

THE EMPLOYEES IN NON-STATE ENTERPRISE IN THE FOURTH INDUSTRIAL REVOLUTION: A STUDY IN THAI NGUYEN PROVINCE, VIETNAM

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Abstract

Employees have played an important role in the success of enterprises in general and non-state enterprises in particular in the fourth industrial revolution. Hence, quality of an employee is very essential, especially for employees who worked in the new era of manufacturing. The purpose of this study is to analyze the effects of the fourth industrial revolution on employees in non-state enterprises. Secondary data in the period from 2013 to 2017 was collected from Thai Nguyen statistics office. Data was analyzed with descriptive and inferential statistics. The results of the article have shown that Industry 4.0 had both positive and negative effects on the employees in non-state enterprises. The wave of artificial intelligence can lead to mass unemployment in Thai Nguyen province, as a large number of Vietnamese labourers will not be able to adapt to new technologies. In the Industry 4.0, labourer's non-state enterprise has many opportunities to approach and participate in the new technology as it has a youthful labours market with "golden population". After the analysis, the researcher proposed recommendations in order to enhance qualities of employees and give employee's requirements in non-state enterprises in the fourth industrial revolution.

Keywords: Employees, Non-state enterprise, Fourth industrial revolution, Skill, Vietnam

INTRODUCTION

The Industrial Revolution 4.0 is becoming one of the top concerns of countries around the world and Vietnam is not out of the general trend. With the breakthrough of scientific and technological achievements, the revolution will have a powerful impact especially on underdeveloped and developing countries, including Vietnam, which has been revolutionizing

ever since. Facing the Industrial Revolution 4.0, non-state enterprises in Vietnam; in areas without government support; have opportunities and challenges to sustain and develop businesses or join to survive and grow in the era of technology. In the context of the fourth industrial revolution, the world economy is constantly changing; the global competition environment is fierce and poses challenges for Vietnamese enterprises, especially non-state enterprises with a team of human resources working in the business. The demand for employee in non-state enterprise needs to improve their knowledge and understanding in order to meet the demands of their work in the new situation.

In the process of existence and development of enterprises; human resources, especially higher quality human resources are the resources that influence the development of enterprises, especially in the context of the Industrial network 4.0 will create major changes in labours supply and demand. Thai Nguyen province is in a period of "*population surplus*" or "*golden population*" with more than 50% of the population in working age. Population benefits provide a great opportunity for Thai Nguyen province as well as Vietnam to make the most of this abundant human resource and create strong pressure to secure jobs, meet the needs of education and training, improve the quality of human resources. In terms of quantity, Vietnam seems to have an advantage in terms of labours. However, the quality of workforce through trained technical expertise shows that this is a worry issue. Some labours market reports assessing the industrial revolution 4.0 not only threatens the employment of low-level labourers, even middle-skilled workers, will suffer if they do not acquire new knowledge, mainly creative skills.

Industrial revolution 4.0 also poses many challenges, especially that will dramatically change the structure of labours and the labours market. Automation systems will gradually replace manual labours in the economy as a whole. This will affect the income of simple workers and increase unemployment. The high proportion of high-quality labours increases, resulting in an increasingly fragmented employment market into high-skill, low-skill markets that will lead to increased fragmentation or creation. The demand for employment is totally new compared with the past but it is necessary to actively prepare and regulate appropriate policies.

The research was conducted to analyze the employee's income and average employee's income in non-state enterprise in the fourth industrial revolution through secondary data analyzing. The results of the study indicate that the Industry 4.0 has a significant impact on employees in non-state enterprise. From that basis, the researcher has proposed some necessary skills for employee in non-state enterprises in order to adapt to the fourth industrial revolution.

LITERATURE REVIEW

The respective impact of human resources and employees who worked in typical enterprises has received much attention in various researches. These studies showed that human resources in the enterprises has become one of the most important research issues, especially in the context of globalization, internationalization and more specifically, in the context of the explosion of science and technology in the fourth industrial revolution.

The finding of the study by Rosemary Hill and Jim Stewart (2000) which drew on case-study research in to human resource development (HRD) within three small organizations in the north-west area of England. The paper discussed the characteristic and value of small and medium sized enterprises in general and explored how they might influence the HRD policies practices developed by them. A comparison of an HRD model typically found in small organizations with one typically engendered through the adoption of the Investors in People standard was present.

