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Editorial

Digital Industry by Entrepreneurship: the Way to a Flourish Economy

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Abstract

Nowadays, with the amazing progress in the era of the Fourth industrial revolution (digitalization), entrepreneurial engineering business lays a basis for all new progress in modern industries to boost the economy, thereby improving the quality of life of people. The industry, especially the engineering industries with its feeding industries, is the locomotive of the global economy due to its great diversity, the large number of customers, and the multiplicity of their desires. Therefore, modern automotive industries rely on the good ideas offered by inventors to entrepreneurs, and the development of the economy now rests primarily on the modern industry based on innovative pioneering ideas of inventors and creators, especially the outstanding ones. Moreover, entrepreneurship education and its augmenting courses such as artificial intelligence, internet of things, big data, virtual reality systems, metrology with standardization, and cloud computing in engineering technology curricula have emerged as a necessity to prepare graduates with entrepreneurial characteristics and skills. The paper aims to study the link between entrepreneurship and the transition to the digitalization of the industry according to objective criteria to achieve higher quality products and ensure economic prosperity and society welfare.

Keywords: digital industry, inventors, education, entrepreneurship, economy

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1 INTRODUCTION

Digitalization technologies are the current lifestyle of the industries of the seven major industrialized countries, thanks to information and communication, smart technologies, life sciences such as artificial intelligence, bioengineering, nanotechnology, and precision engineering. The digital industry refers to the automated manufacture of products based on the new innovations studied by entrepreneurs. Hence, a thriving economy necessarily depends on the progress of industrial and productional sciences, which is strongly related to business and management information system (B&MIS), agriculture, human performance, and society behaviors. Therefore, the fluctuations of time may be attributed to the individual, institutional, and

governmental performance and their interrelationships at the local and international levels. Fluctuations related to national security and possession of energy and water sources are paramount, which consequently undulates the culture and behavior of societies. Undoubtedly, economic prosperity will be subject to these factors in one way or another, which necessitates creative strategies in research to flourish the economy and underlines the significance of entrepreneurship in modern industries. Therefore, this paper presents the growth of civilizations worldwide throughout history, such as the great experience of China and the relentless pace of some emerging countries following China. How to measure entrepreneurship in the industry that drives economic prosperity is also an important issue that will be discussed. Eventually, we will present the findings, recommendations, and conclusion in brief.

The success of global economy is the international exchange of value products from goods and services. Therefore, the growth of the economy is closely related to the progress of industry around the world. The geographic regions of economic growth around the world change from period to period, which may be attributed to the different strategies in countries, with some being undisguised and others hidden. The economy originates from the human creation. Regional economic prosperity rose and fell, originating in East Asia on the ancient Silk Road in China (3000 B.C.) and extending to Arabia and then to Europe, where economic fluctuations passed through the Islamic Caliphate, the Umayyads, the Abbasids, and the Ottomans (about a thousand years ago). It is recorded that the Islamic economy achieved great success in the first five centuries of the great historical era close to the migration of the Prophet Muhamad (Prophet of Muslims), and over time the economic exuberance favored to a group of Western European countries, and in the early 1950s and 1960s moved to the United States, where the term "entrepreneurship" emerged with the need for institutional projects for commercial industrial activities. In 1990 and 1991, the concept of economic growth appeared in general under the name of macroeconomic[1,2]. Hence, data and analytics have contributed to the ongoing technological advancement of many projects due to the possibility to trace the consequences of different events or policies[3-5]. Undoubtedly, data analysis provides information that enables tracking of issues and corresponding solutions that may improve economic policies.

