

Approaches to Master the 4th Industrial Revolution for Private Enterprises in Vietnam

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Abstract:

The 4th Industrial Revolution (4IR) is changing all disciplines and global economy. The revolution is expected to introduce profound impacts on the socio-economic development in every nation. The private sector in Vietnam, although accounting for large percentage, is mostly small scaled with low performance. Therefore, approaches to promote the development of private enterprises coupling with the Revolution are of great concerns. This paper examines the impacts of the 4IR on production, a key characteristic of Vietnamese private enterprises, and proposing a number of thematic solutions for their advancing with the 4IR.

Keywords: private enterprise, The 4th Industrial Revolution, impacts

1. Introduction

The 4th Industrial Revolution (4IR) is capturing the ideas and altering the way we live and especially the global economy. Being driven by remarkable development of science and technology, the revolution is expected to introduce tremendous and powerful impacts on the socio-economic development of nations in different aspects. The 4IR with fusion of latest technology breakthroughs such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, materials science, energy storage, and quantum computing will impact all disciplines, economies and industries including production as well as business management. In terms of business operation, their processes and production methods shall be potentially optimized by the 4IR, creating new opportunities to improve their performances. The optimization and efficiency are generated through effective utilization, analysis and assessment of multi-dimensional data input enabling timely and smart decision-making to ensure the enterprise's safety, operational efficiency, workflow, services and maintenance.

2. Impacts of the 4th Industrial Revolution on production

- New growth model for "small and smart" enterprise:

The 4IR will increase labour productivity as it is facilitated by technological innovation and creativity. "Small and smart" model of production is implemented by integration of technologies, with no boundaries of space and time. Labour productivity shall be achieved by small (but optimal) scale, smart decision-making based on large connectivity, mobility and processing power.

- Blurring of traditional boundaries:

Trans-border connectivity and mobility of machineries, robots and data collection supported by artificial intelligence will enable autonomous and less-present human being production lines. This will be the resilient background to optimize the loop to connect manufacturing enterprises with its assembly, logistics and distribution partners to create a seamless and profitable chain.

- Providing of perfect quality products to customers:

High-quality goods and services can be obtained by the 4IR. This is feasible thanks to the minimized cost of production. Advances of technologies, smart management and decision-making process shall change the mode of mass production in prompt response to the customer's needs and requirements. Additionally, the autonomous production lines will be possible to combine and produce a new single product at lowest price. In order to remain competitive, 4IR-based factories is equipped with specific capabilities to provide custom designs and rapidly change of products. The Internet of Things and other digital technologies will shorten the lead time to market of the enterprise's products. Most importantly, the customers will enjoy perfect quality products supported by digital life-cycle management solution and excellent customer's care services.

- More affordable to the customers:

Smarter, more transparent and efficient supply chain will be deployed to satisfy the customers' needs from demand to delivery even by a single mouse click. With exponentially increasing productivity and the capability to connect the supply chain with production, with broad distribution channels, consumer markets with large users, production costs will be declined. It can be concluded that advances in

emerging technologies is creating advantages of leveraging the power of digitalization and information technology which dramatically increases the user scale but dramatically reduce production costs and accelerate technological innovation for the customers' affordability.

- Less consuming production

Intelligent and autonomous machineries tools will shorten the time of product update and production which enables the enterprise to optimize their resources. This can be done by applying cutting-edge technologies such as professional software-based tools for design and manufacture, 3D printing for quick process and material savings, wide connectivity and mobility for ease of transaction and communication. With the proper shift to the 4IR, enterprises can undoubtedly benefit from more productive and economical production.

- Reversal of the game

The 4IR will create a reversal as IT businesses become owners and operators of the game from production to global distribution. With the ability to collect and analyze data, IT companies will be able to grasp the needs of their customers so that they can be proactive in designing and manufacturing. Capable of interacting with large number of customers quickly and precisely, connecting 24/24 hours a day, large database and intelligent data mining, technology enterprises will be the key-player of distribution in the Internet-based trading environment. This is the fundamental difference and advantage of modern technology enterprises in marketing and customers' satisfaction.

