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An Examination of the Strategic Use of IT Applications in Achieving Competitive Advantages

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Abstract: *Information Technology has been growing faster for the past decades and it has become one of the important way to help the organizations to sustain competitive advantages. A study has been carried out to determine the importance and impact of Information Technology to organizations. In this paper, I have examined how different organizations use Information Technology Applications to stay competitive against their competitors. The main analysis methods used are Strategic Option Generator, Porter's Five Forces and Porter's Generic Framework. After the analysis, the results show that an organization without an Information Technology Application is unable to stay competitive in today's business environment.*

Keywords: *Competitive Advantages, Information Technology Applications, Porter's Five Forces, Porter's Generic Strategies Framework, Strategic Option Generator.*

I. INTRODUCTION

In today's business world, Information Technology (IT) is very important to every organization. IT has become a very hot, highly discussed and vital in every business plan. It helps to solve every complex problem and decision making in organization. Every IT application in an organization has their own role. The following part will examine the strategic use of IT applications in achieving competitive advantages. According to [27], strategic use of IT is known to be a "Strategic enabler to meet business objectives, to provide competitiveness and to achieve a favorable business performance for long term survival." Before going in detail about the strategic use of IT application, it is important to review what the term "strategy" and "strategic use" refer to.

II. LITERATURE REVIEW

The term "strategy" was a concept that was used in Military that was later adopted into the business context [27]. [1] described strategy as the 'the determination of basic long-term goals of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals. Another definition of strategy is the concept of strategy lies in the way a company finds a position where it can best defend itself against structural forces or can influence in its favor [27]. In this definition the structural forces refer to Porters five competitive forces, which are: the rivalry among industry competitors, the bargaining power of buyers, the bargaining power of suppliers, the threat of new entrants and the pressure from companies offering substitute products or services. From all the above definition the concept of strategy can be concluded as a fundamental means of deploying organization resources that determines how the organization will achieve its goal and objectives; and a pattern of actions leading to defences against or influence on the environmental focus.

In IT literature the term "strategic use" defined as "being that of action, policy, plan, application or an employment of resources that is aimed at achieving a company's success, as embedded in the company's strategy". This is based on the "porters

3 generic strategy, which are cost leadership, focus and differentiation [27]. [25] described strategic use of IT as a system that is used to support or shape an organizations competitive strategy, its plan for gaining and maintaining competitive advantage. [39] defined strategic use of IT in terms of the outcome of effect an application has on company's success and destiny, either by influencing or 'shaping' the company's strategy or by playing a direct role in the implementation of the strategy.

An IT application can be considered as strategic if it acts as a direct role to the business strategy and help the organizations to stay competitive. It must be included as a key element of the organization strategy hence helping organization to have a sustained comparative advantage. In addition to this, if the application is unable to provide organization with competitive advantage or reduce the competitive from the competitor then the IT application is not considered as strategic. Barbara et al [3] stated that for an application to be strategic, the application should be able to change how the company competes in the industry that should help to increase the business performance. Furthermore, the organization production, sales and service related functions should depend on the IT application, in order for the application to be considered as strategic. They stated that strategic IT applications are outward looking and the aim is to provide new services to customer and suppliers. Meaning the IT application that is being built or already built should be able to function in such a way that it provides customer or suppliers new services that was not provided before or provided by the competitors, making the IT application unique. According to [27], some of the ways that IT application can help is by differentiating products from competitors, such that customer directly perceives the value of the system to them through providing information and services, customizing products, eliminating delays, improving reliability, by passing intermediaries, or reducing transaction time. Furthermore, using IT application, applications can help to influence buying decisions by contributing to price reduction, or differentiating products by quality, content and value, or if it opens up new market through facilitating business presence in new geographical areas.

Five Dimensions of Strategic Use of IT

The strategic use of IT can be concluded into 5 different dimensions, which are strategic vision, strategic criticality, strategic cohesion, strategic targets and strategic strengths. The 5 dimensions will help managers with the strategic use of IT in the organization/firm.

