Training and Developing Human Resources to Meet Industrial Network 4.0 of Vietnam's Textile and Apparel Industry

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Abstract:
The article presents an overview of the requirements of digitizing the economy coming from the Industrial Revolution 4.0 (Industry 4.0). Based on the analysis of challenges and difficulties for Vietnamese human resources both in terms of quantity and quality, the author has proposed and demonstrated a number of necessary solutions to improve the quality of human resources to meet. Requirements of a digital economy.

Keywords: Human resources, textile and apparel industry, Vietnam

1. Introduction

In order to develop and join the global supply chain, the textile industry needs to have a strategy to build high quality human resources from now on. In the context of increasing integration and competition, in order to maintain the development as well as participate in the global textile and apparel value chain, experts believe that Vietnam needs to make a proper investment in training, create and improve the quality of human resources. In Vietnam, the application of Industry 4.0 in the textile industry has been implemented slowly. Besides the causes of awareness, capital one of the main causes and also the biggest barrier is the shortage of high quality human resources.

Textile is a key export industry of the country, creating many jobs for workers today. The textile industry currently has about 2.5 million employees, of which 80% are women. It is forecast that by 2025, Vietnam's textile and garment industry will need more than 130,000 laborers with university and college degrees. This number will increase to over 210,000 by 2030. However, human resources in many textile enterprises do not meet both quantity and quality. The number of trained workers in Vietnamese textile enterprises accounts for only 25%, while up to 75% in this field has not been trained or trained for less than three months.

In order to have access to Industry 4.0, textile and apparel, human resources need to be systematically trained at university and college levels, especially managers and technicians. When applying the achievements of Industry 4.0 to production, about 50% of current jobs will be lost and 50% of new jobs will appear. New emerging competencies that require the human resources of textiles and garments required to meet Industry 4.0 include Product innovation; Improve product design skills using 3D technology; Improve production level; Able to operate high automation line with industrial robots; Specialized management and level of Internet marketing.

Under the impact of Industry 4.0, with a focus on the application of digital and digital technologies, in the future, many stages in the textile and apparel industry value chain will be to use machines, equipment, modern technology, high automation, robots instead of human labor. For example, at the stage of fiber production, 10 years ago, businesses needed to use up to 110 employees to operate a factory with a scale of ten thousand spindles, but when applying 4.0 technology to production, the number of manpower reduced to 25 - 35 employees to operate the factory of the same scale.

More ominous, in many businesses, managers, technicians and technology are selected and taken from advanced workers with good skills but not yet fostered management skills, children People, especially the ability to apply technology in production, make the human resources of the garment industry lack.

2. Research overview

2.1. Training and developing human resources
Human resources: Including all human potentials in an organization or society (including members of the management board), all members of the enterprise use knowledge and ability, conduct and ethical values for establishing, maintaining and developing businesses. Human resources are the sum of internal and external factors of each individual, ensuring creative resources and other content for success, achieving the organization's goals. Human resources are understood as the resources of every human being shown in the labor process, which include physical, mental and mental power. Human resources: Human resources include physical strength (health, the standard of living, etc.), intellect (intelligence, aptitude, personality), mental power (dynamism, creativity, working attitude, ...) and is considered in many respects:

M.P Srivastava (1997) considers that human resources are all capital, including physical and mental power, professional skills that every individual possesses. Human capital is understood as human in the form of capital, even the most important source of capital for the production process, capable of generating future sources of income. This capital is a collection of skills and knowledge gained from manufacturing labor. Therefore, the costs of education, training, health care and nutrition, etc. to improve the production capacity of human resources are considered as input costs of production, through investment in humans. Chu Tien Quang (2005) defines: Human resources include the quantity and quality of the population and labor of a country, a territory, are prepared in terms of working capacity and professional skills and to a certain extent, being and will engage in various economic activities in society. Thus, in a broad sense, human resources are the "population and quality of people, including physical and mental, health and intelligence, ability and quality. In a narrow sense, human resources are understood as "the labor force, including the number of people working, unemployed, and backup workers; or includes trained and untrained people, who may or may not be working. Nguyen Ngoc Quan and Nguyen Van Diem (2004) think that human resource development is the activity to maintain and improve the quality of human resources of the organization.

Training is understood as learning activities to help employees be able to perform their functions and duties more effectively. It is the learning process to make employees more aware of their work, which is the learning activity to improve the qualifications and skills of employees to perform their labor tasks effectively, more fruit. Training is the activity of developing human resources, is the total of organized activities taking place within a defined period to change the occupational behavior of workers.