The 4IR stimulates both supply and consumption as a result of convenient transaction, low cost and the ability to personalize the product. Constantly innovated technology will also lead to breakthroughs starting from the supply side in terms of productivity, quality and affordability. In the digital age, logistics activities will have to be adapted to be smarter in the global value chain including process management, material supply and distribution. Transportation and communications costs will decrease, logistics and global supply chains will become more efficient, and commercial expenses will decrease, all of which will help expand the market and promote economic growth.

3. Weaknesses of Vietnamese private enterprises

3.1 Vietnamese private enterprises are very small scaled

In 2014, the number of enterprises increased by over 44% compared to 2010. The proportion of private enterprises on the total number of enterprises remained relatively stable at over 96% but still small even making up a large proportion in the economy.

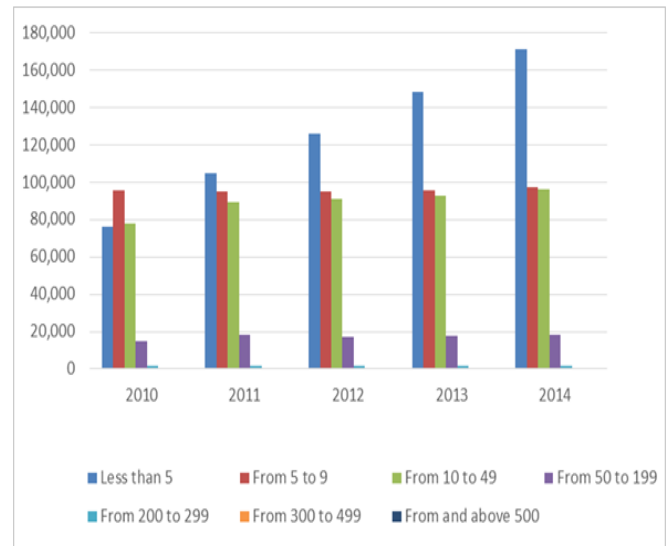


Figure 1: Labor size of private enterprises

Source: General Statistics Office of Vietnam (GSO) [1]

Figure 1 shows that enterprises with less than 5 employees occupy the largest share. This type of enterprise occupied for 28% and 44% in 2010 and 2014 respectively compared with 5.5% and 4.7% of 50 to 199 employee enterprises in the same time. Notably, the enterprise of 200 labors made up a rather small proportion.

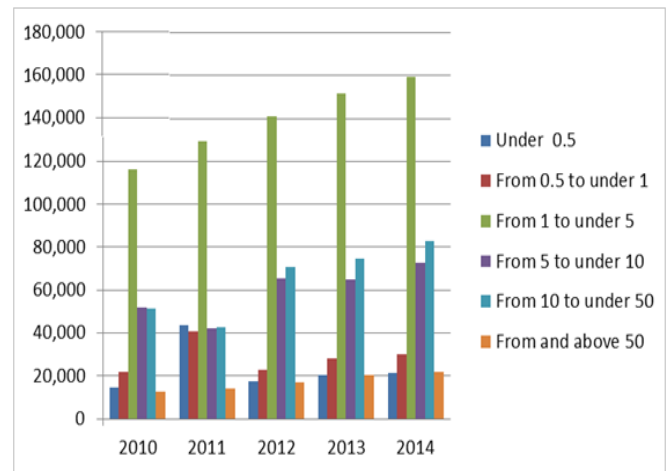


Figure 2: The capital size of the business (billion VND)

Source: GSO [2]

In term of capital, enterprises with capital from 1 billion to 5 billion VNDs accounts for 43% and 41% in 2010 and 2014 respectively. Due to the fact of small scale, domestic private firms operate unprofessionally. As consequences it is difficult to increase productivity through economy scaling, by specialization, technological investment and innovation or to build up their capabilities for steady and sustainable growth. This reality creates high-risk in doing business and is causing the high rate of bankruptcy and dissolution.

In addition, ineffectiveness in production and business of Vietnamese enterprises leads to the possibility of capital accumulation to expand investment or to renew technology is limited.