The author Yuqin Feng (2016) studied in order to clear the possible integration path of industry 4.0 in multinational corporations (MNC) and understand the influence of such industry trend on the management of talents. This study found that a clear talent management strategy was missing from the company case, a typical technology driven MNC. The missing of clear talent management vision leads to the low satisfaction rate towards the HR department and personal development possibility from both talents and line managers. Another study by Hirsch-Kreinsen (2014) supposed that swarm organisation is at the other end of the spectrum. This form of work organisation was characterised by a loose network of very well qualified and equally active employees. It no longer comprised simple and low-skilled activities, because these had largely been replaced by automation. There are no defined tasks for individual employees. Instead, the work collective acts in a self-organised, highly flexible way that is determined by the situation at hand.

The researcher Le Thi My Linh (2009) focused on analyzing management training and human resource development; the responsibility of the enterprises and all its employees in career development. In addition, the author analyzed the internal and external factors impacting on the human resources development in SME's in Vietnam. This research analyzed the forms of training and human resource development in enterprises with the process of international economic integration that human resources needed to be trained and developed with the development trend of the economy.

According to Nguyen Thanh Vu (2015) one study proposed a research model with nine factors impacting of the internal and external environment on the development of Tien Giang garment enterprises (*Tien Giang is a coastal province in the Mekong Delta, South Vietnam*).

This research summarized the overall of human resources in garment enterprises during the study period. Using the Quantitative Analysis of Exploratory Elements (EFA), the study identified specific solutions based on the analysis. However, the research identified the nine factors in the model, in addition to many other factors impacting on human resources in garment enterprise that the study did not also mention.

Previous research often focused on the human resource development in SME's, management in enterprise in difference context and had not mentioned the necessary skill for labours in the new context, especially during the fourth industrial revolution. The study, however, analyzed the labourers who worked in non-state enterprise during the fourth industrial revolution, prospects of employees and necessary employee's skills in this area in new era of manufacturing.

RESEARCH METHODOLOGY

Research site

Thai Nguyen province is one of the political, economic and educational centre of the northern mountainous midland in Vietnam. Thai Nguyen province is a gateway for socio-economic exchanges between mountainous midland and northern delta and exchanges were made through the road system and railway that Thai Nguyen city is the central node for.

Along with trending of economic development and the Industrial revolution 4.0 in Vietnam as well as the northern mountainous midland, Thai Nguyen province; with favorable conditions on geographic location, socio-economic characteristics; has created favorable conditions for the enterprise's development. In addition, with the policies about investment and enterprise development of Thai Nguyen's provincial leaders, many industrial zones and enterprises have established and attracted thousands labours from others provinces to work; especially with the number of non-state enterprises and employees who worked in this area increasing annually per year. However, Thai Nguyen's employees in non-state enterprises have lacking in various skills in order to adapt the changing of the Industry 4.0. So that, the author selects Thai Nguyen province for the research site. (Source: Thai Nguyen statistics office, 2018).

Data source

Secondary data of the Thai Nguyen statistics office, regarding the number of acting enterprises, the number of non - state enterprise, the employees who worked in non-state enterprise, employee's income and average employee's income per month in non-state area; from 2013 to 2017 in Thai Nguyen province released on annual year was used in order to analyze for this

research. One of the rationales for the selection of this period is that the author wanted to have a comprehensive view and analysis of the impact of the Industry 4.0 on employment in non-state enterprise. Vietnam's employment was rebased clearly in 2013 and the figures indicated that "the wave of technology" in the Industrial revolution 4.0 brings Vietnam's employment both opportunities and challenges. So, for the aim of the research, the author decided not to include figures that preceded the period of rebasing.

Descriptive and Inferential Statistics

In this research, descriptive statistics utilize numerical and graphical methods to illustrate the number of enterprises, the number of employees and their income in non-state enterprise in the data, to summarize the information it reveals and to present that information in a meaningful way. Inferential statistics uses the data to make estimates, decisions, predictions, or other generalizations about the employees in non-state enterprises in Thai Nguyen in the fourth industrial revolution from which the data was obtained.