In order to use IT strategically the first dimension to be looked is **Strategic Vision**. According to [8], a strategic vision is the ability to understand how an IT application is used to support or shape the firms' competitive strategy that in turn helps to navigate the firms strategic path. One of the most important areas in strategic vision is combining consistency and dependency of IT with the organization strategy. This can be achieved by seeing how IT support and interact with the organization strategy processes. If a firm has differentiation strategy with cost-efficient production and has not combined IT and the firm's strategy properly then it could result the firm being unable to differentiate the product or service due to the cost-efficient process. If the firm has an application to connect with suppliers to get parts for production (to reduce cost such as labor, material cost, etc.) but the application is not properly implemented to fit the organizations strategy, it can result in failure, because the application is not being fully utilized (to see the latest parts or to differentiate the high quality parts) resulting the organization to be unable to differentiate the product or service as IT application is not combined properly with the organization strategy to meet the objectives. Hence for an application to be of strategic use, it is important to make sure that IT has a well-defined path at the same time support the long-term corporate strategy.

The second dimension is **Strategic Criticality**. This strategic should be used in critical area of business. It means the use of IT in function that has the highest impact on the organization. By doing so, an organization should minimize the costs and maximize the value of an IT application. For example, if an organization is using a low cost to compete in the market, the application should be able to reduce the costs, help in procurement and delivery products or services. If these have been achieved, then an application can be considered as strategic use as it supports the business in most of the critical areas.

The third dimension is **Strategic Cohesion**. This dimension makes sure that the organizations' goals are achieved by using operational and managerial support. Also if the organization is cohesive then the organization can easily modify and co-ordinate process flow based on any change. Strategic cohesion is about coordinating, controlling and integrating the work flow in order to support the organization strategy, this means that cohesion make sure the organization has efficiency and effectiveness in the business at all times. According to [26], Strategic Cohesion can be determined based on ways organization uses IT, following are some of the ways: "as a means of expediting and streamlining operation and communication", "as an information support to enable functions areas to consult one another", "as a means to automate routine tasks, scheduling and reducing uncertainty in work procedures" and "as a means to exploit slack resources".

The fourth dimension is **Strategic Target**. Strategic Target is referred as the ability of an organization to utilize IT to influence competitive targets e.g. customers, suppliers and competitors, is deterministic of its ability to sustain its performance in the marketplace [35]. In addition, the success of organization is known through the target influences, as the target plays a huge role when achieving the organization goals. Hence the strategic use of IT is determined by finding how the IT application is able to have influence on the targets. In order for an application to meet the strategic target, the application should be able to do the following: "Influence customers buying behavior", "Reducing suppliers bargaining power", "Reduced the imitability of an application" and "In an expected time/duration the application should have an advantage over its competitors".

The fifth dimension is **Strategic Strengths**. According to [2], the organization strength increases if IT supports motivation of employees such that they are more confident in their work and are more willing to change because of the dynamic imposed by the marketplace. This means that if the employees have really skills then the organization can easily adjust changes in the market and tends to be more innovative and creative. According to [27], if an application provides flexibility and motivational support for the employees, then strategic strengths can be calculated. Strategic strengths can be calculated by the ability for employees to specialize in their work or become an expert in a particular area, the ability of IT to make work more exciting by experimenting with new ideas and making employees more confident of the quality of their work.

Thus, for the strategic use of IT, the above five dimensions need to be considered so that it can be formalized and organized for the present and future of the organization. IT should be combined equally with the organization's objectives for the organization to be successful and stay competitive.

