

Research on the Transformed Development of Coal Enterprises under the New Situation -- Based on Field Research in Jincheng, Shanxi Province

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Abstract

Under the new situation, the development of traditional coal companies is facing enormous challenges. As a coal-rich province, Shanxi, coal companies are also faced with an urgent need for transformation and upgrading. In this regard, the method of combining on-site interviews with questionnaires was used to conduct in-depth investigations in Jincheng City, Shanxi Province, to explore the problems and causes of the current development of coal enterprises, and to propose new ideas for the transformed development. The six major transformations---- from tradition to "ecology protective type", "resource intensive type", "government guided type", "talent leading type", "culture identifying type" and "security strict type", has provided a reference for the transformed development of coal companies in China.

Keywords

New situation, Coal enterprises, Transformed development.

1. Introduction

On October 18, 2017, Xi Jinping made a report at the 19th National Congress of the Chinese Communist Party. He pointed out: "We must unswervingly implement the development concepts of innovation, coordination, green, openness, and sharing"; "We must be in harmony with nature, establish the concept that green water and castle peak are golden mountain and silver mountain, and adhere to the basic national policy of saving resources and protecting the environment; "Accelerate the reform of the ecological civilization system to build a beautiful China." Shanxi Province has been possessing such developed coal industry that causes many social problems, and it is demanded urgently for transformation to rely on technological innovation, energy saving and environmental protection and linkage production.

Shanxi Province, known for abundant coal resources, is an most important coal base in China, so rational development and utilization of coal resources directly affects the sustainable economic development of Shanxi Province and even the whole country. Jincheng City, located in Shanxi Province, is famous for mineral resources such as coal, coalbed methane, and iron ore, thus it has the reputation of "township of coal and iron". At the same time, Jincheng is located at the southern tip of the "Qinshui Coalfield", which has extremely rich coal resources and excellent coal in quality. Therefore, it is typical and representative to investigate the coal companies in Jincheng.

From November 2017 to February 2018, Staff of coal companies in Jincheng are investigated by on-site interviews and questionnaires. The research mainly aimed at the staff of various departments in different sized enterprises. A total of 200 questionnaires were distributed to the staff in which 172 were returned, and 148 valid questionnaires were obtained after the invalid questionnaire was eliminated. Therefore, the effective recovery rate was approximately 86%. The method of paper was dominated by qualitative analysis, supplemented by quantitative analysis, and introduced "stimulus recall" to ensure the reliability of first-hand data. Specific methods are used as follows:

First, qualitative analysis: Make full use of the Internet, television, related book materials, newspapers and on-site interviews to collect information, so as to analyze the current developing situation of Shanxi coal enterprises in recent years and acquire other related conditions.

Second, quantitative analysis: The "Likert Scale" was introduced into the questionnaire to make the collection and quantization of data easier. The paper adopted the method of univariate descriptive statistics to analyze through SPSS software , and it was showed in an intuitive and easy-to-understand way of pie charts and bar charts.

Third, "stimulus recall" method: With the permission of the staff surveyed, what they said would be recorded while interviewing. After the interview was finished, the recorded tapes were re-released to give the respondents a chance to correct the original thoughts. On the one hand, it could be helpful to avoid the mistaken thinking because of tension, and on the other hand it may be able to stimulate the production of new ideas. Hence, this way could improve the efficiency and quality of interviews, and increase the reliability and validity of information.

2. Current Problems in the Development of Coal Enterprises

Through sorting out the questionnaires and analyzing the contents, it is concluded that the current development of coal enterprises in Shanxi faces six major problems: namely, the serious environmental pollution, the threat of resource depletion, uncoordinated development, the low quality of personnel and lack of innovation capacity, the difficulty of promoting smart technology inside, and weak foundation of safe production. Then make a specific analysis as follows:

