Improving Business Processes through Artificial Intelligence

Corresponding Author:

Ashkan Pourzeinali

DBA, Department of Management, University of Tehran, Tehran, Iran

ABSTRACT:

This research investigates the way to improve business processes through artificial intelligence. It is a descriptive research through analysis of library resources. The function of artificial intelligence is to address cognitive problems that are usually associated with human intelligence. Nowadays, the expansion of technology and the development of artificial intelligence cause changes in human relations, human relations with artificial intelligence, and even their social relationship. Artificial intelligence, which was originally designed to serve humanity, sometimes becomes an irresistible tool for human exploitation in its development process. The business model as one of the important underlying issues of the economic growth and development of the countries is a scale and criterion for the decision-making of private sector economic activists in investing in domestic or foreign projects, which represents the economic status and the level of ability of the capital receiving countries in servicing.

Keywords: Business processes, Artificial intelligence, Technological expansion, Economic situation

INTRODUCTION:

Understanding the concept of artificial intelligence requires a comprehensive definition of intelligence and artificial intelligence. Theorists have given different definitions of intelligence. Some define intelligence as the ability to gain experience, and perception, and make appropriate choices against environmental changes (Poole et al., 1998). Others define it as the ability to quickly find the right solution in a huge information space that seems unlikely to observers (Lenat and Feigenbaum, 1992). Professor John McCarthy, a professor at Stanford University, first proposed the term artificial intelligence under the concept of the science and engineering of making intelligent machines. This term refers to machines that can learn and act intelligently (Manning, 2022). Artificial intelligence is, in a comprehensive definition, an intelligent system that learns through big data analysis and cloud computing, implements, and empowers new types of software and robots to act independently from the decisions of manufacturers and operators (Kayssi, 2019). Nowadays, the development of technology and artificial intelligence has brought changes in the personal relationship between humans, the relationship between humans and artificial intelligence, and even their social relationships. The category of artificial intelligence, which was originally designed to serve humanity, sometimes becomes in its development an irresistible tool for human exploitation (Sinaga, 2015). It attracted researchers and experts in various fields of technology, psychology, sociology, art, etc. Soon it became a concern for compiling the ethics of artificial intelligence, the effects of which quickly were manifested in works of art (Hibbard,

2015). Looking at the collection of artworks that were created in the contemporary period and after the formulation of the ethics of artificial intelligence, clarifies one thing: as if all these works, regardless of their formal and outward differences, follow a series of fundamental principles or patterns in the representation of artificial intelligence, which gives them a unified appearance (Mehrabi and Awazpour, 2020). The industrial landscape is on the verge of an unprecedented revolution with advent of the artificial intelligence, is ready to open the virgin potential and lead the industry to a new era of productivity and innovation (Sojodin et al., 2023). Indeed, artificial intelligence represents the next generation and the most advanced form of industrial digitization and digital service (Kohtem Kay et al., 2022).

Automation requires the use of artificial intelligence and can act as building blocks for the development and commercialization of industrial business models, enabling companies to develop intelligent solutions to optimize the use of resources, increase the potential of productivity and the overall operational efficiency of their customers (Kohtem Kay et al., 2022). Despite the considerable promises in these areas, more research is necessary to fully understand the potential of AI-enabled business models. A literature review of existing business models can provide valuable insights into companies' use of AI for their progress. The effects of artificial intelligence on addressing sustainability concerns and business model goals have recently received research attention (Chahan et al., 2022). Business processes in our world face a challenging and rapidly changing environment, and they cannot compete despite many opportunities, new business ideas, sufficient benefits, and capable