III. RESEARCH APPROACH

The research methods that have been used are collecting and using information from published journal, case studies, books and online resources. The main analysis of this paper are done using 3 frameworks, which are **Strategy Option Generator (SOG)**, **Porters 5 Forces** and **Porters Generic Strategies Framework**. The Porters 5 Forces is based on the telecommunication Industry and the main company chosen is Apple Inc. The SOG is done based on Industries such as Airline Industry, Computer Industry, Clothing Industry using different companies such as Zara, Apple Inc., KLM Royal Dutch Airlines, Driving Mobile Innovation (DMI) along with Samsung. Porters Generic Framework is discussed using Apple Inc., Wal-Mart and IKEA which are companies in Computer Industry, Hypermarket Industry and Furniture Industry. Porters 5 forces framework is used in this paper, as it helps to analyze the external environment and identify the position and the competition that is in the external environment and to find the position of the company.

IV. ANALYSIS AND EVALUATION

A. Strategy Option Generator

Strategy Option Generator, which was proposed and developed by [40]. This framework is used to identify the opportunities so that the organization can stay competitive.

i. Differentiation

According to [19], one of the tools to achieve competitive advantage is product differentiation. Differentiation strategy will be needed by the organization to meet the current and future market needs [12]. It also helps the organization to keep themselves competitive in the marketplace. That is the organization needs to provide unique products that satisfy customers. [13] discusses how Zara, one of the famous fashion retailer can stay competitive advantage. Zara is one of the most successful companies in Spain. Zara is able to provide a fast respond to the market because differentiation strategy has been applied in design, information systems and logistics management. They have their own factories located in Spain, designers and stores. Every designer has a close relationship and contact with the stores thus they are able to respond to the rapid changing trends. The company has their own machines that are all computer-controlled to cut fabric. Zara purchased the textile from their suppliers around the world and perform the final product like clothes on their own. Hence, Zara is able to stay competitive by reacting faster than their competitors. Apple Inc. also applied differentiation strategy for their products like computers and iPhones. [20] said Apple's computers are differentiated from others because their Operating System is highly secured and protected from viruses and hackers. Besides, Apple always put more concern about consumer's lifestyle on their product design. Apple has chosen the best quality material and the most comfortable designs for their products. These will make consumers feel that they have purchase a valuable product. Apple also provides software programmer a platform that is able to access iPhone's locked software. This platform comes with a feature that protected the software from malicious programs. Thus, it allows the end users to use without worries.

ii. Cost

The main focus of cost thrust is mainly on reducing costs or increasing competitor's costs. The author, Phillips has mentioned in his book that by applying IT in business, one of the benefits is IT can help to reduce costs across the entire organization [30]. Besides, [22] also discussed in his business research that one of the benefits of using IT in a firm can help to reduce general cost. [5] said that IT plays a major role in communication of an organization. IT helps the organization to reduce the communication cost through the use of management by exception. According to [7], construction organization has used IT to reduce cost. Automation System for Architectural Practices (ASAP) and Multi-Phase Integrated Automation System (MIAS) have been implemented and used in the organization. These systems bring conveniences to the organization such as cost reduction, easier access to accurate up-to-date information, data storage, able to share information, better communication among each other and reduce the paper usage. Hence, the organization is able to have competitive advantage since the IT provides new revenues, quality improvements and less resources consumptions.

iii. Innovation

In today's world, a company without innovation is unable to stay competitive in the market. [32] said that innovation is one of the elements that brings the company to success future and it is an element to realize the customer's desires and reach their satisfaction. Apple Inc. is one of the companies that aligned IT innovation into their business operations. Apple has invented an innovative product, iPod which has solved a lot of problems. Before the iPods are introduced, the MP3 players in the market have small storage, poor battery life and clumsy user interface. iPods are the first MP3 players that allow users to create playlist and shuffle through tracks. Although iPods are not the first MP3 players in the market, but Apple has created the world's first transformational customer experience with portable music [26]. Apple also created and applied new technology in iPods such as using 1.8-inch hard disk (smaller and lighter), FireWire (faster data transfer rate) and lithium batteries (longer battery life).

iv. Growth

In order to make an organization to stay competitive, it is very important to increase its business. A study by [29] states that Internet is a pervasive tool that offers business to grow in sales and reduce costs. According to [17], they said that the business has increased using social technologies such as YouTube, Facebook and Twitter.