2.2. The role of training and human resources

The objective of training human resources is to make the best use of existing human resources and improve the professionalism and efficiency of the organization by helping employees better understand their jobs and gain a better grasp of their jobs. their businesses and perform their functions and duties more voluntarily with a better attitude, as well as improve their adaptability to future jobs.

Training and developing human resources is a prerequisite for an organization to survive and advance in the competition. Training and developing human resources for businesses:

- Improve labor productivity, performance efficiency.
- Improve the quality of work performance.
- Reduce supervision because trained workers are capable of self-monitoring.
- Improve the stability and dynamism of the organization.
- Maintain and improve the quality of human resources.
- Facilitate the application of scientific and technical advances and management into the business.
- Create a competitive advantage in the business.

+ For employees, the role of human resource development training is shown in:
- Creating a strong bond between employees and enterprises.
- Create the professionalism of workers.
- Create an adaptation between employees and current and future jobs
- Meet the needs and aspirations of employees.
- Giving employees a new perspective, a new way of thinking in their work is the basis for promoting the creativity of employees at work.

2.3. Types of human resource training

Human resource training is divided into 4 main types as follows:

New training: is the conduct of training for untrained individuals with the main goal of helping workers with certain technical and professional qualifications to meet the organization's work requirements. In many cases, due to the inability to recruit skilled workers, appropriate qualifications in the labor market or for some other reason, the organization is required to conduct new training.

Retraining: is the training for trained workers, but their expertise is not suitable for the job undertaken. The retraining is conducted when due to certain reasons, the organization recruits people into positions that are not suitable with the trained expertise, due to the arrangement and reduction of the apparatus, due to changes in technological lines that workers become redundant workers and are transferred to other jobs. At that time, they need to be retrained to be able to take on a new job.

Additional training is the training for employees of necessary knowledge and skills to overcome the shortage of knowledge and skills, thereby helping them to complete their assigned jobs.

Advanced training: is a training aimed at helping employees gain knowledge and skills at a higher level, thereby helping employees to better fulfill their assigned tasks with higher productivity and efficiency.

3. Impact of industrial revolution 4.0 on human resources in the garment industry

To be able to apply Industry 4.0 in the field of textile and garment, firstly, it is necessary to prepare sufficient human resources for textile enterprises in accordance with the fields capable of applying 4.0 technology.

For managerial and technical personnel, basic training is required at university and college level with implementation capacity. On the other hand, it is necessary to retrain the number of human resources directly at the factory to access robot operation technology and highly automated production lines. The update of knowledge for human resources directly to meet the 4.0 technology will usually be done by the equipment companies during the technology transfer process, but human resources at university and college level for Industry 4.0 in the textile sector should be forecasted to carry out systematic training for the development of the textile and apparel industry in the next 10-15 years.

Expected, by 2030, the textile industry will need about 210,000 employees. Preparing human resources for the development of industry 4.0 in the textile and apparel industry is one of the great challenges for human resource training. Therefore, the textile industry needs a clear strategy and a roadmap if not "missed" the Industry 4.0 train. The training of human resources needs to be systematically conducted at all universities and colleges in the textile and garment industry, and in parallel with the process of investing in new technologies, Enterprises need to focus on training human resources to make good use of market opportunities as well as improve competitiveness.

It can be said that the achievements of Industry 4.0 are an important premise in improving labor productivity and product quality in the DM sector. For example, the fiber factory under the 4.0 model allows to reduce up to
70% of labor and reduce energy use up to 25%. Dyeing and dyeing factory 4.0 helps reduce 30% of labor, 50% of the water used for dyeing and 50% of energy consumption.

Especially in the garment industry, the trend of using robots or automation equipment for difficult technical steps or repetitive work steps is being concerned by businesses (DN). Using robots in fabric spreading and cutting stages can save up to 80% of labor and save 3% of raw materials; In difficult stages such as adding a pocket, putting a hand on the neck using the equipment, automatic robots will significantly reduce the number of employees, increase product quality, reduce dependence on skilled labor.

In addition, before the development trend of Industry 4.0 with a high level of automation, robotization, along with the Internet of connecting things (IoT) is applied in the process of production and circulation, inevitably, labor required per unit of product will fall sharply. Thus, the advantage of low-cost labor - which is a traditional advantage to promote the growth of Vietnam’s DM industry will no longer exist. Instead, the growth of Vietnam's DM industry will depend on unit labor costs per product. If investing in technology, building a reasonable production management system, helping to improve labor productivity, it is still possible to have a low labor unit price on a product, despite high labor wages.