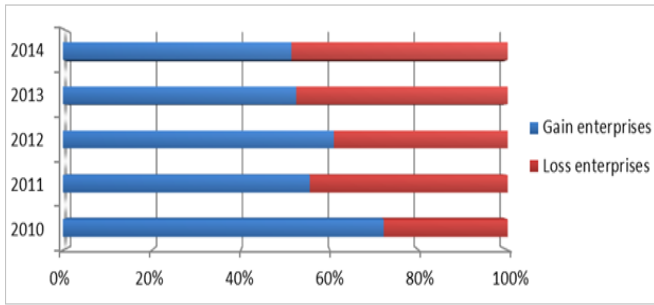


Figure 3: Business effectiveness of the Vietnamese enterprises

Source: GSO

Figure 3 show that the most effective private enterprises in the country tend to decrease. In 2010 there were only 24.8% of businesses suffering losses, but this figure increased to 45.5% in 2014.

3.2 The private enterprises are organized in a variety of legal forms

The fact is that most of local private enterprises are in the form of private limited liability companies.

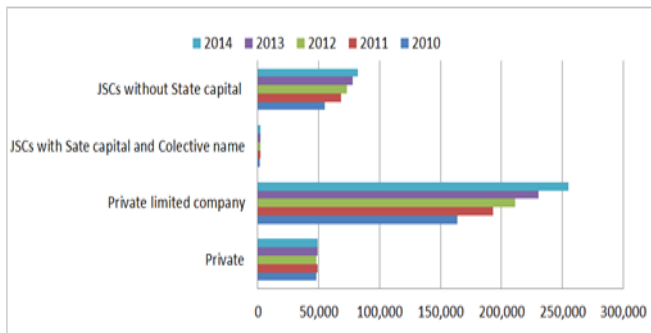


Figure 4: Number of private enterprises classified by type of enterprise

Source: GSO, (JSC: Joint Stock Company)

The form of organization of private business in Vietnam reveals the fact that the spirit of cooperation and association in the business by enterprise owners is not so tight. With the nature of the family business, the capital, management and linkage skills will be limited as well as innovation and creativity. Meanwhile, the 4IR has been contributing to the formation of a shared economy; creating the win-win instead of win-loss partnership. In particular, enterprises are tightening their cooperation, development along the supply chain, exploiting the common resources to promote each other's strengths and minimizing the production costs. This is currently a big challenge for Vietnamese enterprises in surfing with the 4IR.

3.3 The private enterprises operate mainly in domains of trading and services.

In 2014, more than 70% of Vietnamese enterprises were running on trade and services; more than 29% on industry and only about 1% investing in agriculture.

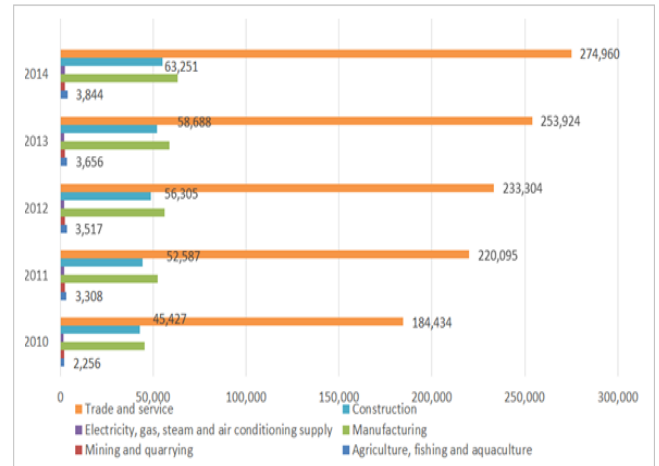


Figure 5: Quantity of enterprises by activity sector

Source: GSO

Private enterprises, due to their small scale, low capital, investment and technology, are hard to succeed in carrying creativity and innovation activities. This is also hindered by the status of law violation, unfair competition, violation of consumer rights, and the situation of counterfeit and bad quality goods.