ANALYSIS

The number of non-state acting enterprises and employees in this area in Thai Nguyen province in the fourth industrial revolution

There was a steady increase in the number of enterprises from 2013 to 2017 in Thai Nguyen province. In the year 2013, the number of enterprises was 2,090, with growing rates reaching about 3.26%. But due to the financial crisis and the global economic downturn from 2013, the volume of enterprises decreased at 2,019 and growing rate fell to 3.52%. As of the 31st December 2017, Thai Nguyen province had 2,894 acting enterprises and reached its highest number of enterprises from 2013 to 2017. In 2017, the growing rate increased dramatically, approximately 32.87%. Average growing rate in this period was about 8.08%.

The information about the number of acting enterprise and growing rate enterprise in Thai Nguyen province has illustrated as figure 1. Acting enterprises by type of enterprise has included state-owned enterprises, non-state enterprises and foreign investment enterprises. Over a period of 5 years, the number of state-owned enterprises remained stable and the structure decreased; while the amount of foreign investment enterprises had an increasingly in numbers and percentages. In Thai Nguyen province, as well as the others province in Vietnam, the number of non-state enterprises has accounted almost approximately over 96% the total amount of enterprises.

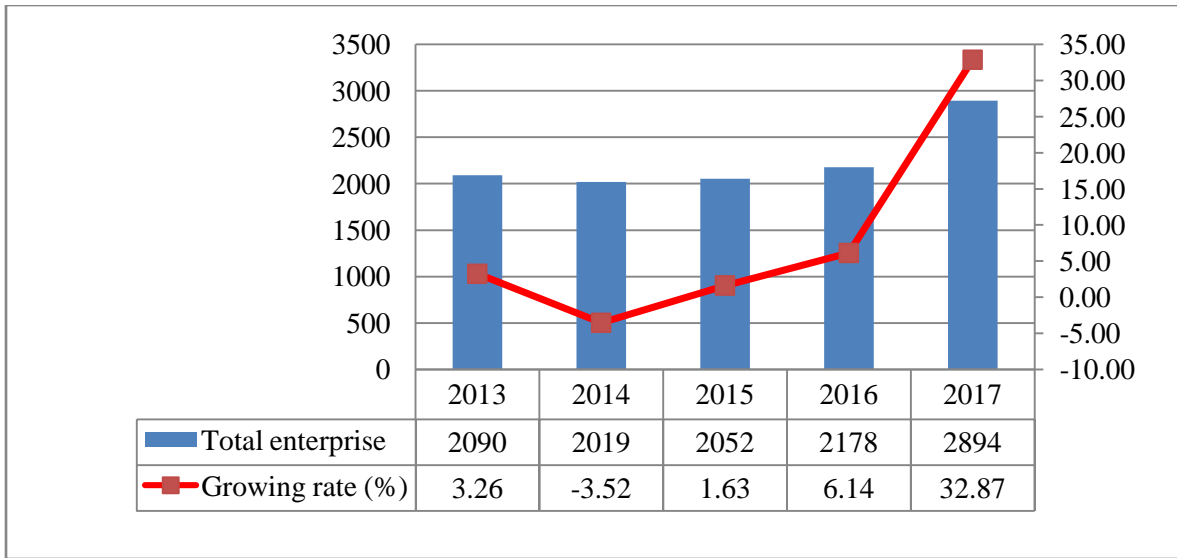


Figure 1. Total number of acting enterprise and growing rate enterprise in Thai Nguyen province, Vietnam

Source: Thai Nguyen statistics office

The number of acting enterprises by type of enterprise is shown as follow:

Table 1. Number of acting enterprises by type of enterprise in Thai Nguyen province, Vietnam

Unit: Enterprise

	2013	2014	2015	2016	2017
State owned enterprise					
Number of enterprises	29	30	29	30	30
Structure (%)	21.36	21.91	13.37	10.06	8.33
Non - state enterprise					
Number of enterprises	2046	1970	1984	2095	2783
Structure (%)	97.89	97.57	96.69	96.19	96.16
Foreign investment enterprise					
Number of enterprises	15	19	39	53	81
Structure (%)	0.72	0.94	1.90	2.43	2.80
Total enterprise	2090	2019	2052	2178	2894