entrepreneurs. The literature is full of companies with innovative goods and services that have failed, mostly because they fail to attract customers and their inability to compete. This shows that a good product or service or advanced technology does not guarantee success. There has been much valuable research on why entrepreneurs fail, and one of the possible reasons is the inability of the business to create a competitive advantage and their failure in business process design (Morris and Allen, 2005). The business process is necessary for the systematic examination and design of the competitive environment of any business, and it expresses the mechanism of creating and providing value (Szopinski, 2020). It acts as a structural plan that paves the way to create value for customers and earn money through it. This shows that the business process will have an important impact on the success of the business (Karraresi and Broring, 2021). The company uses it as the path or operational method to provide value to a group of customers. Indeed, new business models can significantly change the rules of the industry by introducing new ways and strategies to connect entrepreneurship. A valuable business process creates benefits for both the customer and product suppliers (Haaker and Janssen, 2018). As studies have shown, the business process has a significant impact on the competitive status of businesses, because it is a powerful tool for understanding, analyzing, communicating, and managing the company's strategic choices (Avison and Al-Debei, 2017). The business process has been the subject of numerous articles by magazines, people active in business, consultants, and researchers and has been discussed in various fields such as electronic business, information systems, strategy, and management. The number of articles about the concept of the business process until 1990 was small and only 5 articles had the business process in their title (Dasilva, 2014). The emergence of the Internet in the mid-1990s led to the increasing interest of researchers in the concept of business processes (Zott et al., 2011). The business process can define the necessary activities for production and provide a suitable framework for managers to make decisions (Ladd, 2018). The business process, as one of the important underlying issues of the economic growth and development of countries, is a scale and criterion for the decision-making of private sector economic activists in investing in domestic or foreign projects, which reflects the economic status of the capital-receiving countries. The business process includes, in the law on continuous improvement of the business process approved by the Islamic Council, any type of recurring and legitimate economic activity such as production, purchase, and sale of goods and services to gain economic benefits. It is also a set of effective factors in managing or performing production companies that are outside the control of their managers. The business process includes institutions, regulations, and administrative procedures in the environment of economic activity and determines the non-technical costs of economic activity.

A successful new business has more growth potential than a mature company. It can have a lower capital, workforce, or more growth area than old companies. The startups in Iran are highly sensitive industries and have not achieved their position despite their historical background. These industries have faced many challenges in the last decade and their share has decreased in the Iranian economy. Furthermore, business has a direct relationship with daily life and the basic needs of households. Thus, this research investigates the way to improve business processes by using artificial intelligence.

Theoretical foundations of Research:
Artificial intelligence:
Artificial intelligence systems are software systems (and sometimes hardware) that humans design so that if a complex task is assigned to them, they can do it physically or digitally by understanding their surroundings through gaining data and analyzing and interpreting the structured or unstructured data. Artificial intelligence systems can learn symbolic rules or numerical models. They can also adapt their behavior based on the analysis of the impact of their previous actions on the environment" (Takhshid, 2021). The forecasting based on artificial intelligence consists of four main steps: data collection, data pre-processing, model training, and model testing. The accuracy of the forecasting model based on artificial intelligence depends on the selection of input data. More influential and highly correlated input data may have better prediction results (Bui et al., 2020). The data pre-processing of the collected events occurs to organize them in a suitable format before using them to train the prediction model based on artificial intelligence. Data preprocessing techniques such as data transformation, data normalization, and data interpolation may be used at this stage to improve data quality. The third step is to train the prediction model based on artificial intelligence. A training process is needed to develop the model. The training process specifically aims to select the most appropriate parameters to improve the prediction performance of the learning algorithm. It is noteworthy that the type of parameters is different between different learning algorithms. Parameter alternatives are under the influence of various factors such as the size of the training data, the selection of input variables, and performance indicators (Tran et al., 2020).

Artificial intelligence includes artificial neural networks, convolutional neural networks, genetic algorithms, and natural language. Nowadays, researchers use sentiment analysis, classification and clustering, and various types of programs and tools to use artificial intelligence in learning and teaching (Kandlhofer et al., 2016). These tools are mainly based on artificial intelligence technologies such as mobile games, intelligent tutoring systems, educational robots, augmented reality, virtual reality, and virtual space. Several educational strategies, such as project-based learning, collaborative learning, blended learning,