Entrepreneurship in the early days was influenced by a range of humanities such as economics, marketing, sociology, psychology, strategic management, and history, which contributed to the emergence of related theories and interpretations of the concept of entrepreneurship. The concept of entrepreneurship was spread widely in the nineties in most developed countries in both West and East, during which the science of entrepreneurship focused on the integration of profits and innovative ideas in all areas of industrial and commercial operations, with reliance on the creation of practical and implementable means[6-8]. The diversity of modern management schools and the establishment of technical education schools and vocational training centers endowed new contents to the concept of entrepreneurship, given the impact from the goal of these existing applied schools to achieve seriousness in creativity and profit that form an essential part of the production process elements. This leads to the continuous development of the various institutions through the implementation of their activities by obtaining the appropriate support to promote the economic development of the community[6-9]. Entrepreneurship incubator programs spread later, which were considered one of the most important mechanisms of economic and technical development to contribute effectively to the development of existing industries, through the formation of small or medium projects where they are provided with sufficient information and studies of work plans, project feasibility, and product marketing. The incubators also differ according to the goal for which they are established. There are regional, international, technical, and other incubators. Incubators have now become one of the newest and most important means of creating new entrepreneurial job opportunities[8-10]. Incubators, in the simplest definition, mean that they incubate and sponsor projects or companies with ideas and components to facilitate business success once being provided with supportive services such as financing, supervision, and marketing strategies. This may have a greater impact on promoting access to the Fourth Industrial Revolution (IR4.0).

IR4.0 is the digital transformation of manufacturing for the production and creation of value-added products. It represents a new stage in the organization and control of the industrial value chain. Digital transformation is characterized by the application of information and communication technology to various industries, especially engineering industries because they are widely available according to requirements of standardization[11]. It is based on the development and expansion of manufacturing systems that already contain computer network technology and are equipped with a digital twin over the Internet, compatible with the Internet of Things (IoT)[12-15], which allows communication with other facilities as well as related information outputs. This indicates that all systems of the factory or institution are linked to the electronic physical production system, and all the data were collected for information analysis to obtain a correct decision in the interest of the business. Figure 1 shows some of the important factors that are needed to activate the IR4.0 (digital), in continuation of the first, second, and third industrial revolutions. Therefore, factories with intelligent machines and industry-specific processes, the rest of the production systems, and the rest of the components and

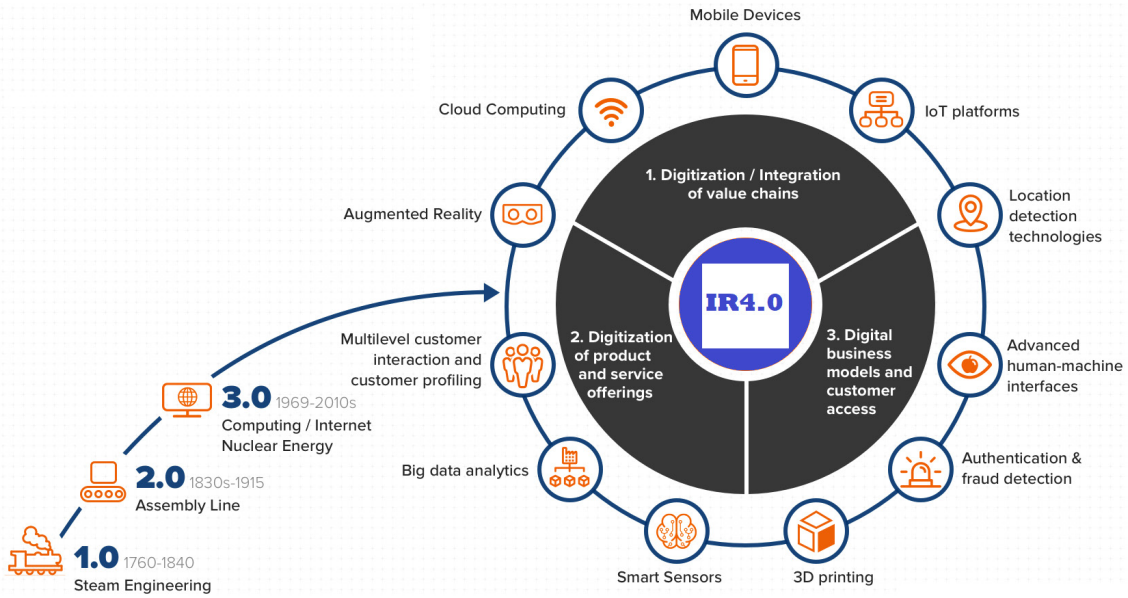

Figure 1. The path of the previous three industrial revolutions to the fourth digital (IR4.0) to the forward[13].