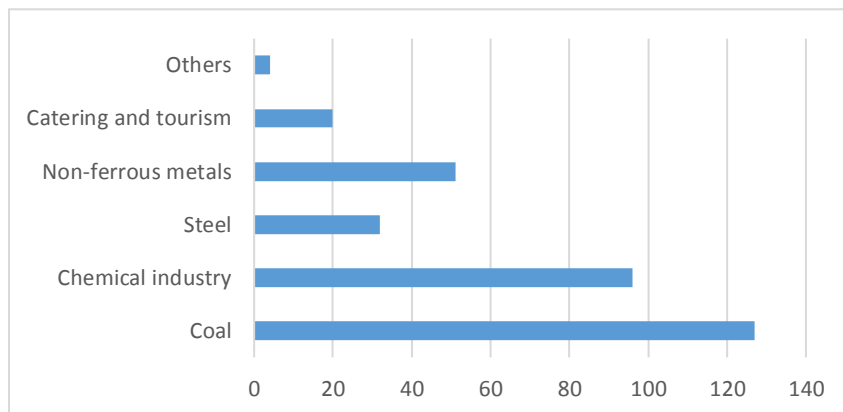


Fig. 1. Industry of severe environmental pollution in Shanxi

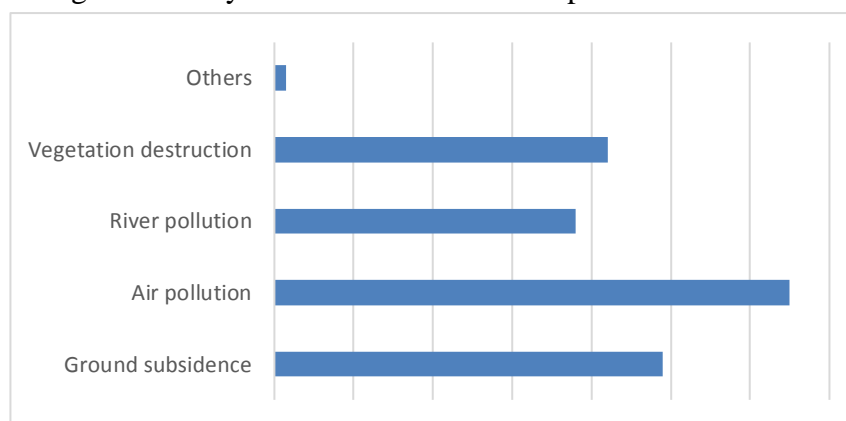


Fig. 2. Great impact on the environment because of coal mining and processing

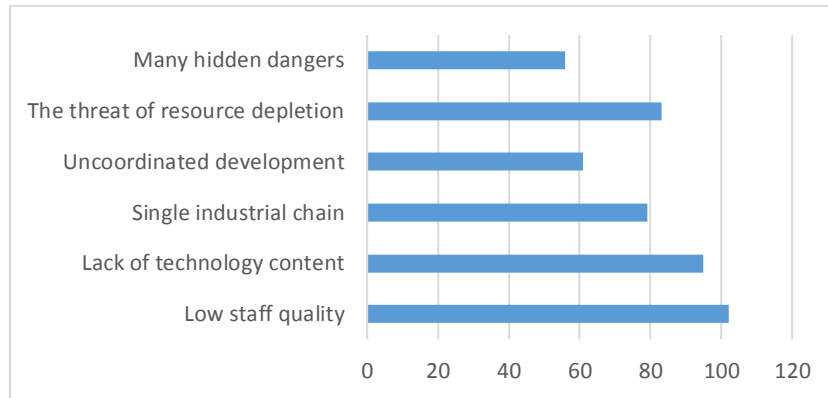


Fig. 3. Main problems faced by the coal enterprises in Shanxi

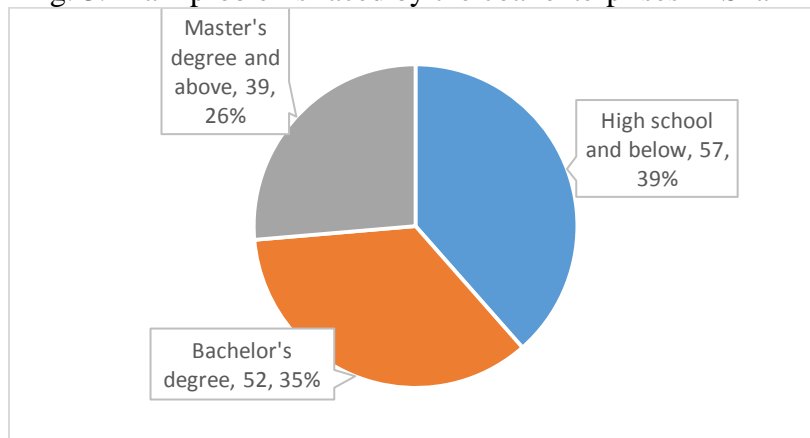


Fig. 4. The education of employees surveyed

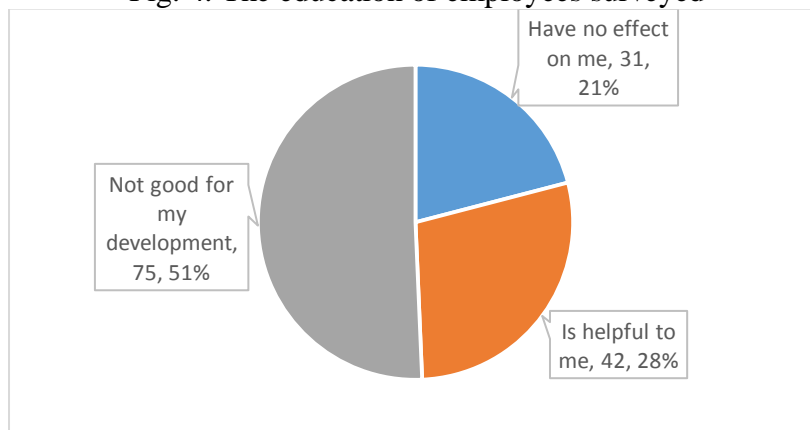


Fig. 5. Influence on introducing smart technology to coal companies

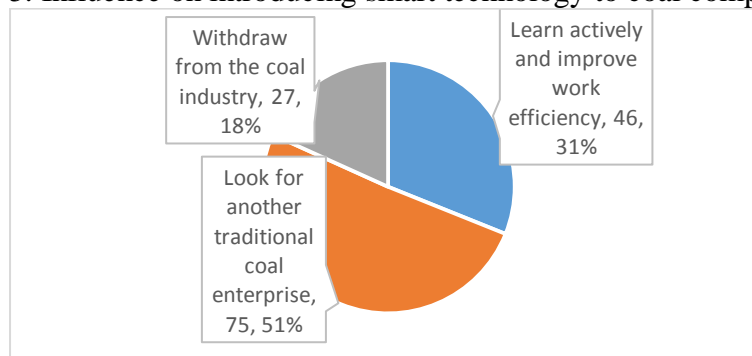


Fig. 6. Choice after promoting the use of smart technology in coal companies

2.1 Serious Environmental Pollution

From Fig. 1 and Fig. 2, it can be seen that of the 148 people surveyed, nearly 130 people think coal is the industry that causes the most serious environmental pollution in Shanxi. The pollution includes

but are not limited to water pollution, air pollution, vegetation damage, and strata collapse. Also, industries associated with coal, such as chemicals and steel, are very polluting as well.

2.2 Increasingly Depleted Resources

Fig. 3 shows that among the surveyed people, more than half of them believe that over-exploitation of minerals has made the exhaustion of coal resources under threat. As we all know, coal resources are non-renewable resources and will be used up sooner or later. It's not beneficial to the sustainable development of the coal industry. We could not mine coal resources blindly, and should find ways to develop related industries, extend the industrial chain, maximize the use of limited resources, and achieve sustainable development of coal companies.

2.3 Lack of Coordination

