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## Analysis on Driven-force-mechanism of Management System and Mechanism Innovation Based on Technology Innovation Driven-force-model in Grid Enterprises

<sup>1</sup>Wu Chen and <sup>2</sup>Yan Chang

<sup>1</sup>State Grid Energy Research Institute, Beijing, 100052, China

<sup>2</sup>School of business, Central University of Finance and Economics, Beijing, 100081, China

**Abstract:** Management is also productive force and management systems and mechanisms determine the level of management efficiency directly. To improve the management level, companies must change management systems and mechanisms according to the internal and external situation constantly. On the basis of reviewing the technology innovation driven-force-model, this study summarizes the enterprise technology innovation driven-force-model literature and defines the connotation of the management system and mechanism. Then it formulates a “nine factors” driven-force-model for enterprise management system and mechanism innovation and applies it to the grid enterprise management system and mechanism innovation practices. And it carries out an application analysis using the State Grid Corporation of China (SGCC) as an example. It gives a thorough analysis of the management system and mechanism innovation implementation driven-forces of SGCC, which the core is “Three-Intensive-Management and Five-Big-Systems” (“Three-Intensive-Management” are human resource intensive management, financial intensive management and material procurement intensive management. “Five-Big-Systems” are big planning system, big construction system, big operation system, big maintenance system and big marketing system. “Big” means to build a system that can operate in the all organization layers smoothly). We try to provide a basis and framework for China's central enterprises to carry out management innovation.

**Key words:** Technology innovation, driven force mechanism, management system and mechanism innovation, grid enterprises

### INTRODUCTION

With the development and mature of the market economy, management innovation is becoming important increasingly in China and it has become an important issue enterprises are facing. How to implement management innovation of state-owned big central enterprises and how to build management system and operational mechanism in line with the requirements of the socialist market economy, these problems are related to the future survival and sustainable development of these enterprises. To establish a modern enterprise institution, to realize scientific development, management innovation is imperative. For a long time, due to the special identity and status of state-owned enterprises, it is seriously underpowered for China's central enterprises to implement management system and mechanism innovation. In this study, based on the technology innovation driven-force mechanism models, we formulate a driven-force mechanism framework for power grid enterprises to carry out management system and mechanism innovation.

### LITERATURE REVIEW ON ENTERPRISE TECHNOLOGY INNOVATION DRIVEN-FORCE MECHANISM MODELS

**General driven-force mechanism models of enterprise technology innovation:** Technology is a fundamental basis for the survival and development of enterprises, companies must continue to carry out technology innovation. But where the driven-force of enterprise technology innovation comes from? We summarize the existing research results find that there are mainly the following six technology innovation driven-force mechanism models (Jiang *et al.*, 2012).

**Technology-push mode:** This mode emphasizes that scientific research and technology invention based on

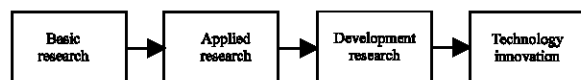


Fig. 1: Technology-push mode

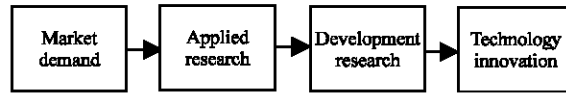


Fig. 2: Market-pull mode

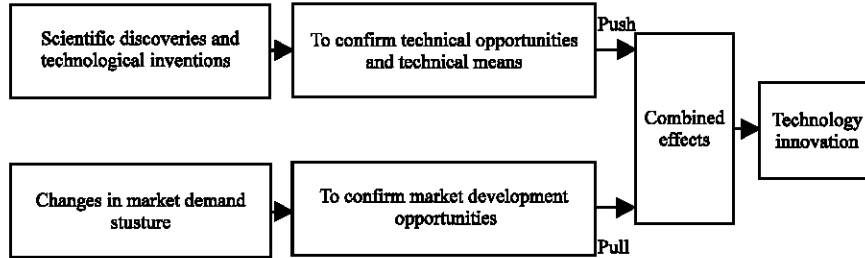


Fig. 3: Synthesized mode of “technology-push and market-pull”