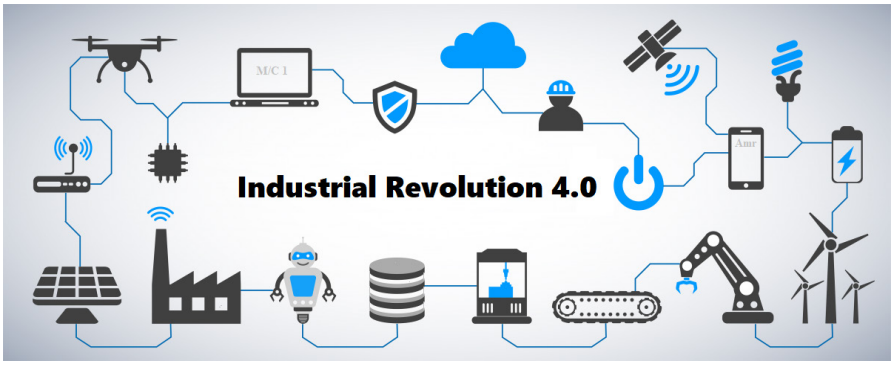

Figure 2. An entrepreneurial network to drive the fourth digital industry forward[15].

people communicate through the (Platform Industry 4.0) for benefit. Figure 2 shows the entrepreneurship network that includes advanced equipment to enhance the Fourth Industrial Revolution. Digitalization also allows services to be digitally delivered in a new and rapid way to enhance wealth creation, productivity, and quality of life. With the IR4.0, new importance has emerged, as infrastructure and energy systems have gained flexibility that has led to a Flourish Economy in some countries[16]. Consequently, digital technology may help reduce the risk of human error and machine downtime and lead to more efficient utilization of resources. Thus, IR4.0 is a positive step towards enhancing transparency, improving quality of life, and lowering the cost of providing services[17].

The objective of this editorial paper is to guide and encourage the transition to the digital industry according to objective criteria and essential features to ensure a flourish economy.

The methodology of this work is based on the study and analysis of the past and the reality of local and global experiences by linking the three main axes: history, management with entrepreneurship, and modern industry in order to reach the prospects for a flourish economic future.

2 DATA ANALYSES

In this section, the available data are collected and analyzed at the international and local levels, to provide a clear picture of the relevant current issues, whether for the specialized or general reader.

2.1 Reality Analysis of Data at the Global Level

In this section, we will briefly present what we see at the international level. It should be noted here that accelerated economic growth began to appear during the last thirty years in the Southeast Asian countries (China, Singapore, Malaysia ... etc.). There is also economic growth achieved in some countries such as India and Russia ... etc.

At the time, American researchers were asking questions within their recommendations that needed to be answered to understand how entrepreneurship positively affects projects. Here is an example of an exactly textual conclusion as written in this reference[18] in 2003: “A question still to be answered is from where does the new knowledge originate.

Is it the R&D activities within the young firm, synergies within networks of small firms, spillovers from universities or from larger incumbent firms? A follow-up question is why and how these spillovers occur and how they can be stimulated. ”

However, the Chinese incubators that were established and started working since 1989 with the aim of developing engineering business and accelerating the investment wheel, have enabled China to compete until it has reached the top of the largest economic countries around the world now[19]. We must also not forget the role of the rational governance in various aspects of Chinese life. It is worth noting that the expectation that China will overtake the USA, Japan, and Germany by 2050 was also confirmed by a report published by Pricewaterhouse Coopers (PwC) in 2020. PwC is one from four largest multinational service organizations headquartered in London, UK. Therefore, we can say that economic growth has changed its geographical location from northern Asia and Africa to the European region and North America and then to East Asia, perhaps due to wise management, entrepreneurship, incubators accelerated investment, and according to the type of civilizations and societal cultures. Thus: now, we request the leaders and scholars around the world to stop here with caution, because the issue needs careful study; perhaps we will witness the restructuring of the global economy and/or the transfer of its geographical position (When and Where?) to achieve more cooperation that leads to real social peace between peoples and tangible progress in people's lives!