Source: Thai Nguyen statistics office

Along with the increasing number of non-state enterprise, the number of labourers who worked in this area increased sharply in 2013 and 2017 in Thai Nguyen province. In the year 2014, the number of employees decreased by 3.05% or 83,647 people compared to the same period last

year. There was a dramatic increase in the number of employees who worked in non-state enterprise from just 83,647 people to 134,311 people, with growing rate around 60.57% in 2015. The number of employees in this year has increased dramatically because in the year 2014, Thai Nguyen's government invested to build new industrial zones such as Nam Pho Yen, Tay Pho Yen, Song Cong I, Song Cong II...Therefore, it has attracted many labourers to work in enterprises, especially non-state enterprises in Thai Nguyen province. In addition, this is also the period of "Golden population" in Vietnam as well as Thai Nguyen, along with the context of industrial revolution 4.0 also creating the changing labours market in the province.

This tendency continued to grow in during this period, and by 2017 the number of labours grew by 13.6% and reached 197,789 people, which was the highest recorded volume of labours in non-state enterprise from 2013 to 2017.

The tendency of the number of employees and growing rate of employees in non-state enterprises is shown as figure 2.

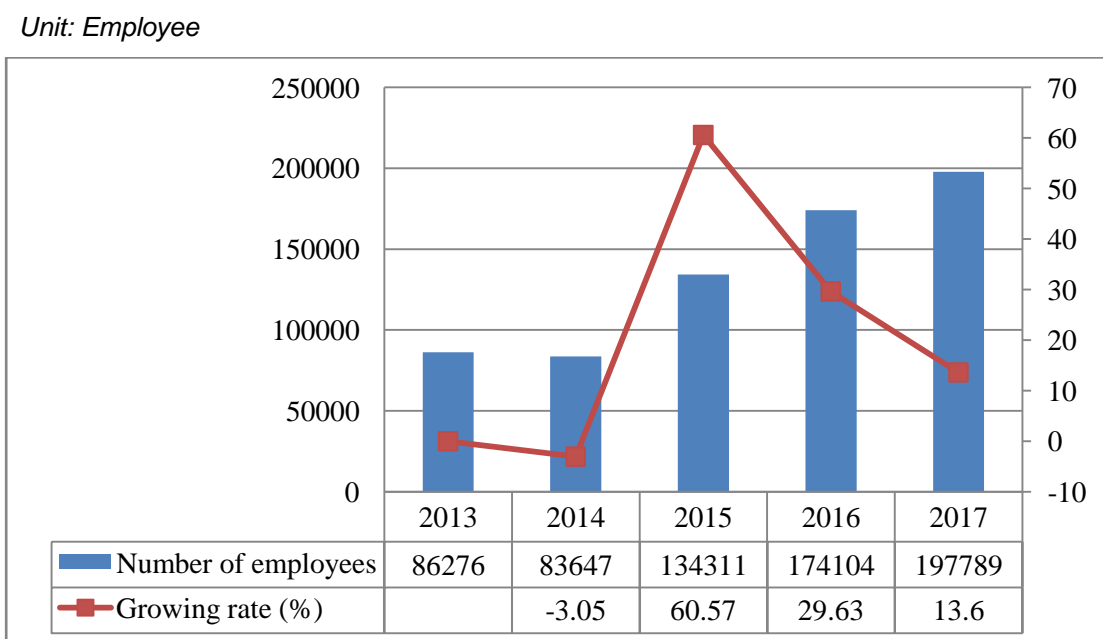


Figure 2. Total number of employees and growing rate of employees in non-state enterprise in Thai Nguyen province, Vietnam

Source: Thai Nguyen statistics office

Employee's income and average income per month of employees in non-state enterprise compared to others enterprise type

Employee's income of acting enterprise increased steadily in annual year in all type of enterprises, especially foreign investment enterprises. Employee's income of state-owned

enterprise rose from 2013 to 2015, but in the year 2016, the income fell from 1,739.6 billion dong to 1,555.7 billion dong. There was a dramatic increase employee's income of foreign investment enterprises; from 343 billion dong to 14,378 billion dong; increased by about 41.92 times from 2013 to 2016. Employee's income of non-state enterprises rose 2 times over a period of 4 years. In 2013, the income of this area increased from 2,678 billion dong to 5,290.9 billion dong.