3.4 Fourthly, Vietnamese enterprises have not yet focused much on investment in technological innovation.

According to GSO survey in 2014, local enterprise investment on Research and Development (R&D) in Vietnam was 41.8% of total national expenditure. This figure is considered to be quite low in compared with other countries such as: Korea 75.7%, Japan 75.5%, China 74.6%, the United States 60.9%, EU 55%, Singapore 52.7% and Thailand 48.7%. [Synthesis from OECD2015a]

Over the past years, the local business community has focused their investment in infrastructure and information technology in order to support their production and business. Unfortunately, the outcome has not been as expected. According survey performed by the E-commerce and Information Technology Agency's in 2016, there were only 32% of enterprises which have established business relations with foreign partners via online channel, 11% run on E-commerce and 49% owned websites.

Regarding information technology infrastructure, banks are only entities with financial resource and pioneering in this investment and wide application of information technology in their activities. On the contrary, most local small and medium enterprises (SMEs) do not really care enough on this trend.

4. Solutions for the of private enterprises development in Vietnam

The 4IR is profoundly altering the ways of doing business in the national and global scale. In the fast changing and challenging situation, development of Vietnamese private

enterprises requires not only their own efforts in renewing and strengthening themselves but also strong supports from the Government by appropriate policies. The following solutions should be considered by the enterprises, the driving force of the national economy.

4.1 Solutions for the enterprises:

4.1.1 Improvement of business management skills of business leaders

Strategic mindset:

Enterprises need to establish their own strategy, vision, long-term growth program. To achieve that, business leaders need a strategic vision, a constant update of latest knowledge, skills needed to compete, business leadership skills, change management skills. In particular, enterprises need to develop competitive strategies in line with their potential and advantages, with the national strategic orientation and the state's policies. At the same time, it is necessary to build a strong corporate culture in order to create a healthy and positive cultural environment motivating the creativeness and competitiveness of enterprises. The corporate development strategy needs to be reviewed and adjusted to adapt to the new business environment to formulate and implement a development strategy based on innovation and creativity. This must be performed systematically and analytically to benefit from the 4IR.

Knowledge-based

Vietnamese enterprises should develop long-term business strategies and plans, clearly defining the objectives of each stage, step and large solutions in each period on the basis of clearly identifying strengths, the weaknesses, opportunities, threats (SWOT) of the business, clearly define the position of the company and analyze the business conditions, comparative advantages of themselves and other enterprises. They also need to develop a knowledge-based strategy, based on "soft power", in which knowledge exploitation and development is a key driver and resource. Each enterprise should clearly locate its roles and positions in the enriching, updating and exploiting knowledge in the relevant fields of science and technology. Accumulated knowledge should also be transferred, shared within organization, cooperative enterprises and other units in the same supply chain, creating the strength from the cluster relations.

Creativity, independence in thinking and creating uniqueness:

The shift of private enterprises to 4IR will be driven by human creativity, which differentiates human with machines. Independent thinking is a tool for business leaders to foster the enterprise's performance, productivity and efficiency. This also can support creativity to create unique and distinct products that ensure successful competition.

4.1.2 Effective mobilization, utilization and management of production resources

Human-resource is crucial for enterprises. So human training is one priority to ensure the enterprises competence and also attracting talented people with consistent and prudent orientations. Training should be in line with the long-term development strategy of the business within five to ten years. Enterprises need to focus investment on human resource training and development. The spending on these activities must reach a reasonable rate in the firm's costs. The motto of "regular learning", "self-learning is the mainstream" and "lifelong learning" should be mastered in corporate culture. Training content should include professional knowledge and skills, creative skills, application and sharing of knowledge in the enterprise's activities.

For capital and assets, businesses should be proactive in capital and assets. It is necessary to raise their prestige and create trust for credit institutions favorable capital access. Enterprises must improve the efficiency of financial management and well-performed internal control so as to optimize the capital, the production costs and affordable product's price.

Enterprises should tighten the link with research institutions for rapid commercialization of their latest scientific and technological advances. Additionally, partnership with other enterprises to keep up with modern technologies, latest initiatives which can be jointly invested, developed and delivered to the customers. To ensure this fruitful cooperation, enterprises shall follow the technology markets to match the technical solutions with their capabilities in finance and mastering of technology.

4.1.3 Application of science and technology in production and business activities

The 4IR is empowered by science and technology and enterprises can only benefit or even survive if they are well-prepared. Becoming a digital entity is a key measure to advance with the revolution.