problem-based learning, and mobile learning have attracted the attention of artificial intelligence researchers (Whitehill et al., 2014). Educational institutions are an area that offers extraordinary potential for the use of artificial intelligence technology (Guan et al., 2020). Indeed, AI innovation in education has evolved from idealized laboratory scenarios to more complex real-life learning contexts. Educational technology industrial companies have created a personalized adaptive learning system that enables personalized learning and assisted learning systems. This practice leads to the management of the learning environment, grading, assessment, and personalization (Russell and Norvig, 2018). Global investment in AI-based education from 2008 to 2017 reached $1047 billion (Mou, 2019). The consumer faces, with companies rapidly advancing in AI-based innovation, issues such as the integration of AI-based educational systems in macro-educational institutions and micro-educational contexts, the roles the beneficiaries play in the AI-based educational ecosystem, and the business development; problems such as operating systems based on artificial intelligence, educational literature based on artificial intelligence in education, changing the role of artificial intelligence technologies, and the evolution of educational paradigms (Wang et al., 2019). Although artificial intelligence-based training has grown rapidly in the past 10 years, research on this subject has emerged since the early seventies. Eliza, an early natural language processing program, was developed from 1964 to 1966 by Joseph Weisenbaum at MIT. Elizavas research was then incorporated by various programs as a human-machine interface. Jaime Carbonell then coded a student exposed to the educational program Scholar5, which presented or answered questions about the geography of South America and provided immediate feedback on the quality of a natural language learner's responses. Later, this system was referred to as an intelligent tutoring system (Wang et al., 2019).

Business process:
Literature has provided different definitions for business processes. Osterwalder et al. define a business process as the architecture of the company and the network of partners for creating and marketing value and capital relationships with one or more segments of customers to create profitable and sustainable revenue streams. Shafer et al. also see the business process as consisting of two parts: model and business. The model is a simple representation of reality and business is creating value and making profit. Therefore, the business process comprises 4 parts: the basic logic of the company, its strategic choices for value creation, value acquisition, and networking. Morris et al. see very simply the business process as an economic model and concerning the logic of profit creation. The business process operationally indicates the structure of the company and its architecture. It refers strategically to the overall direction of the company's market position and interactions within the organization's boundaries and growth opportunities. Zott et al. define a business process as a structure that describes the organization of a partner's exchanges with all external producers in product and operational markets. Thies defines the business process as describing the design or architecture of value creation and acquisition and the mechanisms the company uses. Casadesus, Masnel, and Ricart also state that strategy researchers have used the concept of business process to refer to the logic of the company, its operations, and value creation for the beneficiaries (Casadesus et al., 2011).

Business process means the factors affecting the performance of economic enterprises that managers or owners of enterprises cannot change or improve. The business process is a set of policies, legal conditions, institutions, and regulations that govern the activities of the business process (Shahabadi et al., 2019).

Amending the regulations of the business process and improving its indicators in the global arena is not only a positive and fundamental step towards strengthening the participation of the private sector in the economy, but the growth of the private sector depends on the improvement of the business environment. Providing public services around the world becomes a serious issue because good governance will provide good public services through the high motivation of employees (Nurung et al., 2019). PSM will improve business indicators by improving the performance of executive bodies, so the motivation to serve in the public sector becomes an important and fundamental issue (Hidayati and Sunaryo, 2019). Business process is a set of factors that have an effect on the administration or performance of enterprises but are almost beyond the control of the managers of economic enterprises. The theoretical discussions of the business environment have been proposed since the 1950s and have been developed in wider dimensions. Thomson's contingency theory, resource dependence theory, transaction cost economics, (network) structural theory, organizational ecology theory, and institutionalism are the first theories on the business process. Subsequently, economic theory and strategic management theory were developed based on systemic theory. The function of the government in contemporary critical theories is to protect and develop the economic and social well-being of the citizens besides providing physical security. The modern state, as a regulator of economic activities and a large consumer-producer, plays a key role in economic structuring. An institution in which all economic business processes are formed, continue, or become bankrupt, is called the business process of economic activities (Babki and Salimifar, 2014). Governments in institutionalism are recognized as independent economic actors. It has vital and decisive importance for the entry, growth, development, and exit of economic enterprises. The government has a key effect on the quality of economic institutions (such as the efficiency of the government, the quality of the

implementation of regulations, and the rule of law in society), so the role of the government in improving the business process is essential (Heydari and Alinejad, 2014).

The business process describes the structure and system through which organizations create and develop different types of values, especially economic and social values. The business is practically and theoretically formal and informal descriptions that present the different aspects of business process such as goals, services and products, strategies, infrastructures, organizational structures, business practices, and operational processes and policies whose part is its design process.