Table 2. Employees' income of acting enterprise by type of enterprise in Thai Nguyen province, Vietnam

Unit: Billion dong

	2013	2014	2015	2016
State owned enterprise				
Employees' income	1,305.2	1,510.5	1,739.6	1,555.7
Structure (%)	30.2	19.3	12.0	7.3
Non - state enterprise				
Employee's income	2,678.0	3,785.6	4,072.1	5,290.9
Structure (%)	61.9	48.3	28.0	24.9
Foreign investment enterprise				
Employee's income	343.0	2,545.7	8,730.8	14,378.0
Structure (%)	7.9	32.5	60.0	67.7
Total income	4,326.2	7,841.9	14,542.5	21,224.7

Source: Thai Nguyen statistics office

Average employee's income per month of employees in non-state enterprise had not changed significantly compared to other types of enterprises over a 4 year-period. In the year 2013, average compensation per month of employees in foreign investment enterprises was at its lowest; at 3,652 thousand dong per month; whereas the average compensation per month of employees in state-owned enterprise was its highest, at 5,297 thousand dong per month. In the year 2016, the average employee's income per month, (of employees in non-state enterprises), was only 5,731 thousand dong per month compared to average employee's income per month of employees in foreign investment enterprises was 12,169 thousand dong per month.

The figure 3 graph illustrates the average employees' income per month of employees in non-state enterprises and the others type's enterprises in Thai Nguyen province as follow.

Unit: thousand dongs per month

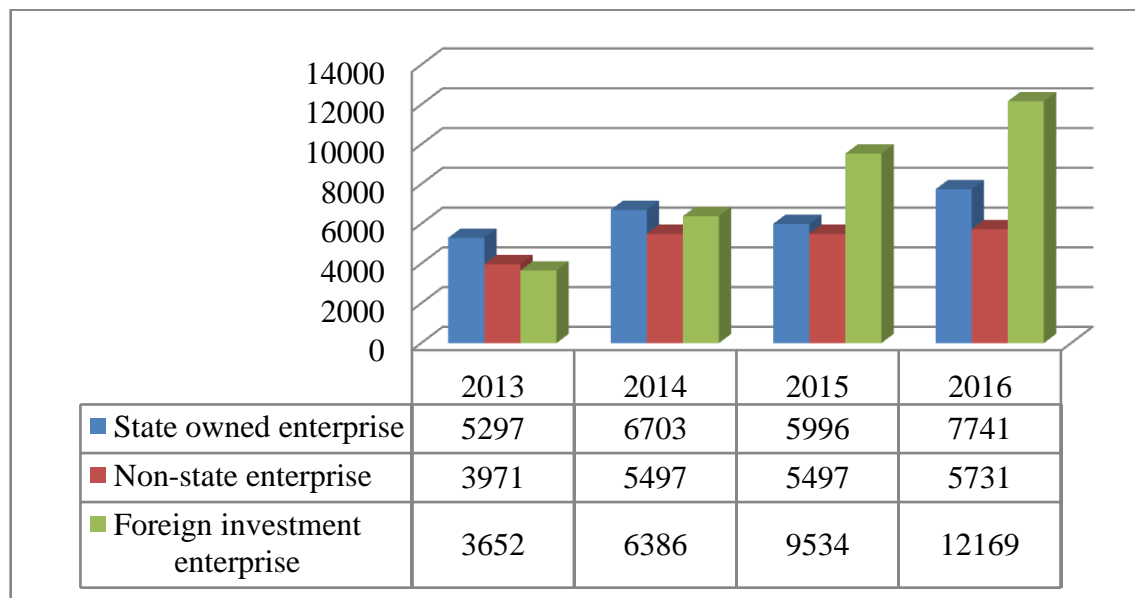


Figure 3. Average employee's income per month of employees in non state enterprise in Thai Nguyen province and Vietnam nation

Source: Thai Nguyen statistics office

The impact of the fourth industrial revolution on employee's non-state enterprise in Thai Nguyen province, Vietnam

The analysis results showed that the amount of non-state enterprises was the highest but average employee's income per month was the lowest during the fourth industrial revolution. Whereas foreign investment enterprise with the fourth industrial revolution results in strong development of new technologies and robots, resulting in a bigger gap between the employee's income in non-state enterprises and foreign investment enterprises, and ultimately in potential social conflicts. This showed that low labours productivity in the non-state enterprises in Thai Nguyen province is one of the reasons that employee's income was the lowest compared to other typical enterprises in the economy.

