

## Impact of Industrial Revolution 4.0 on Student Career Options

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**Article History**

Received: 09.06.2020

Accepted: 16.06.2020

Published: 25.06.2020

**Abstract:** This study focuses on analyzing the implications of the Industrial Revolution 4.0 on career choice of Vietnamese students. Research has shown that, with the industrial revolution 4.0, there has been a great change in the career choice process of students. These industries tend to apply science, technology and services selected by students. However, there are many problems in the career selection process such as student capacity, family economy, job after graduation, etc., which have led to mistakes in career choice. This study will point out the inadequacies, and at the same time offer solutions to promote the positive side and limit the negative side of the industrial revolution 4.0 to the choice of students' career; at the same time, there are solutions to limit the costs of family and society in the process of investing in education and training.

**Keywords:** Industrial Revolution 4.0, Career, Student, Higher Education, Vietnam.

### INTRODUCTION

Industry Revolution 4.0 was formed on the basis of the digital revolution, with new technologies such as 3D printing, robots, artificial intelligence (AI), internet of things (IoT), and big data, nanotechnology, biology, new materials, etc with 5 basic characteristics, that is, digital connection anytime and anywhere (IoT); machine intelligence with robots creating robots, creating competitive forces, and replacing people at every level.

The Industrial Revolution 4.0 is described as the birth of a series of new technologies, combining all the knowledge in the fields of physics, digital, biology and affecting all fields, economic and industrial sectors.

Industrial Revolution 4.0 has the largest impact compared to the previous 3 revolutions. Many industries will disappear and new jobs will emerge due to technological change, millions of unemployed, especially unskilled labor, and skilled labor whose weak skills are at high risk.

In addition, the demand for human resources in the future industry has changed, machinery in the factory is in need of employees with new skills to operate. It is a "knowledge labor" including the workforce who can operate automation machines, solve problems that robots cannot replace. From that, it shows that the Vietnam market is seriously lacking this human resource. In the context of many jobs being replaced by robots, people need to change their skills and working minds to be able to live and work with robots. "Good at profession, good at profession must know technology, creative thinking. The habit of "liking degrees", choosing prestigious schools to study or high scores will be changed in the context of the 4.0 Technology Revolution takes place across the globe. Students must choose careers that match their abilities and the needs of the labor market development (labor value, practice value).

In this context, Vietnam's education has changed rapidly, affecting many learners. The choice of a career in a new context is very important, a decision that is crucial to the future of every person. Career mobility before the impact of Industry 4.0 requires learners to make the right choice.

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## RESEARCH METHODS

**System Principles:** A comprehensive study of the impact of Industry Revolution 4.0 on student career options.

**Principle of operation:** This principle affirms that the Industrial Revolution 4.0 has a positive and negative impact on the career choice of employees.

**Specific research methods:** Document research method, Questionnaire survey method, In-depth interview method, Mathematical statistical method, etc.

## RELATED CONCEPTS

The concept of "Industrial Revolution 4.0" has emerged in recent years and has spread increasingly deeply to many aspects of life. This is the inevitable trend of modern society. According to Klaus Schwab, founder and executive chairman of the World Economic Forum, the first industrial revolution uses water and steam energy to mechanize production. The second industrial revolution took place thanks to the application of electricity to mass production. The third industrial revolution used electronics and information technology to automate production. Currently, the fourth industrial revolution is emerging from the third revolution characterized by the unification of technologies, blurring the boundaries between physics, digital and biology with the center are the development of artificial intelligence, robotization, the Internet of Things, materials science, biology, and extensive interdisciplinary wireless mobile technology for manufacturing automation [1, 2].

From such an explanation, it can be seen that the core of this revolution lies in the following issues: Artificial Intelligence (AI), Internet of Things (IoT) and Big Data. This is truly an unprecedented revolution in industrial history in the world, creating great opportunities and challenges for all areas of social life.

According to Klaus Schwab [8], the breakthrough speed of Industrial Revolution 4.0 is "without historical precedent". When compared to previous industrial revolutions, Industrial Revolution 4.0 is progressing at an exponential rather than linear speed [3, 4]. Moreover, it is disrupting almost every industry in every country. The breadth and depth of these changes herald the transformation of the entire production, management, and administration system.