2.2 Reality Analysis of Date at the Local Level

In this section, we will briefly present the Egyptian experience in light of the Chinese experience. During the past seven years, the Egyptian ministry of investment and international cooperation realized the importance of establishing entrepreneurship incubators (similar to the experience of the sister country China) to transform young people's ideas into productive projects due to the urgent need for comprehensive reforms with its Vision 2030. Hence, the necessary legislations for this were prepared in Egypt. It launched an ambitious plan for sustainable development in the country based on joint action in three basic dimensions: The economic dimension, the social dimension, and the environmental dimension. One of the steps to implement this was the rationalization and dismantling of the financial subsidies system with a careful gradual dismantling with the initiation of tax reforms, and it was keen to plan to improve the investment environment thanks to information and communication technology and life sciences. This is happening now clearly and is noticed by every follower[20,21], at the level of state institutions, especially the Ministry of higher education and scientific research represented by the Academy of scientific research and technology, universities, and research scientific institutes. Implementing the interest in developing entrepreneurship at the present time is a prerequisite for participating in the development of the national economy as a step to achieving Egypt's Vision 2030.

3 HOW TO MEASURE ENTREPRENEURSHIP IN INDUSTRY

To reach a modern industry, and after analyzing some findings at the international and local levels, we will present in this part the concept of entrepreneurship and how to measure entrepreneurial work in the industry. We would like to introduce the society and organizations with their different objectives: how to measure the ability of an entrepreneur. Studies have confirmed that the distinguished entrepreneur transfers his idea to establishing a successful company or project. The modern concept of entrepreneurship has become dependent on the readiness to manage, organize, and develop projects in light of the opportunities and challenges offered by digital technologies to achieve ambitions successfully, and then serve society and make profits. Entrepreneurship depends on the idea of the creation of a new engineering business, service or activity to maximize the benefit of strengths such as the availability of scientists, different technologies, available resources, and capabilities of all kinds, and at the same time to overcome weaknesses and work in a team spirit to contribute to success and profits. Figure 3 shows the importance of the basic elements and the role of the entrepreneur in the development of the economy[22,23]. We, therefore, agree with the view that entrepreneurship stimulates economic growth via modern industry and manufacturing[24].

4 CONCLUSION AND RECOMMENDATION

Accordingly, the success of the entrepreneur depends on the achievement he has achieved in completing or realizing the engineering business in a beneficial and non-stereotypical manner. An entrepreneur is someone who succinctly expresses the practice of engineering business with a positive vision and innovative and equally serious ideas, away from stereotypical ways of working, because stereotyping is counterproductive in creativity. This can be maximized by activating patents or utility models on which to base successful projects, whether for small individual or large national ones. Innovators and creators should be ensured as the foundation of any development for entrepreneurial work. The idea owner, nicknamed the "entrepreneur," is characterized by specific distinct qualities such as creative thinking, initiative, patience, perseverance, ability to overcome risks, and determination to succeed. Dealing with and overcoming problems is another essential characteristic of a successful entrepreneur[25]. So, the authors suggest that excellence in entrepreneurship depends on several objective criteria and essential features to ensure a flourish economy, the most important of which are:

√ The personality traits of the entrepreneur and the work team: such as self-preparedness (initialization), the ability