Research Background:

Mousai and Sharifi (2022) compiled in an article a strategic model of business development in the tourism industry of the Isfahan province. The research was qualitative and was based on a grounded theory strategy. The 10 major categories include optimizing accommodation centers in the province, restaurant management, infrastructural advantage, strengthening of financial and monetary flows, attractive tourism facilities, development of facilities and services, technology and development of systems, strengthening of relevant businesses, introducing natural resources and training, and development of skills. Business development in the tourism industry has become dependent on the activities and strengthening of the tourism market, and Iran, like many developed countries, can have a strong share of tourism in the developed market.

Taqavi Fard et al. (2019) investigated with a cluster analysis approach the relation of information and communication technology with the ease of doing business in the world. Thus, Iran should formulate strategies to increase the effectiveness of information technology in improving the business environment, by studying information and communication technology infrastructure in leading countries.

Sojudin et al. (2023) examined in their article that artificial intelligence makes possible innovation of circular business models in digital services, conceptualizing dynamic capabilities, artificial intelligence capacities, business models, and effects. This study represents an important step forward in our understanding of how AI can drive transformation and sustainable innovation in industrial digital servicing. Their study contributes to the practice and academic literature on AI, circular business models, and digital servicing by highlighting the potential of AI to enable circular business models for industrial manufacturers and the underlying processes of this digital transformation.

Nazir et al. (2023) investigated in an article the impact of artificial intelligence technology on consumer repurchase intention. Digital technologies have saliently changed business practices and consumer purchasing behavior. As their findings showed, artificial intelligence technology positively affects consumer engagement in social media and the optimization of conversion rates. Similarly, consumer social media engagement and conversion rate positively influence consumer satisfaction experience and lead to increased consumer repurchase intentions. Finally, consumer habit positively modifies the relationship between Customer Satisfaction and repurchase intention.

Qiu et al. (2023) presented in an article a sustainable supply chain model based on artificial intelligence for e-commerce in international trade. Its purpose is to improve the efficiency of logistic distribution in the international trade environment by optimizing the distribution path of the e-commerce supply chain model. First, this article analyzes the background of international trade and e-commerce and reveals the problems in the sustainable supply chain model.

Berdonak et al. (2021) explored New business models in the circular economy: a multiple case study for creating customer values in healthcare. As this study shows, customer value creation and activities should be linked to a circular business model. These relationships are based on six moments where customers and producers can choose to participate in the circular economy, coined as circular touchpoints.

CONCLUSION:

Artificial intelligence is not a specific field, just as natural intelligence is not a specific thing, but consists of dozens of diverse subjects. Knowledge is a real asset of an organization that operates based on the principles of the free market and lays stress on the integrity of its departments and principles. Because knowledge management deals with technical tools and multiple human values, it can show how educational organizations, smart organizations, and organizational management can redesign their processes through a "knowledge-oriented" approach. Intelligent factors (human values) and technical tools can provide a basis for the long-term organizational efficiency of devices that seek to institutionalize knowledge management. Knowledge management is becoming more and more useful because value management takes advantage of intelligent systems and intelligent agents. Artificial intelligence is divided into the first generation: reactive artificial intelligence, the second generation: limited memory artificial intelligence, the third generation: mental artificial intelligence, and the fourth generation: self-aware artificial intelligence. The function of artificial intelligence is to address cognitive problems that are usually associated with human intelligence, such as problem-solving.

The business process is a conceptual tool that consists of a set of elements and their relations and expresses the logic of generating revenue for a company. It describes the value provided by the organization to one or more customers, the architecture of the organization, and its partners to create, market, and transfer this value and relevant capital to create profitable and sustainable revenue streams. Indeed, entrepreneurs use the business process to describe the

logic of the company, and the procedure of business, and create value for the beneficiaries. Studies have shown that the business process has a significant impact on the competitive status of businesses. Because the business process is a powerful tool for understanding, analyzing, communicating, and managing the company's strategic choices. A company's business strategy strongly influences its business process, and the appropriateness of the business process depends on its ability to advance the company's growth. The business process includes methods that guide the company to achieve its goals and is associated with various factors such as product or service quality, operational efficiency, environmental performance, and workplace safety. In conclusion, the business process allows companies to be competitive in the market and is a source of their competitive advantage.

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