63% of companies using social media say it has increased marketing effectiveness—among other benefits.

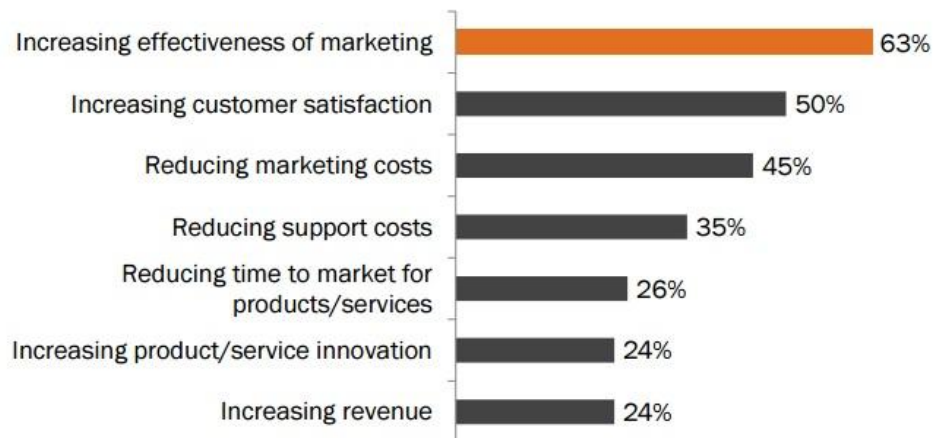


Fig.1 Percentage of Benefits Gained Using Social Media. [15]

A marketing statistics (Figure 1) shows that almost 63% of companies that use social media has increased the effectiveness of marketing. An article written by [34] said KLM Royal Dutch Airlines has used social media strategy in their business. They will update every social media page every five minutes. Through this, they are able to enhance customer service area and thus increase the business. KLM always listening to their customers on social media. In 2001, a Dutch filmmaker tweeted about his disappointment on KLM's twitter due to lack of flight from Amsterdam to Miami. A KLM representative then respond to the filmmaker and a campaign Fly2Miami sold out the flight less than 5 hours. Thus KLM business has increased. Today, KLM has their own customer service channel and KLM has 70,000 queries per week in 14 languages [21].

v. Alliance

Strategy use of IT allows the organization to create and apply strategy alliance in order to achieve competitive advantages. Organization will need to cooperate with one or more organizations in specific business activities. According to PR Newswire [10], Driving Mobile Innovation (DMI), a company that provides big data solutions and services has joined with Samsung, to provide mobility services. DMI and Samsung work together and deploy Samsung Enterprise Service, which is designed for enterprise consumers. DMI also manage and provide platform, Samsung Knox to overcome Samsung security problem. With the help of Samsung Knox, the security of the device has improved. With the services provided by DMI, Samsung becomes the most exciting devices today. Jay Sunny Bajaj, CEO of DMI claims that consumers today have made a right decision on Android OS especially Samsung devices.

B. Porter's Generic Strategies Framework

Aside from Strategic Option Generator, some businesses also use porter's generic strategies framework. According to [31], this strategy allows the organization to stay competitive and perform better than competitors. The framework contains three strategies, they are differentiation, cost leadership and focus strategies. Differentiation strategy refers to the organization offers differentiated products and services. It can be from many degrees of differentiation, such as design, features, brand images, customer services, ease of use etc. Cost leadership strategy refers to the organization focuses on producing the products and

services at lower costs. Porter said the organization is able to earn returns after the competitors have driven out of the marketplace. Focus strategy refers to the organization produces a low cost products and services to serve a segment of a market.