In Fig. 3, about two out of five people believe that the development of coal enterprises lacks coordination. The coal industry is an important pillar industry in Shanxi. However, it will lead to inefficient operation and abnormal development if relying too much on coal resources to develop the Shanxi economy and adopting backward production methods in the utilization of modern mines.

2.4 Low-quality Personnel and Poor Technological Innovation

As can be seen from Fig. 4, 74% of the employees surveyed are bachelor's degree and below, while master's degree and above account for only 26%. Among them, 39% are just high school graduates and below, which indicates that the average education level of the employees is low, giving rise to poor technological innovation capability. Therefore, the coal products are monolithically produced and extensively operated, resulting in low additional value of products and lack of scientific content.

2.5 Difficult Promoting Smart Technology in Enterprises

From Fig. 5 and Fig. 6, it can be found that the introduction of smart technology has advantages and disadvantages for internal employees. Positive influences include reducing the workload and the risk of work. Negative impacts mean increasing the risk of unemployment and making it difficult to adapt. Of the 148 people surveyed, 42 people thought that the introduction of smart technology had a positive effect, and 75 people thought that it would bring them adverse risks. After an in-depth investigation, it was found that these people keeping negative attitude would prefer to withdraw from the coal industry or find another traditional coal companies rather than learning smart technology. This attitude is not conducive to the transformation and updating of enterprises and the long-term development of self-career. All these show that it is still very difficult to promote smart technology within coal companies.