- Information technology integration: Enterprises can benefit from latest and innovative IT solutions such as sensors and control systems, communications networks, business and customer care applications.
- Scientific analysis and data management: The 4IR will generate a huge amount of data which is a challenge for management and potential for exploitation. New knowledge can be extracted by smart data mining to support decision-making and create competitive advantages.
- Cloud-based applications: These solutions provide an excellent access, sharing, processing and computing of large database creating opportunities to enhance the enterprise's productivity.

4.1.4 Partnership building with other enterprises:

This approach is a key measure to limit the inherent weaknesses of Vietnamese private enterprises, which are small scale, small capital, ill-equipped with qualified labors, business and legal knowledge (especially international law). In the competitive environment, the partnership will help enterprises to improve the market strength and product quality. It is notable that collaboration is not just simple sum-up of the quantity of businesses, but the power of the group or association. That is the idea of forming of "clusters" businesses in the value chain. Vertical link between supplying, supporting, manufacturing and distributing enterprises must be set-up for perfect products. Additionally, business and professional associations should be more actively involved for the purpose of enterprises development.

4.2 Solution to the State***The proposed measures include:*****4.2.1 Strong support for innovation**

- Establishing the government of integrity, implementing efficient public services to facilitate development. The relationship between state and business should be seen as partnership, with support and interaction. The operation of the State management system should be renovated, building responsible administrations and minimizing the negative impacts of group interests. It is also necessary to improve the quality of business support services.
- Formulating a comprehensive economic strategy, clearly defining the fields, industries with comparative advantages, key production branches and national products of Vietnam. This is quite a difficult task that Vietnam has not completed for many years. Because strategy is the foundation to realize policies, appropriate ones will guide private businesses to invest in human resources, finance and technology. Priorities should be put on public investment in infrastructure development in line with improving internet connectivity, extending its coverage, speeding up access and lowering the cost of utilization.
- Completing the legal documents related to science and technology, regulations on high technology and venture investment. The State should focus on speeding up the process of strengthening the information technology platform, evaluation criteria for Research, Development and Innovation (R&D&I). In parallel, information technology innovation should be transparent, fostering the precise evaluation of scientific research results, the socio-economic and geopolitical benefits. Regarding the capital market, long-term market, development of venture capital funds associated

with technology and innovation should be accelerated.

4.2.2 Empowering of human resources for innovation.

- Creativity and innovation are keys for any successful organizations. They are knowledge-based and must be built-up through education and training. Science - Technology - Engineering - Math (STEM) should be incorporated to school curriculums to foster creative thinking for students. National education and training system should be adapted and improved to generate capable workforce to master the 4IR.
- Selection, nurturing and investment for talents at all ages should be done appropriately with focus on science and technology. This approach will create a well-prepared human resource to master the 4IR.
- Prioritized national investment should be put on socio-economic development oriented research activities in universities and research institutions.
- Supporting policies should encourage business start-ups taking the universities, research institutes as a focal point of innovation.

4.2.3 Enterprises as the core of the innovation system.

- National policies should favor manufacturing enterprises to innovate their production chain. And the enterprise shall enjoy this favorability by fostering potential R&D&I initiatives or project. They will become the heart of four-side collaboration of government, universities/research institutions, investors and enterprises.
- Innovation activities of Vietnamese enterprises can be financed by the National Scientific and Technological Development Fund, the National Technological Innovation Fund or venture capital funds. So far the outcome from these activities is still modest compare to the investments and requirements for innovation. The targeted beneficiaries and set of criteria need to be assessed and selected carefully with the goals of effectiveness and fairness.
- Domestic and FDI enterprises collaboration should be promoted by industry policies to support start-ups and those operating effectively on technology development and application and supporting industries associated with global value chains.

5. Conclusion

Surfing with the 4th Industrial Revolution, Vietnamese private enterprises can benefit from of advanced technologies, increasing their productivity and innovation. The outcome is delivery of perfect products and services to the customers. This is a bright future for those who are well-

prepared especially with innovative mind and activities. The highlighted measures to promote the developments of local private enterprises should be performed synchronously and transparently taking into account the current economic situation an environment and their interaction in the national and global scale.

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Author Profile



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