Future of Business and Finance

Tankiso Moloi
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Artificial Intelligence and the Changing Nature of Corporations

How Technologies Shape Strategy and Operations

Springer

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Preface

This book examines how various forms of artificial intelligence (AI) could shape a firms' strategy. To assess how AI is likely going to shape firm strategy, the book confines itself to AI forms such as machine learning (ML), natural language processing (NLP), and robotic process automation (RPA).

After the introductory chapter, the book discusses a high-level overview of artificial intelligence in Chap. 2. It discusses strategy conceptualisation and formulation in Chap. 3. Chapter 4 discusses strategy implementation.

Chapter 5 discusses machine learning as a form of artificial intelligence. It provides an understanding of machine learning as a starting point. It further considers how machine learning (ML) could be used to shape strategy and strategy implementation.

Chapter 6 discusses natural language processing as a form of artificial intelligence. It provides an understanding of natural language processing (NLP). The chapter further postulates how the NLP could be used to shape strategy and strategy implementation.

Chapter 7 discusses robotics and robotics process automation as a form of artificial intelligence. Its aim is to determine how robotic process automation (RPA) could be used to shape strategy and strategy implementation. Chapter 8 provides a synopsis of the book.

This book is an interesting resource for graduate students, researchers, business executives, and artificial intelligence practitioners interested in strategy theories and artificial intelligence.

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1 Introduction to Artificial Intelligence and the Nature of a Firm: Implications to Strategy and Strategy Implementation

1.1 Introduction

Early economics literature had a profound belief that one of the core resources, if not the most principal resource, was the human resource. We have repeatedly seen the argument that the most critical resource for any form of organisation, be it in the country or the firm, is 'its people'. Therefore, it was not a surprise that before the 1930s, the classical economic view was that businesses should hire employees. This could be done when and if businesses required them for specific tasks (Moloi, 2018).

It is equally not a surprise that in 1937, Ronald Coase put forward a compelling argument in *The Nature of the Firm*, observing that firms in the Detroit region grew only so long as it was cheaper for them to complete additional parts of the production process in-house rather than resort to the open market. With labour as an example, Ronald Coase argued that transaction costs and search-related complications associated with the procurement of resources at short notice could be problematic for firms. As such, his view was that it would make sense to keep employees on the company's books.

It would seem Ronald Coase feared that negotiations in an open market would likely increase the unit costs of labour, causing the production of an item to be expensive. Coase may also have feared that if the demand for a firm's product was to increase, at the same time that the firm did not have sufficient labour to meet production requirements, the firm would either lose business to its competitors or may be forced to bid for these employees in the open market, and they would join that particular firm at a high cost.

Perhaps Coase had in mind what in today's terms we refer to as competitive pricing. In order for the firm to price its product competitively, it has to manage its costs. According to Chappelow (2019), competitive pricing refers to the process of selecting strategic price points. This allows the firm to best take advantage of a product- or service-based market relative to the competition.

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Furthermore, this pricing method is often used by firms that are selling similar products. The distinguishing factor is then the pricing aspect since services can vary from one firm to the next whereas the attributes of a product remain similar. Accordingly, a competitive pricing strategy would ordinarily be used once a price for a product or service has reached a level of equilibrium. Equilibrium in this regard occurs when a product has been on the market for a long time and when there are many substitutes for the product.

We note that the rise of institutional shareholders in the 1990s began to undermine the Coasean doctrine, as these shareholders encouraged businesses to outsource certain non-core functions. An example here would be of what these institutional shareholders would demand in a mining company, in which the core functionaries would be geological surveyors, miners, engineers and similar functionaries. Due to the nature of mining, operations would typically be based in remote areas where housing is required.

Since builders were not necessarily seen as the core of the mining business, conventional wisdom, according to institutional shareholders in the 1990s, would be that employees had to be outsourced for a project surrounding the development of houses for a mining company. The critical point, though, is that the work would be outsourced to another company that would have the workforce to undertake such a project.

Clearly, for a long time, firms have operated within certain boundaries. These boundaries include the 'in-house production as envisaged by Coase', having operations in a specific region or country, compliance with certain legislation applicable to regions of application, facing uncertainties relating to regions where they operate and raising capital in traditional capital markets among other boundaries. The most essential resource was the human capital. As new technologies took hold, it affected the human resources.

To demonstrate this, Aubert et al. (2006) investigated the relationships between new technologies, innovative workplace practices and the age structure of the workforce in a sample of French firms. Their findings are important in demonstrating the impact of technologies on human capital. Their results demonstrated that the wage-bill share of older workers was lower in innovative firms and that the opposite held for younger workers.

According to Aubert et al. (2006), the age bias affected both men and women in a sense that new technologies essentially affected older workers through reduced hiring opportunities. Their study further found that firms' innovations mainly increased older employees' probability of exiting the company, which decreased much less for younger workers following readjustment.

Both the Ronald Coase fear that negotiations in an open market would likely increase the unit costs of labour, causing the production of an item to be expensive, and the rise of institutional shareholders in the 1990s, which encouraged businesses to outsource certain non-core functions, hinged on the idea that labour was an important aspect of the production process. Aubert, Caroli and Roger's (Aubert et al., 2006) investigation and the subsequent findings in French companies undermine the concept of labour as an important aspect in a firm.

The 2019 debate between Elon Musk and Jack Ma, who are deemed the titans of technology, emphasises the changed role of a human being, given the advances in artificial intelligence (Sarmah, 2019). As AI advances, what becomes clear in this debate is that technology 'will inevitably change the way we live and work'.

We know that before the COVID-19 pandemic, the world was already changing rapidly. According to Birkinshaw (2018), artificial intelligence was already playing a major role by assisting many firms to exploit their existing sources of advantage. The existing sources of advantage were exploited through process automation, improved problem-solving or quality assurance. In addition, AI was also beginning to be useful in exploring new sources of advantage.

Moloi and Marwala (2020) concur with the above but bring in a broader perspective. They argue that not only has technology had a huge impact on firms; it has also had impact on almost all aspects of life, such as economies, or even politics, among other aspects. Human life, economies and politics have all been affected by the rapid changes brought by developments in information technology (Harari, 2018). In their treatise, Moloi and Marwala (2020) posit that technological advances allowed humanity to discover powerful energy sources. It allowed humans to discover faster modes of transportation, goods and services, improved the speed at which we communicate and landed human beings on the moon. There is now even an attempt to send a mission to Mars. In the same vein, advances in technology have allowed other businesses to continue to operate, even amid the lockdowns implemented in response to the COVID-19 pandemic.

1.2 The Pandemic and the Great Acceleration of Technology Utilisation

As the world changed, it would seem that firms and individuals within firms were caught between leveraging the advances brought about by technology and keeping certain aspects of the firm in a traditional form. For instance, in most companies, meetings had to be attended physically in the boardrooms, even though virtual meeting platforms had been available for some time.

Then the great COVID-19 pandemic descended on humanity towards the end of 2019. This led to the majority of governments confining their citizens due to the fear that the virus would spread and the anticipation that the hospitals would not cope. In most parts of the world, businesses such as gymnasiums, restaurants, nightclubs, bars and casinos all had to shut down or work with minimal staff members.

However, businesses that do not necessarily require physical presence continued to operate under these circumstances. Meetings, workshops or labs were swiftly moved to the virtual space. There has been an intense utilisation of technologies such as Google Meet, CISCO WEBEX, Zoom, Microsoft Teams and Skype among other technologies.

In the same period, we also witnessed the property market business moving towards advanced technology such as 3D. The Financial Times (2020) reports of a house in central London that was sold to an overseas buyer for six million pounds.