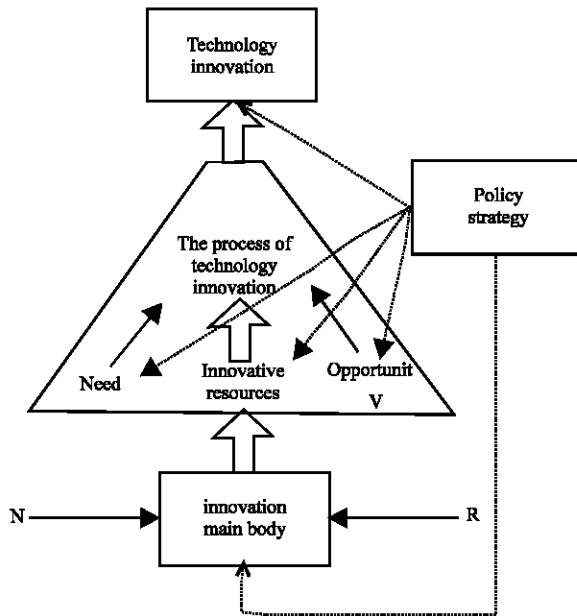


Fig. 4: N-R relationship mode

scientific research are the main driven force of technology innovation. It can be expressed as Li and Ding (2013) (Fig. 1).

**Market-pull mode:** This mode emphasizes that technology innovation originates in market demand and this social market demand provides pull force, so it becomes the main driven force of technology innovation. It can be expressed as (Guan, 2012) (Fig. 2).

**Synthesized function mode of “technology-push and market-pull”:** This mode emphasizes that mutual cooperation and the interaction between

science-technology research and market demand are the dominant driven force to promote technology innovation. It can be expressed as Wang (2012) (Fig. 3).

**N-R (need, resource) relationship mode:** In this mode, N represents the needs of the society and R represents the various resources of the society. It considers that N-R contradictions and gaps between needs and resources are the social driven force to cause technology innovation and they are initiated prerequisite for technology innovation. Specifically, when the society put forward some sort of technical requirements or product needs and the existing social resources can not fully meet this need, there produced an incompatible “bottleneck” phenomenon between the needs and the resources. This bottleneck constraints generated by the relationship between N-R, will greatly stimulate and promote the technology innovation activities occur and run. Its mode can be expressed as Zheng and Guo (2013) (Fig. 4).

**Technology paradigm-technical track mode:** This mode has established a driven force model with evolution nature for technology innovation and technology change (Wang and Shi, 2013). It describes a driven force mechanism of technology innovation which actually provides restrictive driven force that comes from interaction between technology paradigm and the economic-social conditions. It is not only subject to focus, select and stimulate the economic conditions but also subject to the technology paradigm which is limited to this stimulus by the technology.

**Administrative plan propulsion mode:** This model emphasizes that prescriptive innovative plan formulated according to the development plan, as well as the

administrative means and organizational measures which adapt to the plan are the main driven force of technology innovation (Zheng and Guo, 2013).

**PRESENT INVESTIGATION ON TECHNOLOGY INNOVATION DRIVEN-FORCE MECHANISM**

We believe that the driven force of enterprise technology innovation comes from both internal and external. External driven force include: market factors, competitive factors, government factors etc.; internal driven force include: Economic interests driven force, the cost driven force, the corporate social value driven force, the managers' achievements driven force, the social value driven force from the innovative personnel, entrepreneurial spirit driven force, the innovative organizational skills driven force, corporate culture driven force, corporate technical innovation capability driven force etc (Fig. 5).

**Market factors:** Today, consumers are becoming more and more critical, so the enterprise must improve their products and services according to the needs of the consumer so as to gain the consumers and to get profit. Today's consumers are very critical and it is also a group of critical consumers promoted our enterprises to improve their technology continuously so as to create new products and services. In order to survive, develop and gain profit, enterprises must innovate according to the needs of the market (Zhang, 2008).

**Competitive factors:** Competition is one of the main rules of survival in the market economy. Market economy can not do without competition (Zhang, 2010). In the era of

global economic integration, the competitors of our enterprises facing are not only the domestic enterprises but also includes a large number of strong multinational enterprises. Our enterprises how to maintain and obtain a competitive advantage in the fierce competition? Probably the most important is that we continue to strengthen and enhance their core competitiveness, where technology is a most important source of the core competitiveness of enterprises. Therefore, enterprises must carry out technology innovation in order to obtain and maintain their competitive advantage (Laura and Giovanni, 2002).