i. Differentiation

The best organization that applied this strategy is Apple Inc. Apple Inc. has differentiated their product from product design and ease of use. Apple always produce well-designed, attractive products [28]. According to [24], Apple Inc. is more focus on the product design combined with user-friendliness. They always stay competitive from their competitors by key features beneficial to their customers. One of the differentiated product that Apple has launched is iPod. When iPod first launched in October 2001, it comes with an intuitive interface design, smaller body size and lighter weight. One of the differentiated design is iPod is the first player that uses 1.8” Toshiba hard drive to store music rather than using conventional flash memory. [33] said that using flash memory which developed by Sony will cause automatically shut down during playback. After 2 years, Apple has developed iTunes music store, where customers can download songs and directly use iPod to play the songs. iTunes software also allows the users to transfer songs synchronically from computer to their iPod. According to [36], iPod is also designed to meet customers’ needs. It provides a two-inch-diameter thumb wheel that allows the users to scroll through the menu in the screen. Besides, iPod firewire connectivity allows a higher data transfer rate compared to others portable music player which uses the slower USB connection. Due to Apple always produce a design differentiation, it helps to enhance the corporate image of Apple Inc. [9].

ii. Cost Leadership

Wal-Mart has become the largest stores in the world that supplies a variation of lowest cost general merchandise [11]. Wal-Mart constantly focuses on the way to always sell their products at lowest price. Based on the Wal-Mart official website [38], Wal-Mart has 11,526 retail units in 28 countries and they have employed 2.2 million associates worldwide. In order to become the world’s largest organization, they have used cost leadership strategy. They emphasize on selling low price products and help the customers to save money. According to [6], he said one of the strategies - everyday low prices, that is selling the products with low costs every day. [4] also said the principle that Wal-Mart used is always sell the large amount of discounted products to customers.

iii. Focus

An organization that uses focus strategy for its competitive advantage is IKEA, which sells a wonderful design of home furnishings and accessories at lower cost. According to [16], the vision from the business idea is offering a wide range of affordable home furnishing products so that many people able to afford as possible. In order to achieve their vision, they follow focused cost leadership strategy. [14] stated that the targeted market buyers are young buyers who are searching for a good design, functionality and good quality at affordable price. IKEA has concentrated on the activities on producing low cost product. Thus, IKEA tries to sell product that are cheap for the quality and avoid their product from upper-class stores [18]. Based on [14], one of the activity is IKEA provides a ready low-cost furniture that allows customers ready to assemble. Besides, IKEA also provides image about the different view angle printed on the box. This helps the customers to know how the arrangement will look like. This is one of the ways that helps IKEA to keep its cost low. Compared to their competitors who spend money on displaying demo set of furniture in their stores.

C. Porter’s Five Forces

Another framework is Porters 5 Forces, this helps to determine how good an Industry is to enter, meaning how much a company can profit from entering into the market. Also helps to determine whether it is reasonable to enter to the market or should be avoided. Porters 5 forces states that if the forces are strong, that the company has less chance of gaining a good profit from the market. The 5 forces are Threat of new Entrants, The bargaining power of suppliers, the bargaining power of buyers, Threat of substitute products or services and Rivalry among existing competitors. “Porter (1979) assumes these five forces to be

applicable to absolutely every industry, regardless of if it is low-tech or high-tech, emerging economy or developed economy (Porter 2008) and sees them as a vital key to determining industry trends, profitability and attractiveness” [23]. In this paper Porters 5 Forces will be discussed based on the Industry of Telecommunication in which Apple Inc. will be the main focused company.

i. Threat of New Entrants

According to [23], the threat of new entrants in a given industry is vital factor in determining industry profitability and attractiveness. Porter stated that economies of scale, product or services differentiation and capital requirements are the main sources of barriers when estimating the threat of new entrants. The threat of new entrant in the telecommunication industry is high as the entering requires a very low fixed cost as company can easily join in to the industry through online stores, reducing cost on physical store hence the startup cost is low. Since Apple Inc. is in a competitive industry this results Apple Inc. to face new competition constantly and these new competitors might also become a serious competition in the future.

