



## Challenges for Vietnamese business leaders in the era of international economic integration and industrial revolution 4.0

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### Abstract

The world is starting to enter the fourth industrial revolution, a new revolution associated with unprecedented breakthroughs in technology, involving Internet connectivity, cloud computing, 3D printing, sensor technology, virtual reality. This new technology revolution is expected to have a strong impact on every country, government, business and people around the globe, as well as fundamentally changing the way we live, and work. The nature of the fourth industrial revolution is based on digital technology platform and integrates all smart technologies to optimize processes and methods of production. The new era of investment, productivity and rising living standards will have a profound impact on the world's political, social and economic systems and pose challenge for business leaders of this opening and economic integration period.

**Keywords:** challenge, leadership, international economic integration, Industrie 4.0

### 1. Introduction

The fourth industrial revolution (IR) has been coming. This is an unprecedented revolution in human history as it will evolve very quickly a combination of technology in the fields of physics, digitalization and biology, creating completely new possibilities and has a profound impact on the world's political, social and economic systems. This IR 4.0 will create a world in which the global virtual and physical systems of the production chain can work together flexibly. IR 4.0 is not just about machines, smart and connected systems, but also much broader. At the same time are waves of further breakthroughs in different areas ranging from gene sequencing to nanotechnology, from renewable energies to quantum computing. It is and promises to create tremendous benefits and a strong impact on the world economy as well as the Vietnamese economy.

IR 4.0 will first have a strong impact on production, making a big change in manufacturing methods, the convergence between physical and digital applications to create the universal Internet, the Internet of Things (IoT). Business landscape will change rapidly, extending the entire value chain from development research to manufacturing, logistics to customer service, significantly reducing transaction and delivery costs. In this process, IoT will impact all industries, from production infrastructure to health care. By changing production methods when there are modern technologies that can connect the real and virtual worlds, people can control the process at home but still cover all activities of factory through the Internet excellence.

For the commercial sector, this IR 4.0 firstly reduces the transaction and delivery costs significantly. For the investment field, with the nature of the IR 4.0, technology is the most attractive and potential investment segment of investors in the coming time, especially digital technology and Internet. But this revolution can also create greater injustice, especially causing the risk of breaking the labor market. When automats replace people in the entire economy, workers will be redundant. While technological

innovation often leads to higher productivity and prosperity, the rate of change will also create a great pressure due to the shift of labor resources. Workers at factories during the IR 4.0 will have new jobs with different requirements and in a work environment or organization that is no longer the same as it is today.

The IR 4.0 will grow strongly due to the need to find new, more sustainable and effective production methods with challenges such as climate change, population aging or other security issues. This revolution will bring many development and integration opportunities, but at the same time poses many challenges to developing countries like Vietnam.

### 2. Theoretical Framework

IR 4.0 impacts comprehensively, extensively and rapidly, in all areas of social life, including education and training. Many issues are posed for the training and retraining of staff such as renovation of school administration, innovation of methods of training, improving the quality of teaching staff. It is a revolution in smart manufacturing based on breakthroughs in new technologies in areas such as artificial intelligence, robots, IoT, 3D printing, nanotechnology, biotechnology, machine learning, energy storage and quantum computing on a digital revolutionary basis. All areas of social life, including education and training systems, will be strongly affected by it. The national philosophy of education will have many changes. School administration, class organization model, the role of teachers and students will change by the emergence of many new concepts such as virtual classrooms, virtual teachers and virtual devices. That context requires the training and retraining of staff to have a strategic vision to prepare for major changes, meeting the requirements of the new situation. IR 4.0 will impact on the (re)training of staff in such aspects as: (re)training of officials; school management methods; organizational model of teaching - learning activities in (re)training of cadres; the teacher's role and

teaching methods; content of the teaching program as follows:

- Firstly, on the goal of (re)training of cadres, especially the leaders and managers at all levels, is to create competent staff to work in creative and competitive environments. All changes of the school must be aimed at training cadres and learners to acquire new capabilities and skills such as practical review capacity; organize tasks, analyze and synthesize thinking; handling multi-dimensional information etc.