**Government factors:** The government is the macro-environment of enterprises and it inevitably generates huge direct and indirect effects on the activities of the enterprise (Lehrer *et al.*, 1999). Especially in China's socialist environment, the governments often give macro-guidance or specific plans on technology innovation activities. This situation is bound to affect our enterprises' technology innovation activities. In order to complete the national plans and tasks, to win the support of the government, it is bound to increase the intensity of technology innovation.

**Economic interest factors:** We believe that the main cause of enterprise technology innovation is the pursuit of profit. Profit pursuit is the main objective of enterprises operation in a market economy. Therefore, all the activities of the enterprises in the market are to get profit (including current profit and potential future profits). How technology innovation to get additional profits for enterprises? It provides consumers more consumer surplus than the competitors to gain an advantage. We give a brief analysis of this argument from an economic point of view. Figure 5 shows this analysis. Company E

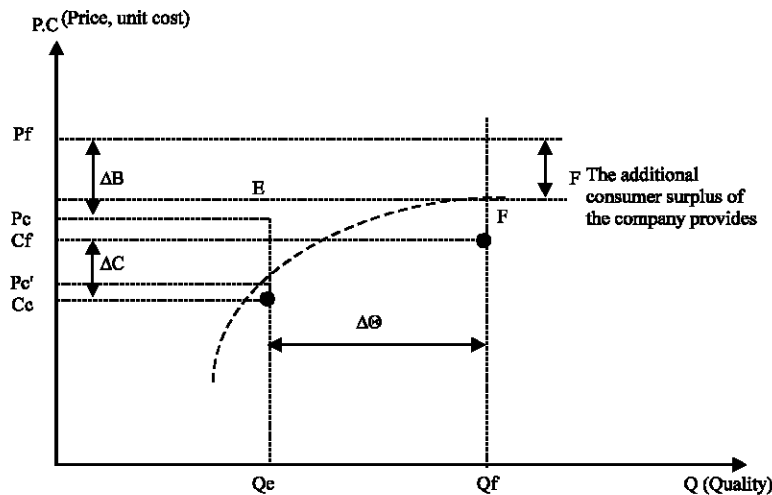


Fig. 5: Economic logic of technology innovation

the unit cost is  $C_e$ . Company F provides a much higher functionality or quality product, its unit cost is  $C_f$  and the margin production cost is higher. As can be seen from Fig. 5, where the increased revenue value consumers feel from the product F ( $\Delta B = B_f - B_e$ ) exceeds the additional costs ( $\Delta C = C_f - C_e$ ), so company F can determine the price under the indifference curve so as to “share” part of the additional value with consumers. So that company F can cut the price to achieve consumers' parity reaction through lower price (thus the indifference curve moved to the dotted line position in the figure). The margin profit of Company F is still higher than that of Company E. Just because technology innovation can give enterprises such benefits, they will try to implement technology innovation and develop new products, new services and new processes etc (Atuahene, 1996).

**Cost driven force:** Goods and services become standardized in this era, so making different price is difficult. In the case of product quality and performance is almost the same, the price must be consistent and otherwise you will be abandoned by the consumers inevitably. So enterprises must gain super profits only through cost advantages. This cost pressure also promotes them to implement technology innovation and strive to obtain cost advantages.

**Corporate social value driven force:** Enterprise is similar to person and their pursuit is not only interests but also social value. Today we are talking about corporate social responsibility, talking about corporate ethics and morality, on the one hand it is to serve the society, to fulfill social responsibility, on the other hand and the bigger reason is to realize its social value (Markman *et al.*, 2001). Today, the brand's role is growing and the carrier of corporate social value is largely brand and its reputation. Enterprises want to gain a reputation, build superior brand, they must continue to carry out technology innovation and establish a good image. Only the technology is advanced and the company becomes well-known enterprises, its social value can be well achieved. Therefore, to gain a good reputation, enterprises will strive to carry out technology innovation.