Employees in Thai Nguyen province as well as Vietnam's labours with the advantage of low labours costs will be significantly affected by Industry 4.0. The development of science and technology can lead to mass unemployment, as a large number of Vietnamese labourers will not be able to adapt to new technologies.

According to the World Economic Forum (2018) in the Global Competitiveness Report 2017 - 2018 has shown that Vietnam was generally ranked 55, but the component indexes related to innovation are much lower. Specifically, firm-level technology absorption ranked 93;

availability of latest technologies: 112; pay and productivity: 66; quality of scientific research institutions: 90; Availability of scientists and engineers: 78; quality of the education system: 71, extent of staff training: 71.

According to the World Economic Forum (2018), (WEF)'s Readiness for the Future of Production Report 2018, among the 100 countries assessed, Vietnam was ranked among those that aren't ready for Industry 4.0.

In addition, following the Report for Vietnam Labours Force Survey in 2016, Vietnam's labours productivity at current prices was \$ 3,660, just 4.4% of Singapore's; 17.4% of Malaysia; 35.2% of Thailand; 48.5% of Philippines and 48.8% of Indonesia. In other words, in the year 2015, a Singaporean with a productivity of nearly 23 times Vietnamese, a Malaysian of nearly 6 times Vietnamese, a Thailand of nearly 3 times Vietnamese and 1 Philippine or Indonesian more than two Vietnamese.

In particular, industry 4.0 will bring about major changes in labours supply and demand in the world. Economists and scientists have warned that during the Industrial Revolution 4.0, the labours market will be severely challenged between supply and demand. as well as the structure of labours. A highly automated and innovative economy requires workers to adapt quickly to changes in production that otherwise would be redundant or out of work. Not only lacking in professional knowledge, Vietnamese workers are weak in problem solving, leadership and communication skills.

Beyond positive effect in Industry 4.0, employee in non-state enterprise has many opportunities to approach and participate in the new technology as it has a youthful labours market with "*golden population*". The industrial revolution 4.0 has the potential to raise income levels of employee's non-state enterprise and improve the quality of their life. This is a good foundation for fast growing new business models based on digital connections.

Requirements of employee's non-state enterprises in the fourth industrial revolution

The Internet of things, data and services are merging the physical and digital world (Forschungs union, 2013). Daniel Buhr (2017) supposed this was where Internet and knowledge-based services have a huge task ahead. Knowledge often takes the form of practical knowledge: "learning by doing" and "learning by using". People are the bearers of this knowledge and the drivers of innovation. Thus, the question arises: What kinds of skills do people need for Industry 4.0? And just as important: How can people and society benefit from Industry 4.0?

Each individual worker must strive to overcome his or her own self-image, first of all thinking, practices and habit of small farmers, then self-study, equipping themselves with knowledge and skills to meet the requirements of new development.

Employment opportunities will be affected by the 4.0 industrial revolution, but that does not mean automation will replace workers. Therefore, individual workers need to find ways to adapt by always improving and always innovating their skills. Workers in the revolution 4.0 need to be ready to learn, be creative, and think innovation in addition to theoretical study, life skills, international communication, foreign language proficiency and information technology knowledge.

In the industrial revolution 4.0, each worker needs to actively improve his or her own professional level, approach new science and technology, change skills to meet the needs of every enterprise in the revolution. Individuals need to determine learning to know, learn to do, learn to live together, learn to be.