On the other hand, it is impossible to continue the trend of employing more labor. The Industrial Revolution 4.0 creates an opportunity for Vietnam's DM industry to break out of the trap of employing many workers, but the salary is not high, and the labor is not stable. In addition, the trend of the global supply chain now concerned with clean production, sustainable production, environmental protection, social responsibility also requires DM businesses to invest and innovate technology. reasonable way to be able to make the most of resources.

4. Solutions to improve the quality of human resources for Vietnam's textile and garment industry

Solutions to improve the quality of human resources from universities and textile colleges

- Revise the training program to be updated with technology 4.0 in both technical and management fields.
- Opening more interdisciplinary training majors to access 4.0 technology such as mechatronics techniques in textile equipment, applied informatics in textiles, e-commerce, and fashion design. page with 3D technology.
- Train lecturers in the direction of research and update with 4.0 technology, especially in the field of textiles, management.
- Invest in training equipment in the direction of updating with 4.0 technology such as automatic equipment and industrial robots.
- Organization for students to practice abroad to access a working environment with automation technology, high virtual-reality connection under 4.0 technology.
- Organize scientific research activities in the school in the direction of assessing the impact of industry 4.0 on the field of human resource training, thereby proposing solutions to train human resources to work in the industrial period. 4.0.
- Maintain the scale of training human resources at university and college levels for the textile and garment industry with the current level of 6000-8000 new students to ensure sufficient manpower to serve the industrial application strategy. 4.0 in the textile industry.

Solutions for Vietnamese textile enterprises

Industry 4.0 is an inevitable process that Vietnam cannot stand by. It brings many opportunities to change the face of the country's economy in general, as well as to bring about expectations for positive change for Vietnam DM enterprises in particular if there is good preparation to seize it. be this wave. Accordingly, each enterprise
in the industry itself should proactively plan its strategy to take advantage of the achievements of Industry 4.0, as well as minimize challenges.

In addition, the DM sector also needs strong support from the Government, ministries, departments and sectors. For example, the State has preferential interest rates policies for hi-tech investment, or the state management of the environment must comply with the provisions of law, but cannot impose sanctions. for fear of pollution, otherwise, it will be very difficult to produce materials for DM.

In particular, the ministries, departments and branches should accelerate administrative procedure reform. In 2003 there were only 15 procedures, now it has increased to 402 procedures. The cost of implementing these procedures is equivalent to a 22% tax (while for ASEAN 4 countries only 12%). On the other hand, the time to complete the procedures for exports and imports is also much higher than those of other ASEAN countries. Accelerating administrative procedure reforms will create many favorable conditions. for businesses DM Vietnam to improve its competitiveness in the context of increasingly fierce competition in the international market today.

The cost is too high, lack of knowledge and suitable human resources are the three factors that are studied. Hoang Xuan Hiep pointed out that the impact of the main barrier on the application of achievements of Industry 4.0 in Vietnam's textile and garment industry. In order to overcome these barriers and achieve the set growth targets, three solutions have been proposed to help the textile and garment industry develop as expected.

Firstly, step by step invests in application of achievements of Industry 4.0 in the textile industry. Specifically, garment enterprises should invest in each piece of equipment using digital technology in simple, highly reproducible stages for the production of complex and highly fashionable products such as jackets, suits, skirts Parallel to that need to invest in information technology platforms, plant management software such as ERP, PLM ... proceed to build intelligent factories. Enterprises in the yarn, weaving and dyeing industries, which have not fully depreciated their old equipment, can invest in testing equipment and gradually replace digital devices ...

Secondly, invest in developing science and technology in the field of textiles. The textile and apparel industry needs to develop nano-fiber products, antibacterial, fireproof, software to run the textile factory or develop 3D applications in product personalization, etc.

Thirdly, human resource training solutions. In parallel with the upgrading of knowledge and skills of human resources in textile and textile industry, it is necessary to organize human resource training for the application of Industry 4.0 technology to the textile and garment industry through the opening of additional training branches towards interdisciplinary approach to 4.0 technologies, training of lecturers on 4.0 technologies, smart textile factory.

Industry 4.0 can increase labor productivity and product quality, but with Vietnam's textile and apparel industry, the human resources to access Industry 4.0 are weak, the investment to apply 4.0 technologies requires large capital and public level. The enterprise's current technology is still quite far away from the digitalization requirements of Industry 4.0. Therefore, the investment in the textile and garment industry in the direction of Industry 4.0 should be carefully selected and calculated for investment efficiency. Therefore, our country's textile and garment industry will really benefit from Industry 4.0.

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