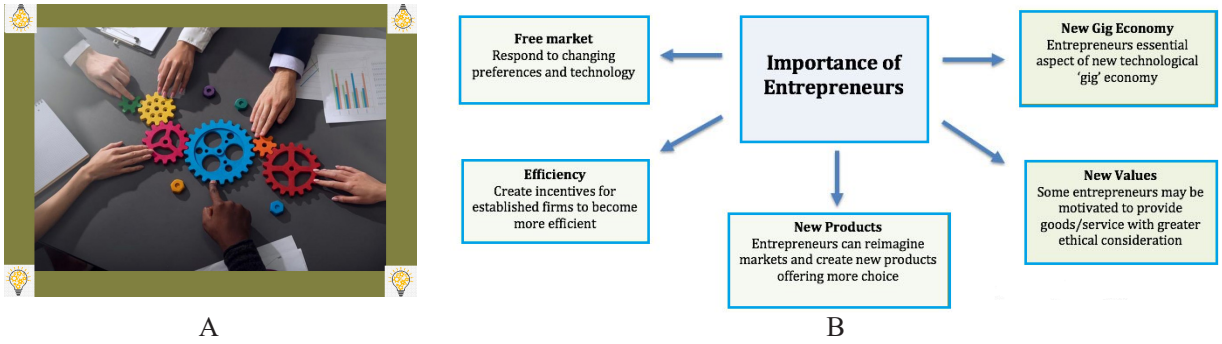

Figure 3. Entrepreneurship in industry driving to a flourishing economy. A: Team collaboration and partnerships; B: Role of the entrepreneurs[22,23].

to be creative, and transform ideas from imagination into reality applicable on the ground.

√ Statistics confirm that the youth of the world is distinguished by individual creativity. However, national teamwork remains the real challenge, which entails the encouragement of organized collective action.

√ Establishing a culture that accepts the surrounding community environment for innovative engineering business and works to encourage it.

√ Removing officials with trembling hands and tyrannical ideas, taking into account the need to put the right person in the right place.

√ Good selection of the relevant official: according to his distinguished creative history, to encourage every talented person in a sector without persecution or harm.

√ The ability of political will to make national legislation in light of Chinese distinguished experience in building and sponsoring incubators, which enables institutions and bodies, especially universities, to encourage and support entrepreneurship projects and integrate them into the economy.

√ Considering the call to revive the New Silk Road in order to support the movement of trade ex-change between the countries of Asia, Africa, and Europe. This is according to the Chinese President announced a new initiative in September 2013 and was welcomed by the Egyptian government to enhance economic cooperation.

√ We encourage the existence of Chinese-Egyptian and Chinese-Arab world cooperation within the framework of entrepreneurship under the umbrella of IR4.0 to ensure maximize economic cooperation[26], in light of national justice and peace, without any conflict between cultures, reli-gious worship, customs, and inherited traditions.

√ Since IR4.0 has created a dynamic scheme in the companies of high-tech industries, it is difficult to bridge the huge gap between those industries and the classroom, which consequently requires more attention[27,28]. So, entrepreneurial education, and its augmenting courses such as artificial intelligence, internet of things, big data, virtual reality systems, metrology with standardization and cloud computing should be introduced into the fields of engineering technology curricula to develop graduates who possess entrepreneurial characteristics and skills.

In conclusion: We remain hopeful about the importance of each individual seeking to prepare for the achievement of rational pioneering work with objective criteria in light of the amazing digital developments such as information technologies, communications, artificial intelligence, bioengineering, nanotech, and precision engineering. This can only be achieved by developing a culture of society and providing an attractive climate for investment to ensure the continuation of the success of Industrial Revolution 4.0. It can be maximized in modern industries such as the electric car manufacturing with its feeding industry and others to flourish the economy and societies welfare. This is considered an advanced and smart step to use modern industries to support the ongoing international efforts, as a necessary requirement for the success of the activities of the United Nations Climate Change Summit, which will be held in the Scottish city of Glasgow, UK from 1 to 2 November 2021, to provide a healthy and safe life for the peoples of the world.

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Not applicable.

Conflicts of Interest

No potential conflict of interest was reported by the authors. So, the authors declare no conflicts of interest.

Author Contribution

Ali ASHR designed this study, wrote the article, collected the data, performed the analysis and prepared with developed the figures; all authors revised the paper for important intellectual content and approved the final version.

Abbreviation List

B.C., Before century
IR4.0, Fourth industrial revolution
IoT, Internet of things
R&D, Research and development
USA, United States of America

PwC, Pricewaterhouse coopers
UK, United Kingdom

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