- Secondly, IR 4.0 requires changing the training and retraining methods, especially the intensive application of information technology training. However, the condition for this change in the current training and retraining schools is still very limited, the innovation of teaching and learning methods is still slow; Backward infrastructure. Currently, the Ho Chi Minh National Political Academy has enacted and implemented regulations on the construction of a standard political school, creating the basis for political schools interested in investing more in infrastructure, in line with the impact of IR 4.0.
- Third, the change in school administration. In the near future, the promotion of IT application (information technology), virtual reality technology in training and retraining of officials will be the distinctive direction. For example, students will be instructed by a VR instructor to experience a simulated battle in a history lesson, or they can enter management information of their area of responsibility into their computer system of schools to practice analyzing information, thereby suggesting advisory solutions etc. This impact requires changing the school management method, thereby directly affecting the arrangement of management staff, service and teachers of the school. This team needs to be professional and highly creative, with modern training methods with strong IT application. In schools, there will be a change in the size and structure of teachers (both in terms of qualifications and skills).
- Fourthly, IR 4.0 requires improving the quality of the teaching staff. No matter how modern science and technology is, it is not possible to completely replace the role of the teacher. In recent years, teachers in training and retraining schools have been standardized in terms of professional qualifications. Most of them have master and doctoral degrees. However, practical knowledge and scientific research capacity of a part of lecturers is limited. In the current scientific and technological conditions, students can search for knowledge and skills through the internet. Therefore, if the lecturer does not regularly improve and improve the level, this impact will gradually lose the leading role of the teacher. This is a significant pressure for the teaching staff in the training and retraining schools.

The term "international integration" in Vietnamese originates from foreign languages (in English it is "International Integration" in French it is "l'integration internationale"). This is a concept used primarily in the fields international politics and international economics, born around the middle of last century in Europe, in the context of institutionalists advocating the cooperation and association between former enemies (Germany- France) in order to avoid the risk of recurring world war through the

construction of the European community, in fact, there are many different understandings and definitions of the concept of "international integration". So far, there are three main approaches:

The first approach, belonging to the federalist school, argues that integration is a final product rather than a process. That product is the formation of a federal state like the United States or Switzerland. In order to assess cohesion, those who follow this school are primarily concerned with the legal and institutional aspects. But there are many limitations because it does not set the integration phenomenon in the development process, but only sees this phenomenon (mainly in the legal and institutional aspects) in the final static state associated with the interrelated model of states. This approach is difficult to apply to analyze and explain the reality of the integration process taking place in many different forms and levels today in the world. Not any integration leads to a federal state.

The second approach, with Karl W. Deutsch, is the pillar, see integration first of all the linkages of nations through the development of exchanges such as trade, investment, correspondence, information, tourism, immigration, culture from then on, gradually formed security communities (Security Community). According to Deutsch, there are two types of security communities: the type of security community that is united in the United States, and the type of security community that is as diverse as Western Europe. Thus, this second approach considers integration as both a process and a final product. This approach has a strong point of recognizing the phenomenon of integration, both in the process of progress and in the final static state, and at the same time providing quite specific and practical contents of the process of integration and many issues of this phenomenon.

The third approach considers integration in terms of phenomena/behaviors of countries to expand and deepen relations of cooperation with each other on the basis of intentional international division of labor, based on advantages of each country and the goal of pursuit. However, this approach focuses on the behavior of phenomena, regardless of the institutional perspective as well as the end result of integration, thus, lack of comprehensiveness and limitations in interpretation capacity of the nature of this integration process.

In Vietnam, the term 'international economic integration' began to be used from the mid-1990s along with the process of Vietnam's accession to ASEAN, participation in the ASEAN Free Trade Area (AFTA) and the other international economic institutions. In recent years, the phrase "international integration" (even in short, "integration") is used more and more popularly and in a broader sense than international economic integration.. All three of these terms are actually used to refer to the same concept that English calls "International Economic Integration." The difference between them is mainly the way of using them with different political and historical implications. The term "international economic integration" is used primarily in the context of cooperation between socialist countries within the framework of the Economic Mutual Council in the years 1970-1980.

Even so, so far there is no definition of the concept of "international integration" that won the full consensus in academia and the whole world in policy making in Vietnam. From different definitions emerge two main understandings.

First, a narrow understanding of "international integration" is participation in international and regional organizations. Secondly, the broad understanding, considering "international integration" is the opening and participation in all aspects of international life, in contrast to the closure, isolation or little international exchange. With thinking in this way, many people even co-integration with international cooperation. Both of these understandings about the concept of "international integration" are incomplete and inaccurate.