2.6 Weak Foundation for Safe Production and Inadequate Supervision System

Fig. 3 also shows that 56 out of 148 people think frequent mining accidents are a major problem faced by coal companies, and hidden dangers still exist in the process of production. Shanxi's coal enterprises are mostly small, so some coal companies have irregular management, low equipment levels, unsatisfactory mining operation mechanisms, and imperfect supervision system resulting in the phenomenon of "collusion between officials and businesses". Therefore, small coal companies have hidden security risks, causing frequent mine accidents that have brought some damage to employees and their families in the past several years.

3. Reasons for the Problems Existing in the Coal Enterprises

In allusion to the above six types of issues, it is summarized the reasons through in-depth analysis and discussion, as follows:

3.1 Environmental Issues

Coal resources are digged continually which may lead to ground subsidence and damage to vegetation coverage. The exploited coal resources will release a large amount of harmful gases in the process of developing products in related industries, as well as the untreated waste water. All of which has

affected the species of animals and plants and even the living environment of human beings in the entire ecosystem, and has destroyed the diversity of wild animals and plants.

3.2 Resource Issues

With high-intensity, large-scale, extensive mining for several decades, although Shanxi's coal resources are extremely rich, coal resources are decreasing sharply. Coal is a non-renewable resource that makes it upcoming exhausted. In addition, many coal companies in Shanxi still have problems in the sustainable development and utilization of coal mining. For example, the degree of coal exploration is not high and the geological work is lagging, resulting in a low rate of exploitation of coal resources. Also, over-exploit and extensive operations of some enterprises have caused serious waste and low utilization of coal resources. At the same time, the exploitation of coal also requires the loss of water resources and various mineral resources associated with coal, making the situation of resource depletion more severe.

3.3 Coordination Issues

The abundant reserves of coal resources provide advantages for the economic development of Shanxi Province. However, relying too much on coal resources will cause the problem of sustainable development. On the other hand, the mine-control mechanism is not perfect, and the internal development of the coal industry is not balanced, and mechanized operation cannot be fully implemented, bringing about coexistence of various mode of production. Modern mines and backward mining methods do not match each other, resulting in inefficient mining and production. In addition, the government did not take advantage of the situation, adapting to local conditions and introducing guidance policies that are suitable for the development of coal in the region. These are the reasons that lead to the poor coordination of Shanxi coal industry development.

3.4 Innovation Issues

The coal industry is a traditional industry, and it is also a high-risk industry. The working environment and conditions are relatively poor. Many talented people are unwilling to work in such enterprises. Most of the workers are from farmers, and they are relatively fluid and loose, and their quality is not high. In addition, the managers and technicians of coal enterprises are seriously lacking, and some coal companies equipped with that do not meet the requirements which are not qualified for their jobs. In the long run, it will cause the loss of talent, and coal companies lack reliable personnel protection, affecting their ability to innovate in technology.

3.5 Introduction of Smart Technology

Smart technology, such as coal enterprise intelligent diagnosis and data warehouse technology, intelligent coal sampling machine and other new technological inventions, will be quite beneficial to the overall development of coal companies if they are introduced. However, for employees, they need a stable job and income. The introduction of smart technology will replace part of the human labor, which will expose many people to the risk of unemployment. This is the very situation for them to be reluctant to face. Therefore, the internal division of the company makes some employees find another way out only, leading to talent loss and trapping in the new problems again.

3.6 Security Issues

The lack of input of safety equipment and safety management talent has prevented them from taking measures until a dangerous accident occurs. In some places, the safety supervision system is not perfect so that the phenomenon of "collusion between officials and businessmen", malpractice for personal gains, and falsification occur again and again. Enterprises cannot offer related culture knowledge to their employees regularly. Employees and coal companies' bosses have a weak sense of security and ideological awareness is not in place which can often lead to security incidents. Many coal companies have hidden dangers in safe production, such as gas outbursts, rockbursts, and threats of water damage. Enterprises should arrange appropriate technical staff to conduct careful inspections and eliminate hidden dangers .

4. Suggestions for the Transformed Development of Coal Enterprises

Based on the analysis of problems and causes, this paper proposes that if coal companies want to achieve transformed development, they must go to “ecology protective type”, “resource intensive type”, “government guided type”, “talent leading type”, “culture identifying type” and “security strict type”.

