



Competitive Advantage of Open Innovation in the Context of Enterprise Digital Transformation

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Abstract. Enterprise digital transformation is the implementation of digital solutions to company systems. With digital transformation, enterprises move their businesses to cloud infrastructure and improve business operations. This paper explores whether open innovation has a competitive advantage in a digital context. To answer this question, the author explores the two domains of open competitive advantage through literature research and case studies from multiple perspectives, including feasibility, drivers, and the concept of competitive advantage. In addition, the concept of dynamic capability theory is introduced to explain the competitive advantages of open innovation and the important role of sustainable development in the digital transformation of enterprises.

Keywords: Open Innovation · Enterprise Digital Transformation · Innovation management · Competitive Advantage

1 Introduction

The new generation of digital technologies represented by the Internet of Things, cloud computing platforms, mobile informationization, artificial intelligence, etc. is changing people's lifestyles and reshaping numerous industries. The new technologies not only enable enterprises to acquire new assets through digitalization - data, but also provide a more friendly environment for the innovation activities of enterprises. Innovation is becoming more open; the way companies manage innovation requires alteration. Open innovation is a new type of innovation model that is more acclaimed by enterprises. So, under the premise of digital transformation, does open innovation have a competitive advantage? In order to explore the above problem, this paper research on the feasibility of open innovation, the key drivers to open innovation, and competitive advantage through the literature research method and the case analysis method and explores the two areas of open competitive advantage. This was followed by the introduction of the concept of dynamic capability theory to elaborate on the competitive advantages of open innovation. Finally, the important role of sustainable development in the digital transformation of enterprises is expound.

Digital transformation means the moves by companies to enhance their operations by applying various tech-centric elements that are meant to shift to more innovation

through the application of cloud software powered by microservices architecture. The use of modern technologies to create a modified corporate system helps in competitive advantage [1]. Therefore, digital transformation has gradually become a strategic priority for many companies and has become a strategic choice for those companies who are seeking business development and operational optimization.

When a company has established its digital formations, it can meet the customer's demands that require new applications that can be deployed using single functions without affecting other metrics applied simultaneously in a given firm's framework.

2 Open Innovation and Competitive Advantage

The term open innovation refers to applying expert knowledge to increase internal advancement frameworks while expanding the external market perspectives through research and development metrics. Open innovation supplies new programs that are initiated, tested and implemented to allow a certain organization gets a market share in the area of specialization. For example, Mozilla is an open innovation developed by the Firefox web browser [2]. Mozilla is among the key paraphernalia that advances the browsing experience through the open-source management of software, which makes people learn.

A given community is allowed to participate in the Mozilla product development that is meant to create research that develops the talents available [2]. Therefore, all these metrics under innovation are targeted to increase the competitive advantage. Innovation starts within the company's employees who power the moves to advance. 60% of technocrats believe that internal staff are vital in delivering people-centered innovation [3]. Other key contributors include technology partners who take 50% while academic research taking 22% among many others [3]. Thus, open innovation has been embraced to bring competitive advantage in many companies.

It is vital to explain the concept of competitive advantage among the variables in the research paper. It refers to the elements that enable a firm to develop goods and services better and at cost-friendly factors than its rivals [4]. It means most consumers will prefer a company due to the ability to produce and generate sales that can be differentiated from other similar products offered by other companies.

3 Whether Open Innovation Has a Competitive Advantage

The economic is evolving fleetly, technology production and science research are iterating frequently, and new interior design in most cases lags behind market demand. The use of open innovation by the companies can lead to a new shift from "internalization" to "open", provide a new vision for the long term, and facilitate the process of research and development.

It is true to say that open innovation has a competitive advantage. The reason is that when a company develops elements that bring differentiation from other similar organizations' products, consumerism is likely to shift in favor of the company. When a firm has proved to be better than rivals in terms of production and delivery of the items, it gets a stable market share hence, gaining a competitive advantage [5]. It is important to

mention that open innovation's main target is to ensure that a company responds swiftly to the probable competitive advantage by having rapidly-changing selling points and digital aspects that maximize the functions of a given company.

During open innovation, a company gets the information and knowledge required to improve production. When there are advanced formations that increase the brand power in the market, that can be termed a competitive advantage. Considering the rate at which companies are producing fake products in the market, a firm can engage in research and development to meet the goals and objectives that can build the productive lines of that company [6]. For an organization to fully observe competitive advantage elements, it must have pressed on key methodologies that improve innovation by applying technology based on artificial intelligence perspectives.

Open innovation has been embraced at National Aeronautics and Space Administration (NASA) in developing mathematical algorithms. The purpose of adopting the innovative strategy was to govern the optimum content of kits for the agency's future crewed operations. Through a collaborative effort with TopCoder, London and Harvard business schools, NASA was able to get more than 2833 codes that assisted the firm to develop the targeted algorithm [7]. All that was supported by digital aspects that relied on mathematical technology to meet NASA's objectives.