From the above theory and practice, we need to define an appropriate approach to the concept of "international integration" as the foundation for developing the international integration strategy of Vietnam in the new period. We believe that the most appropriate approach is to consider integration as a comprehensive internal social process and regularly advocate for certain goals. Accordingly, international integration is understood as the process of countries conducting activities to strengthen their cohesion based on the sharing of benefits, goals, values, resources, power (the right to dispose of policies) and to comply with common rules within the framework of international institutions or organizations. Thus, unlike international cooperation (acts of international entities that meet each other's interests or aspirations, do not oppose each other), international integration transcends conventional international cooperation: it demands ask the high sharing and discipline of the participants. From an institutional perspective, the integration process forms and reinforces international institutions / institutions, and even new owners of international relations. These new international subjects may take the form of:

1. It is an intergovernmental organization (members still retain national sovereignty in disposing of policies, such as UN organizations, ASEAN ...).
2. Or a supranational organization (members give full national sovereignty to a supranational structure and this form may be similar to the federal state model, such as the United States, Canada ...).
3. Or a hybrid organization between these two forms (members give a part of national sovereignty to a supranational structure and still retain a portion of their own sovereignty, such as the EU case).

The subject of international integration is primarily the countries, the main subjects of international relations, who are competent and capable of negotiating, signing and implementing international commitments. In addition to this main subject, other entities join the combined force in the international integration process.

### 3. Methodology

In this article we use historical and logical methods. These are two methods used to describe and understand the process and content of international economic integration policies of Vietnam. Furthermore, we use methods of analyzing, synthesizing and comparing. On the basis of collecting and synthesizing many different sources of data, we conduct analysis to clarify the status of implementing international economic integration policies of Vietnam in the period of economic crisis. Finally, we use practical summation method. This method is used to clarify, evaluate and analyze the positive and limited aspects and impact on economic development on the basis of practical

implementation of international economic integration policies.

### 4. Research Results and Discussion

In the context of the booming IR 4.0 and its impact on many countries, the Governments are very concerned and proactively issued IR 4.0 related development strategies such as: Germany (Industrie 4.0), USA ( Industrial Internet Alliance), South Korea (iKorea 4.0), China (Made in China 2025). For Vietnam, IR 4.0 is also providing opportunities as digitalization of industry helps increase labor productivity, improve information connection system, save management costs, production costs, bring great benefits to the State, businesses and consumers. However, IR 4.0 also poses many challenges that require the Government and businesses of Vietnam to have strong innovations: Building a tight legal corridor for the digital industry, comprehensive preparation for digital transformation process, starting from national public administration to business models in digital and digital economies; development of information infrastructure; training and supplementing of high quality human resources; administrative reform; improving competitiveness. With the task assigned by the Government to coordinate with ministries, branches and localities to build and promote research and development activities, key application and technology transfer of IR 4.0, through the workshop, the Ministry of Science and Technology wishes to acquire broad opinions from domestic and international society and friends. In order to seize the opportunity and overcome the challenge in IR 4.0, Vietnam has been, will and will persistently implement the Party's views on the development of science, technology and innovation to work together with the quality of high quality human resources to really become one of three strategic breakthroughs.

In the process of implementing action programs and solutions to bring Vietnam further access to the IR 4.0, we also need more comments from experts and speakers from agencies, domestic and international organizations. We hope that, with that contribution, Vietnam will understand the steps, developments of this revolution and have appropriate policies for the socio-economic development of the country in accordance with the common trend for the international community. In addition, in order to serve scientists and enterprises in research, application, mastery and technology transfer of IR 4.0, as a basis for replicating the results to the business sector, MOST is also studying to report to the Prime Minister for approval and implement "National key program on IR 4.0. According to Dinh Van Son, Rector of the University of Commerce, in the recent time, our Party and State are very interested in the Industrial Revolution 4.0, expressed by many speeches of the State leaders; agenda of the 5 th Central Conference XII; In particular, the Prime Minister has issued Directive 16 / CT-TTg (5-2017) on strengthening capacity to access the industrial revolution 4.0; In particular, the 4th Industrial Revolution is fundamentally changing the world's production, characterized by thoroughly utilizing the pervasive power of digitalization and information technology. However, up to now, awareness of industrial revolution 4.0 among officials, party members, policy makers, businesses and society in general is still limited; There is no systematic scientific research on the nature, impact as well as opportunities and challenges of this industrial revolution. There are many different perspectives on the role and influence of this

revolution on social life, in which there is a positive opinion and there are also criticisms that emphasize the negative side.