## RESEARCH CONTENT

### **Career mobility before the impact of the Industrial Revolution 4.0**

All young people who want to become global citizen's first need to have good interpersonal skills. Social media and the internet must be used for legitimate purposes, such as understanding some of the hot social issues that affect not only Vietnam but also the world, such as poverty, domestic violence, school violence, social injustice, etc. Next, there is a need to do something to create social benefits, and if the profession and qualification can propose socio-economic strategies and solutions change the situation, things in a more positive way.

According to figures released at the World Economic Conference 2015, with the Industrial Revolution 4.0, 65% of future work for Generation Z (born from 1995 to 2012) has yet to appear. For jobs today where we need 50% technological knowledge, the future will increase to 77%. Areas identified to increase labor demand are data analysis, professional sales, and new types of human resources as well as experts in materials, biochemistry, nanotechnology, and robots.

Vietnam's labor market continues to make great changes, increasing many job opportunities, in which the trend of youth entrepreneurship and self-employment growth. Along with the process of national renewal, the impact of the Industrial Revolution 4.0, many solutions to create jobs for workers and solve labor - employment issues have been paid attention to by various levels and sectors to create jobs driving forces of economic development, socio-political stability. However, the limited quality of labor is putting more and more pressure on employment issues for workers.

Vietnam is a country with a large population, a relatively young population pyramid, and began to enter a period of "golden population structure" with the most abundant human resources ever. As of April 2019, our country's population reached 96.2 million, of which females accounted for 48.94%. Population growth in recent years has led to an increase in the labor force. In general, each year Vietnam has nearly 1 million people entering the working age, this is an important competitive advantage of Vietnam in attracting foreign investment, contributing to socio-economic development.

Vietnam has been deeply and widely participating in the global labor market, according to Nguyen Anh Tuan [9], about 56% of workers in 5 Southeast Asian countries, including Vietnam, are at risk of losing their jobs. Because of robots, especially 85% of workers in the textile and garment industry, leather and footwear, electronic assembly, seafood processing, retail services, etc. In this context, the wise choice of suitable industries is a very important thing for students, it determines your own future.

### **Need Insight in Choosing a Career**

Choosing a career is a major turning point and has a direct impact on the future of every individual. Therefore, when choosing a career, you need a long process to explore your hobbies and personalities in order to find a suitable career, from which there is an ideal job that makes every working day a pleasure. Fun instead of pressure and fatigue.

Work is what takes up 1/3 of our time, even a quarter of our time each day. Most jobs will work from Monday to Friday (Many companies will work every Saturday) [3]. Usually, you will work 8 hours/day and take a lunch break from 1 hour to 1 and a half hours.

Try counting, with a job you don't like but force yourself to do it. How long have you been under pressure from that job? So, instead of choosing jobs that are not interesting and suitable to "jump jobs" continuously, choosing a job that you like and suits yourself is not better.

In addition, choosing a career and pathway for each student's future should follow the following criteria: capacity, interests, labor market needs, and ability, economic conditions of each student, each family. Because, if you have the capacity to respond and the passion to pursue your intended field and career, whether on the path of study or even in the labor market participation, if there are difficulties, obstacles, you will try to overcome instead of surrender.

There is no industry called "hot", but only by the people who decide to choose a career, job suitability is the most essential element in the practice of everyone. In the developing labor market, the future is within the reach of young people who are skilled and valuable at practice.

### **The digital age and artificial intelligence change lives**

The downside of Industry 4.0 is that it can cause inequality. Especially can disrupt the labor market. When automation replaces manual labor in the economy, when robots replace people in many fields, millions of workers around the world could fall into unemployment, especially those working in the insurance sector insurance, real estate brokerage, financial advice, transportation.

Besides, the ideals and philosophy of Industry 4.0 is that we must use information technology to increase labor productivity, thereby saving costs, bringing benefits to consumers. . So those industries that apply technology will grow strongly and outperform other industries, the traditional industries that do not change will lag behind quickly.

### **Some occupations will be selected a lot**

Information technology will be "immune" to the current economic crisis. One of the most prominent industries to mention is information technology. Many experts believe that information technology is considered as one of the jobs capable of being "immune" to the current economic crisis [3]. As long as computers are the focus of the work and daily life of people, these professionals never worry about unemployment.

Research to improve robots and self-driving cars are becoming a key industry. In recent times, the application of improved robots and self-propelled vehicles has been put to the test, especially unmanned aerial vehicles (UAVs or drones) in the military as well as fields [4]. Civil. Improved robots are agile and intelligent, even surpassing ordinary workers in the field of manufacturing and assembly. Therefore, in the future, the research and improvement of robots and autonomous cars will become a continuous development.