ii. Bargaining Power of Buyers

According to [23], the bargaining power of buyers is the level to which buyers can exert power on participants in an industry. This can happen through various ways such as force down prices, demand higher quality and play competition off against each other. Telecommunication Industry the bargaining power is moderate, basically meaning that the buyer as well as Apple Inc. has the power on products and services equally. In case of the buyer, the buyers can easily choose another product as the mobile phones are differentiated only by the form factor or the price. This means that the buyers can easily get a product with the same features as the Apple Inc. products gaining an advantage over the Apple Inc. For example, Apple Inc. produced iPhone 5C as a replacement for iPhone 5 as Apple Inc. was losing a lot of customers to competition due to low priced products that were offered by the competitors that had the same features as the Apple Inc. products. But the power of the buyer is balanced as Apple Inc. is known for the operating system (iOS) and quality in products that are produced, making it impossible for a buyer who wants a mobile phone with an Operating System (iOS, app store), a good design and quality to choose another company as Apple Inc. is the only company to offer such products and services.

iii. Bargaining Power of Suppliers

According to [23], bargaining power of suppliers is the level to which suppliers can exert power on participants in an industry. Suppliers can exert power on firms operating in a specific industry by knowing that there are no fallback suppliers to which firms can shift. The bargaining power in telecommunication industry is moderate. One of the reason for this is due to brand loyalty from the customers. For example, Apple Inc. has a very huge customer base that is loyal, that customers tend to buy products of Apple at unreasonable prices. Hence even if the prices of suppliers are high, Apple Inc. would still be able to buy from the suppliers as Apple Inc. has a market with loyal customers that will help to cover the supplier’s prices. According to [37], Apple Inc. has a diverse set of suppliers, meaning that parts used in the manufacturing of products are not supplied by one main supplier but from different supplier, that Apple Inc. can easily switch from one supplier to other.

iv. Threat of Substitute Products or Services

[23] said the threat of substitute products or services is basically described as the level to which products or services are exchangeable with other products or services in the same industry. The threat of substitute products or services in telecommunication Industry is considered to be moderate as mobile phones are very common and the reliability of mobile phones are based on the mobile phone itself and on the operating system. For this Apple Inc. has a huge competitive advantage, as their products are reliable and also have an extremely good Operating system with the largest apps store in the market. Making Apple Inc. products hard to be replaced by substitute products. Even though second hand mobile phone are substitute products, people do not buy these due to warranty issues or because the mobile phones are not original, in such cases Apple Inc. has more power over the second hand products.

v. Rivalry Amongst Existing Competitors

Based on [23], Rivalry among existing competition is about using tactics such as price competition, advertising slugfests and product innovation in order to assume a fixed position in the industry. In telecommunication industry, Rivalry amongst existing competitors is high. For Apple Inc. also the competition has been high, as Apple Inc. is a company that sells hardware and software globally. According to [37], Apple is also losing its smart phone market share, 14% decline in recent company's quarterly report, Apple iPad growth also slowed to just 13% as compared to competitors 79%. However, Apple Inc. is able to remain competitive as they are focusing on selling simple and user friendly products and also the product line less compared to competitors that offer various choices, making it difficult to choose from, hence customers choose Apple Inc. products as they have less products that are more differentiated in terms of design and operating system compared to competitors.

V. CONCLUSION

This paper has emphasized the importance of the use of Information Technology applications in organizations that can sustain competitive advantage. It also shows that no organization can survive without the use of Information Technology. Information Technology also supports organization's strategic objectives. With the help of Information Technology, it helps the organization to produce differentiated products which provide more conveniences than competitors. Cost to produce the products can also be reduced dramatically. Information Technology also allows different organization to work together in order to provide different services for each other. Organization can also align IT innovation into their business operations.

VI. RECOMMENDATIONS

There are some ways to improve organizational effectiveness through technology. First and foremost, it is important to understand what the needs of the organization are. Then think what needs to be fixed and what could be improved. By doing so it is able to make sure that the technology is able to address the solution for the organization's problem and thus reach the organization's objectives. Besides, there is also a need to consider whether to improve the organization using a small creativity or buy an expensive technology. The organization should avoid one-time-use technology as this is a waste of money.

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