Besides the aforementioned great benefits, the industrial revolution 4.0 also poses new challenges and risks. At the seminar, many national and international experts and scientists discussed and shared experiences on theoretical and practical issues of the industrial revolution 4.0: State management mechanisms and policies in the context of revolution 4.0; IT application in administrative management, public service provision and e-government; Renovate the model of economic development and economic restructuring in Vietnam; Applying IT to managing, exploiting and operating infrastructure systems of the economy; International economic integration and sustainable export development; Sustainable agriculture development with environmentally friendly products; Innovate business model, corporate governance, business strategy, risk management, business culture, finance, accounting, global supply chain. Investment and database management data, information and IT systems of enterprises; Labor restructuring, training and re-training, development of high quality human resources.

Referring to how strongly Vietnamese enterprises are responding to the digital era, AI and IR 4.0 technology, a quick Vietnam Report shows that 62.5% of all businesses said they are currently changing step by step from one technology to another. In the Top 5 technology applications that Vietnamese enterprises prioritize to invest in most of them towards Big Data and Cloud Computing. As for studying the application of AI applications, large Vietnamese enterprises expect AI to help reduce operating costs; increase productivity and create more personalized and high quality products / services. However, only 13.6% of enterprises surveyed by Vietnam Report reported investing in AI in some businesses. From the perspective of Vietnam from the opportunities and challenges from the extensive international integration process that started with the Industrial Revolution 4.0 and AI applications, many strategic solutions have been distributed by speakers. in the Conference. Our country currently has very good premise for access to high technology, new knowledge and outstanding development opportunities; That is: young population, many people are interested in new technology, have open minded, have conditions about higher academic background than previous generations ... Besides, information technology , telecommunication and communication in our country are evaluated as strong development in the past years, creating a stable condition for telecommunications infrastructure and Internet network, initially creating a position for the country in the international arena. Under these conditions, business leaders are pioneers who need to change their adaptive capacity, how to take advantage of the available potential and break down all barriers in the organization.

## 5. Conclusion and Recommendation

### *Conclusion*

The connection between training institutions and enterprises in training, scientific research and technology transfer activities in Vietnam is very weak. The lack of institutional conditions to facilitate linkages, expand autonomy for a number of areas of applied research, training coordination, commercialization of research results, implementation

organization and conditions for deployment. Most training institutions do not have a close connection with enterprises and localities to conduct applied research in appropriate forms.

The structure of training branches is still spontaneous, not interested in career orientation, the choice of students' majors is mainly to ensure the current life, not paying adequate attention to the potential and personal expectations, the development trend of the era and the country's requirements. Students who are good at natural science but choose economics, business administration, finance, banking and foreign trade; leading to human resources to develop science and technology decline.

However, in addition to the positive impacts, IR 4.0 is posing many challenges, greatly changing the labor structure and labor market. Automated systems will gradually replace manual labor in the entire economy, the shift from labor to machinery will increase, the difference between profits on capital and profits on labor will change, moving to the reduction of income of unskilled workers and increasing unemployment. The proportion of high-quality labor increases, giving rise to an increasingly separate job market into two segments: a high-skill market, a low-skilled market and will lead to an increase in diversification, or creation of completely new job needs compared to the past. In the future, a number of industries will increase unemployment, labor intensive industries: agriculture, textiles, assembly, and crafts, while labor in these sectors accounts for a large proportion in the labor force.

Technologies that underly IR 4.0 are having a great impact on businesses, in which the speed of innovation and subsequent breakdowns has continuously surprised even for affiliated businesses. best and get the best information. On the supply side, in many industries, technologies are emerging to create entirely new ways of meeting current needs and significantly breaking the value chains of existing industry. The emergence of creative, fast-paced competitors, with access to global digital platforms for research, deployment, marketing, sales and distribution, can overthrow the It is faster than ever by improving the quality, speed, or price for the value offered.

