION OF BLOCKCHAIN IN THE MARKET

Fig.1: centralised vs decentralised vs distributed [19]

Blockchain is used to provide a decentralised solution for software development, the current systems in the world are working under centralization. The use of blockchain technology is becoming more and more popular by the day. No matter if it is business, finance, or charity; we see this technology becoming integrated into the mainstream. New and innovative ways to use this technology are being thought up and developed. This technology has the potential to change the entire landscape of the internet and the way we do business and interact with each other. The blockchain is a transparent and secure record of transactions that is stored on multiple computers at the same time. It is a set of new technologies that enable the existence of cryptocurrency such as Bitcoin and Ethereum through systems such as torrents that are decentralised exist, but they have not been able to replace the centralised system due to the lack of authentication and security. Blockchain can be one of the

best solutions that mitigates those risks as it is a decentralised system which provides security and authentication for all the participants of the network.[17]

Blockchain has already been implemented in many areas in different countries, some of the notable examples are in the country of Georgia they aimed to have a fast, transparent and immutable system with the help of blockchain for the registration of property. They have shown the results of the potential system, the services shall be 700 times faster and disputes related to property would be 20% less. Furthermore, a digital document takes less than 3 minutes to generate and store the hash code.

The Swedish government aimed to reduce the involvement of middlemen in the transaction which would cause possible inconvenience to the parties involved in terms of time and money. By providing a single platform that can be accessed by all the parties: Buyer, Seller, Agent/Broker, Bank if needed for a loan.

Some notable real estate companies adopting blockchain are Imbrex: An auction platform that decentralizes and encrypts data using blockchain, it connects buyers directly with auction sellers and makes use of virtual tokens in place of cash to offer greater transparency and minimize boundaries to the buying / promoting process

The Crypto Reality Group: It is a consulting firm that works with cryptocurrency escrow corporations and financial advisory companies to assist customers purchase and promote residential, commercial, neighbourhood and worldwide real estate using cryptocurrency.

The Leading Coin: It gives peer-to-peer real estate financing via the blockchain. The organization gives partial real estate holdings and guarantees that everyone's transactions are obvious and traceable.

Some more works we came across in India[18] are the land registration digitization work being undertaken by the Indian government includes HALRIS (Haryana Land Registration Information System), a project that the Haryana government has been digitizing land registration since 2000. Another project initiated by the Karnataka state government in 2004 is the Bhumi program, which is accelerating the digitization of land registers and the digitization of approximately 20 million land registers owned by 6.7 million farmers in the state. Chhattisgarh launched the Chhattisgarh Online Information for Citizen Empowerment (CHOiCE) project to provide services such as land registers. projects to digitize land records.

Most of the states in India are implementing a decentralized solution for land registration and have not yet begun to do the same for residential property registration.I would like to conclude by saying The Blockchain is a very viable technology for the future, blockchain mitigates the drawbacks of a single point of failure via decentralisation, it provides authentication, there is more Enhanced security and redundant storage which ensures that data is not lost even if one peer crashes. Blockchain can help reduce all these problems and also help in management of data.

VIII.   CONCLUSION

The continuous progress of the society with the cruel competition easily follows the crisis and the extreme opportunity that exists at the same time. Information and technology have entered Modern society. We reviewed and compared different business models, structures, and understood that, at the initial stage of starting up a new business, it's highly suggestive to make a priority of what and how much to invest. A public enterprise is an open business. The profit of the enterprise should be realized in the market and should be contributed to the state for investment in other sectors. The enterprise's investment distribution mainly includes capital investment, land investment, housing investment, project investment, and actual operating investment, etc. Budgetary operation is an important part of the enterprise's financial management and requires a good grasp of the enterprise's budget and a good budget approach. A variety of investment plans and investment behaviour is developed and developed, and management and management mean of enterprise investment operation mode is developed and developed. Enterprise investment operation is an important indicator of healthy and stable development of enterprise and macro economy and a basic policy of the government's demand and supply balance control. Enterprise investment operation has a significant influence on enterprise development and macro economy development. If the sole product is not a technology related product, then more focus can be given on other sectors. If technology is the sole product for sale, then a high amount of focus is required on the platform, programming language, API etc. Innovation management, Technology, Forecasting Management, System/ design thinking approach, leadership skills, are the backbone of any organization. Coming over to the technology side, evaluating the disparity between object-oriented programming languages Java and Python. As per the survey taken in the industry, we found out that these 2 are the most "opted for " types of languages. After reviewing some papers and surveys we've understood that python and Java are equally used but, python is shaping the way forward. The reason behind this is because Java makes use of ByteCode which makes it very portable whereas Python reduces the LOC (line of code) since it has numerous inbuilt functions and library. Flutter is an emerging language which we predict that it will overcome JAVA for app development since it's a single code for multiple operating systems like iOS and Android. After taking other multiple Surveys, we also found that Python is the most used and learned language of this decade since the code can be more optimized and it also has better connectivity with other Web Languages as well. Platforms used for python are evolving day by day. Businesses have started to understand, to keep up to the market level they will have to think of the future and design the product accordingly. If a technology, which is diminished, is used for making a futuristic product, then it would become difficult for it to sustain in the market. To sustain such products, we have also discussed Sustainable Technology management model and Enterprise Business Management Structure which can be foreseen and modified to find better solutions. Product categorization and refinement of innovation is something every startup or even established organizations are working on.

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