4 Areas of Competitive Advantage in Exploring Open Innovation

4.1 Cost Leadership

In a company, cost leadership focuses on price, whereby the company, through the leadership bodies, the company ensures the products and services offered have the lowest price in the market. However, such a company requires low production costs so that it can have returns on revenue when it begins to sell in the market [8]. Open innovation reduces costs in an organization by inventing ideas to improve the existing products and services. There is a need to partner with various external parties to combine the k knowledge and expertise power to reduce the costs through an organizational strategy that incorporates cost leadership.

Open innovation emphasizes the need to remove barriers in organizational strategies and policies that may limit the goal of being relevant in the market. At this point, digital transformation creates and develops new ideas about the technical requirements that can reduce costs during the production and distribution of products in the market [8]. In the paradigm of cost leadership, open innovation acquires technological ideas applied by the organization to lower the cost of producing goods in the market. There is a quality improvement to protect competitive advantage by cutting the cost.

4.2 Differentiation

Part of the key element of competitive advantage is differentiation which means a company will use unique selling perspectives to distinguish itself from other rival firms. Digital transformations powered by open innovation become a value proposition to the customers to bring them from their competitors. For example, under open innovation, a

company may use cloud software that can enable fast results when dealing with online clients [6]. As a result, the customers will be willing to visit the firm for more business transactions, hence having high revenue returns. Nowadays, technology, which is part of digital transformation drivers, has enabled companies to create websites that assist in selling new services to the customer hence, getting definition from open, innovative aspects of the company.

5 Dynamic Capability Theory

The dynamic capability theory explains a company's ability to structure, combine, and reconstruct internal and external competencies to adapt to new changes in the market. Through the theory, a reader can understand basic concepts that a company can use to fit in the market by applying open innovation to cost and differentiation leadership strategies that guarantee competitive advantage [8]. A holistic perspective of this matter encompasses the use of open innovation through a dynamic capability framework to develop a system-level approach to the business technology and other resources that can be useful in gaining a competitive advantage. While a firm tries to integrate and build a rapid external capability, there must be a digital transformation that applies tech-centric applications to change the work functions.

A company's dynamic capability perspective can be increased and made stable by the calculative utilization of technology through open innovation, resulting in digital transformation for the company. For example, a company's decision-making bodies can seize or transform the routines implemented through technology. For example, Apple is a company that has evolved through innovation and the application of rapid changes that occur due to digital transformation [8]. Through open technological innovation, Apple has advanced in IT-based services and cloud computing moves that facilitate its dominance in the market; hence, a competitive advantage is secured. Through E-pay, Apple can enable contactless payments anywhere, such as in vending machines, grocery stores, and cabs [9]. By enabling open innovation, the company can skip lengthy checking forms, and a customer can pat with one-touch or glance.

Dynamic capability theory combines capabilities and steps that a company may use for specific processes that are implementable by creating values and technology that can change with environmental demands. Since the theory bases most of its framework on an external point of view for a company, the major effect is felt through technological collaboration between different parties involved [6]. Open innovation relates to the dynamic perspective since it is under the company's existing plans that a new innovative strategy is developed. Therefore, the internal elements of an organization must be fused with external forces to enable the transformation that is powered technologically. Dynamic capability incorporates information technology resources to gain a competitive advantage. Additionally, it meets the growing needs of consumers by cultivating the new formations that need to be changed through innovative efforts that lead to digital transformation [10]. Thus, digital capability is a key measure of a company's success if it applies technology towards gaining a stable competitive advantage.

6 Sustainability

Digital transformation is key to sustainability in any given specialization and production line for companies. It impacts the organization's aspects that form an integral part of its future and guarantees operations [9]. If a company wants to remain relevant in the market, it must embrace technology and open innovation, which will make a sustainable business operation. Many of the world's established companies have gone digital to protect their competitive advantage to ensure a sustainable future in enterprise management [10]. Firms must invest in areas where sustainability goals will be easily achieved as firms spend on the digital transition.

A significant sustainability effort must be calculated from a digital point of view which requires technology and open innovation. For example, a company that produces electronics must have a plan to reduce the rate of emissions that can cause harm to the environment. There is a possibility of avoiding 26 billion metric tons of carbon dioxide emissions from electricity, logistics, and automotive [1]. Digital transformations have led to the establishment of data centers that often give information about the need for cooling systems that can enable a safe environment. All those efforts are to ensure that sustainability is achieved to guarantee operations in the future. Sustainability can be in backing an organization's data with microservices architecture that enables enough time to organize and plan [10]. Therefore, a company's digital transformation must be targeted towards minding sustainable development.

7 Conclusion

An organization must be digital to meet the current consumerism metrics. Open innovations have a competitive advantage since companies have developed ways of cutting costs and differentiated themselves from rivalries by advancing their portfolio line. A dynamic capability requires a company to integrate internal and external forces meant to navigate various issues affecting the companies' operations. Through open innovation, digital transformation is met, which increases the market's sustainability. While this study successfully discusses the competitive advantages of open innovation, it is limited by only using secondary data, rather than primary data, which might cause timeliness problem. Further research could be improved on this basis, designing experimental studies to prove the conclusion that open innovation has competitive advantage.

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