Major changes on demand are also happening, such as increasing transparency, consumer participation, and new patterns of consumer behavior (increasingly built on retrieval. Access to mobile networks and data forces companies to adapt to the way they design, market and deliver products and services, thereby creating the development of new technology platforms, giving combining both supply and demand to break existing industry structures, such as those found in "shared" or "on demand" economies. New technology platforms, easy to use with smartphones, allow people, assets and data to be integrated to create entirely new ways to consume goods and services. In addition, they reduce barriers for businesses and individuals to create wealth, altering the personal and professional environment of workers. Businesses on these new platforms are rapidly developing more new services.

Another feature of IR 4.0 is that the initial investment capital for startups may not be large, but the profits are high. The ever-growing development of Internet of all kinds allows these companies to better access each unit, thereby monitoring and evaluating their effectiveness in real time. Thus, with IR 4.0, businesses can start their businesses more easily, with less capital while bringing big profits in a

shorter time. However, hyperlinks also increase network security risks. According to Symantec, energy is now one of the five areas most globally targeted by hackers. In 2012, Saudi Aramco took a whole week to repair the computer system after being attacked by a virus. In 2013, many Austrian and German power grids were threatened after being hacked into the network.

**Recommendation**

For the state, it is necessary to have a policy mechanism to create favorable conditions and environment, create a legal framework for the relationship between schools and businesses, between research and technology transfer training and business production. In which, it is necessary to pay attention to investment policies, financial mechanisms, create motivation for sustainable links; encourage the development of market for science and technology products, in addition to basic science, autonomy should be given to the fields of applied science for schools, research institutes, intellectual property rights protection, creation Equal competitive environment in research activities.

For businesses, proactively propose training needs, scientific research, selection of topics, cost estimates, and select competent staff to participate. For universities, it is necessary to focus on building a contingent of teachers and researchers, attracting good officials from domestic and foreign experts to cooperate with the school; renovating the training management mechanism, scientific research, increasing investment in facilities, in which building a contingent of teachers is a key step.

Vietnam needs to take advantage of its available strengths and take the opportunity to participate in the IR 4.0, promoting the industrialization and modernization process of the country. In order to do this, it is necessary to form a global comprehensive and unified vision of how technology affects life as well as reshaping Vietnamese economic, social, cultural and human environments. In preparation for the IR 4.0, Vietnamese enterprises need to focus on the application of science and technology in production and innovation in organizational models and ways of doing business. Specifically:

- Integrating digital technology: it is necessary to promote the development of digital production and business solutions; integrated with sensor systems, control systems, communication networks for business and customer care; efficiently store and use big data based on cloud computing; collect, analyze and process large data to create new knowledge, support decision making and create competitive advantage; Effective analysis, evaluation and application of data collected from machines and sensors to quickly make decisions to improve safety, operational efficiency, work processes, services and maintenance;
- Optimizing business models: Enterprises need to develop new skills for each individual as well as for organizations; effectively participate and use the smart supply chain created from the IR 4.0, more closely linked to the needs of customers; building and using intelligent logistic processes in the global value chain network, including both processes of supply management and product distribution;
- Effective intellectual property management: There should be better solutions for managing intellectual property in the digital age, in accordance with new

business models and cooperation models;

- Adapting to new tax models: Future 3D printing technology will allow production across countries and continents, obscuring the concept of national borders in production, leading to the demand for New customs regulations and value added tax.

In terms of Science and Technology, it is necessary to promulgate policies to promote innovation and application of science and technology for Vietnamese enterprises, to exploit the opportunities opened from the IR 4.0, specifically:

- Policy to encourage development, support enterprises to transfer and apply some new technologies during IR 4.0;
- Policies to encourage the application of the trend management and management system of the IR4;
- Policies to promote the application of new technology achievements in education to train people with thinking and skills in line with the trend of the IR4;
- Policy to contribute to overcoming the downside of IR4 such as environmental pollution, unemployment, increasing social annoyance, moral degradation, lifestyle, risks associated with information security on nuclear incident.
- New policies and strategies for the development of automation and high-tech industries, specifically in-depth areas such as nanomaterials, energy and quantum computing, artificial intelligence.

In terms of Education and Training, the new production revolution will set new and higher requirements for workers; requires employees to have enough knowledge and skills to master new technologies, work in new times. In order to meet the new requirements for workers, besides policies on labor, employment, policies in the education sector also need to make appropriate adjustments.

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