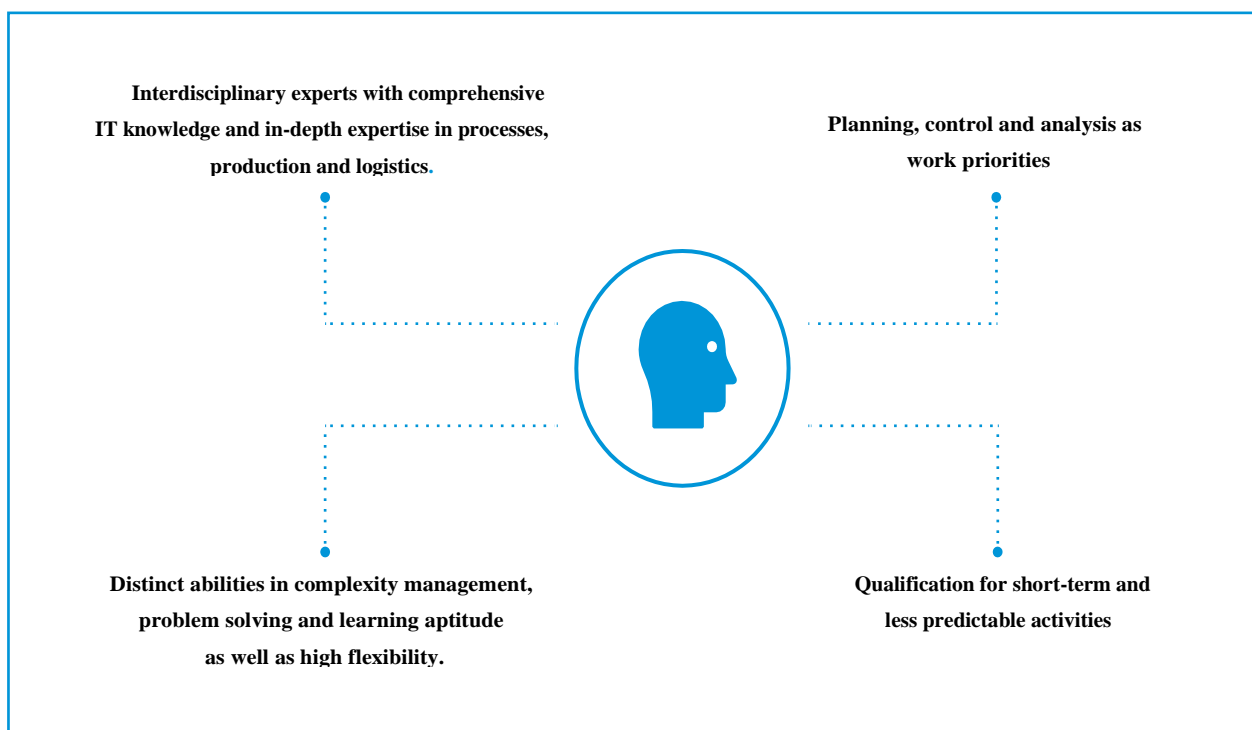


Figure 4. The employee in the future

Source: KPMG, 2016

Requirements of employee's non-state enterprises in the fourth industrial revolution, including:

- Qualification of employees
- Foreign language skills, informatics
- Learning high technology adaptation to the changing of the Industry 4.0
- Good teamwork skills of the employees
- Problem solving and decision-making skills

- Negotiation and conflicting resolution skills
- Communication and professional skills
- Skills in planning, analyzing and prioritizing necessary tasks
- Creative thinking skills
- Professional ethics, working style and good discipline when working
- Responsibility and high patience in work
- Confidence and progressive spirit

CONCLUSION

The study relied upon selected secondary data covering the years, 2013 to 2017. The principal objective of this research article was to determine influence the fourth industrial revolution to employee's non-state enterprises in Thai Nguyen province. Low labours productivity in the non-state in Thai Nguyen province is one of the reasons that employee's income was the lowest compared to type of enterprises. The study showed that in the Industry 4.0, Vietnam's labours in general and Thai Nguyen's employees in non-state enterprises in particular have not only lacking in professional knowledge, but also weakness in problem solving, leadership and communication skills. The Industrial Revolution 4.0 is an indispensable trend, that is happening and nothing can be resisted. Labours in non-state enterprises have no choice but to adapt by actively learning, training, anticipating the skills needed for a smart economy and industrialization. From the field findings, the author recommends some important requirement of employee to adapt in non-state enterprises in the fourth Industrial revolution.

Further studies shall be conducted by the academia to explore the solutions that need to be tackled by Thai Nguyen's government in order to improve the negative influencing of the Industry 4.0 on employees in enterprises, especially employees in non-state enterprises. The more developed analyzes should be a guide to further increase the employee's income in non-state enterprises in the new era.

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