4.1 Promoting the Transformation to “ Ecology Protective Type ”

Coal companies should make efforts to realize the low-carbon development, green and clean development, and firmly push forward with the transformation from environmental destruction to environment-friendly companies. First, fully strengthening coal geological exploration, improving mining techniques, and achieving orderly and appropriate mining, prevent ground subsidence because of unreasonable underground mining causing damage to groundwater systems, etc. Second, coal companies are supposed to learn to shoulder social responsibilities while pursuing their own interests. For waste gas and waste water, they should introduce relevant technologies and equipment for disposal before discharge, as well as developing clean coal technology. Third, they could establish an liability system of environmental pollution. The strict supervision can lead to the timely discovery of environmental issues and handling legacy issues.

4.2 Promoting the Transformation to “ Resource Intensive Type ”

First, strengthen input in mining technologies, increase recovery rates, and at the same time, make appropriate extractions to achieve "fine water flow." Secondly, solid wastes, such as coal gangue, that appear during the processing of coal should be fully utilized. Making full use of abandoned resources ("turn waste into treasure") is helpful to build a recycling economy; Third, accelerate the development of mineral resources associated with coal ,especially the coalbed methane, to achieve construction of "gasification of Shanxi"; Fourth, change the pattern of extensive operation, and transform the direct output of raw materials into deep processing of products, extending the industrial chain and promoting the development of industrial linkages. Thus, it is possible to realize the comprehensive utilization of resources while increasing the added value of products.

4.3 Promoting the Transformation to “ Government Guided Type ”

When the market plays a basic role, it also needs the government to play its guiding role in the transformation of the coal industry. First, the government should use its own power to issue a series of policies to help coal companies solve their problems in bankruptcy and restructuring. Secondly, the government should improve the related mechanism and formulate a unified standard of internal operation; Third, the government must introduce guided policies that are suitable for the region, in accordance with the local actual conditions and resource advantages which will create a multiplier effect. Fourth, the government could support the alternative industries and emerging industries, so as to make the industrial structure more diversified, enhance the market's ability to resist risks, and increase the vigor of Shanxi's economic development.

4.4 Promoting the Transformation to “Talent Leading Type”

First, implement the strategy of rejuvenating provinces through science and education, and actively cultivate high-quality talents, and allocate them to the specified coal enterprises in a classified and point-based cultivation, so as to increase the quantity and quality of management personnel and technical staff. Second, identify key positions, focus on exploring and cultivating potential talents, and at the same time enrich the reserve talent resources so as to ensure that suitable personnel can be employed in important positions. Third, actively appeal to high-level talents, especially leaders in this industry, which form a high-level, large-scale, strong radiation talent deployment system gradually; Fourth, a part of the technical personnel will be “packaged” , and set up a technology research team to carry out the innovation of science and technology, then enhancing their competitiveness.

4.5 Promoting the Transformation to " Culture Identifying Type "

A nation has its own national culture. The company should also have its own corporate culture, so as to enhance the cohesion and unity of the company. First, coal companies should organize the employees to give them ideological guidance and education regularly. At the same time, permeate their corporate culture into all aspects of production, operation and management to strengthen their recognition of the company, enhancing their sense of belonging; Second, for the introduction of smart technology, coal companies' representative must actively communicate with them and strive for their recognition of new products and arouse their desire for knowledge, and train them free of charge to eliminate their concerns, ensuring smart technology can be implemented better within coal companies.

4.6 Promoting the Transformation to " Security Strict Type "

First, coal companies should increase investment in safe production equipment, introduce safety management personnel, and put the company's safe operation at a very crucial position. Second, the government should establish and improve safety supervision mechanisms, and build safety guarantee system, which will investigate specific coal companies while encountering problems, irregularly go to inspect potential safety hazards, and impose penalties on companies engaging in malpractices and frauds. Third, coal companies should strengthen the propaganda of safety culture and enhance the safety awareness of corporate staff .

5. Conclusion

The research results show that coal companies are currently facing the problems of environmental pollution, depletion of resources, uncoordinated development, low quality of personnel, lack of innovation, difficulty in promoting smart technology, and weak security foundation. Based on the in-depth analysis of the six types of problems, it is proposed that coal enterprises can transformation to "eco-environmental protection", "resource intensive", "government guidance", "talent leading", and "cultural identification" and "strict security " in the future. This not only provides a direction for the development of coal enterprises in Shanxi Province, but also provides inspirational references for the development of coal companies in other places across the country. It has strong practical significance.

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