Construction and 3D printing industry: In the future, the profession of architect and interior design that really has the skills and creativity will have many opportunities and become a hot industry, because the limits of people in the construction industry are broken, robots can do many incredible things. In the future, human creativity and the power of robots will completely refresh the face of this industry.

Along with the development of information technology industries, fashion design will also become a focus industry. Because the design profession requires constant creativity to meet the market demand, which not all robots can be replaced?

No matter how much industry 4.0 is developed, the healthcare industry will not be affected. A human resources report forecasts that by 2020, the demand for health professionals as well as community services will be over 40% [2, 7]. Therefore, this is an industry group that is not considered to be in the "storm" of the 4.0 revolution, there are still many opportunities for workers wishing to participate in the health sector [2].

The cooking industry cannot be replaced by robots or machines. One of the industries that are hard to completely replace with robots or machines is the chef. This is an industry that requires skills, taste, creativity, constantly searching for new things in cooking. Although many tools or equipment can best serve customers, they cannot replace them to produce good food such as human hands [7]. Therefore, even if the 4.0 revolution replaces many other professions, the profession of cook cannot be replaced.

The tourism industry is a smokeless industry with economic, cultural, and national security values. Moreover, data analysis shows that tourism is a sector that has a positive growth trend while global trade has tended to slow down and decline markedly since the global economic crisis in 2008.

An important feature of the tourism industry is that it is not subject to face-to-face competition in the global tourism market and is less subject to the negative effects of automation. The main inputs of the tourism industry are people and other equipment such as housing, accompanying furniture, means of transportation, etc., of which labor costs account for a high proportion of total costs and will be less impacted by integration or automation [3]. Products of the tourism industry are specific, associated with the characteristics of each place and region. Tourism products of upland cannot be compared with tourism products of the sea or vice versa because each type will give different experiences.

Thus, for the tourism industry, international integration does not put a face to face international competition pressure, but it brings opportunities to expand markets, attract investment, and expand the exploitation of tourism potentials. It also helps to increase the number of tourists due to easier immigration conditions, promoting travel between countries quickly and conveniently [4]. In addition, international integration also facilitates countries to access new technology easier, faster, thereby reducing costs and increasing access to cheaper travel services, higher quality.

Meanwhile, the digital technology platform has a direct influence when the four basic types of the tourism industry are accommodation, restaurants, tours, and transportation [7]. Use well on digital technology platforms. Specifically, using the www information network platform and applications on smart devices to advertise, sell, manage and take care of customers in providing related services, as well as the introduction of new trends and business forms in the tourism industry.

## CONCLUSION

The fourth industrial revolution is taking place at a fast pace that is changing the global context and has an increasing impact on Vietnam, both positive and adverse effects. As consumers, all citizens benefit because goods and services will be richer and more affordable. However, in the medium term, many workers may be affected, especially unskilled workers, so it is strongly affected by the accelerated automation process in developed countries.

Analytical identity ID 4.0, with the nature of the close connection between real space and digital space, as well as the experience of many countries in taking advantage of opportunities and overcoming the challenges of the digital revolution for suggestions on what Vietnam needs to do to get as close as possible to Industrial Revolution 4.0. These factors have a significant impact on students' employment choices in the future.

Based on the synthesis, analysis, and evaluation, experts on employment issues have also indicated that industries and occupations will tend to "ascend" in the labor market in the next 5-10 years. Accordingly, the information technology (IT) industry is considered to be the core industry of Industry 4.0, able to be immune to the economic crisis. It is forecast that from now to 2020, Vietnam will lack 400,000 IT staff. Meanwhile, each year the market provides only 32,000 IT graduates and IT-related fields [4]. In addition, the electrical engineering industry; Robots, and artificial intelligence - the focus of Industry 4.0 will also flourish. Besides, the sectors: Biotechnology - creating high labor productivity and creating output for businesses (enterprises); Mobile Internet development, cloud computing ... and service sectors also tend to be hot, such as 3D printing and development. In addition, the financial services investment, design, health, automobile repair, refrigeration, beauty, etc.

With the above employment trend, we need to go ahead to take the lead in Industry 4.0 [7]. But it is not merely training human resources for the future, but also retraining the existing labor force, who are working in the production lines. The state and businesses need to coordinate in this regard. Because in the production and business sector, if the labor does not meet the demand, it will immediately be eliminated from the production line.

## ACKNOWLEDGMENT

This research is funded by University of Transport and Communications (UTC) under the project code T2020-MLN-002.

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