**Achievements driven force of the managers:** Corporate managers is one of the main enterprise technology innovation bodies, their pursuits not only include economic returns but also include accomplishment sense (Rhyne *et al.*, 2002). According to Maslow's hierarchy theory of needs, the needs of the people include physiological needs, security needs, social needs, esteem needs and self-actualization needs, they are progressive

layers relationship and despite the possibility of these needs may interpenetration. Corporate managers generally want to make a difference, also clearly recognize the importance and urgency of technology innovation under the conditions of market economy. When they achieved to maximize their profits and sustainable development of the enterprise through technology innovation, they will be full of achievement sense. Achievement and social prestige is the career life of corporate managers. When enterprise managers get the satisfaction of material reward, they will pursue the spiritual rewards, the pursuit of the realization of accomplishment sense and self-worth. It is just this pursuit of accomplishment sense that promotes our entrepreneurs, professional managers, operators and managers try their efforts to enhance the reputation and value through technology innovation, so that their own accomplishment sense will be met.

**Social value driven force of the innovation persons:** Direct executioners of innovation or new processes, new program proponent and corporate R and D personnel; also have the same pursuit of social value with the enterprise managers. Their pursuit not only includes economic interests but also includes the reputation expectations (Acs *et al.*, 2002). An ordinary skilled worker will try their efforts to give their managers' attention and enhance his technical backbone through technology innovation. This individual internal driven force will promote technology innovation.

**Corporate cultural factors:** In general, a culture with the characteristic to encourage technological changes and market-oriented will encourage enterprises to carry out technology innovation activities (Rhyne *et al.*, 2002). While legalistic, conservative corporate culture will hinder the enterprise technological changes and technology innovation.

Driven force factors of enterprise technology innovation are not just those listed above but the described factors in this study are the most important driven force factors for enterprises to carry out technology innovation.

## CONNOTATION OF MANAGEMENT SYSTEM AND MECHANISM INNOVATION

**Connotation of management system:** Management system is the structure and composition of an organization, which is to specify the range of enterprise management, responsibilities and duties, the interests and the relationship standards between each other, according to the structure and composition of an organization. Its core

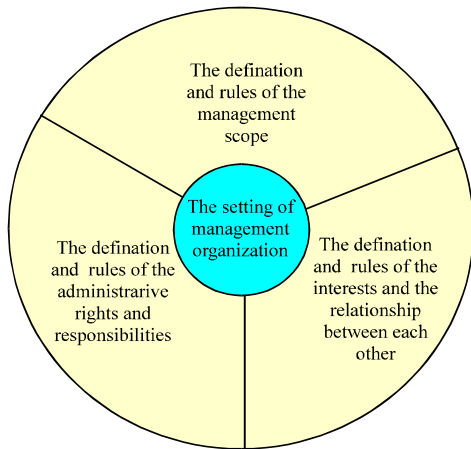


Fig. 6: Connotation of management system

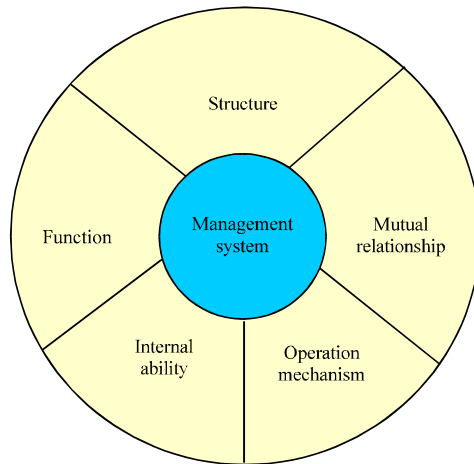


Fig. 7: Connotation of management mechanism

is the setting of management organization, management allocation of authority as well as inter-agency coordination, as shown in Fig. 6.

**Connotation of management mechanism:** Management mechanism is the structure, function, mutual relationship, the internal function and the running mechanism of the management system. It refers to a working system of the organization or the interaction between the process and organization, as shown in Fig. 7. Management mechanism mainly includes three mechanisms: operation mechanism, driven mechanism (interest-driven force, decree-driven force, social psychological driven force) and restraint mechanism (power constraints, interests constraints, duty constraints, social psychological constraints), as shown in Fig. 8.

**Relationship between management system and management mechanism:** In general, management system focuses on the organizational structure, it is limited to the

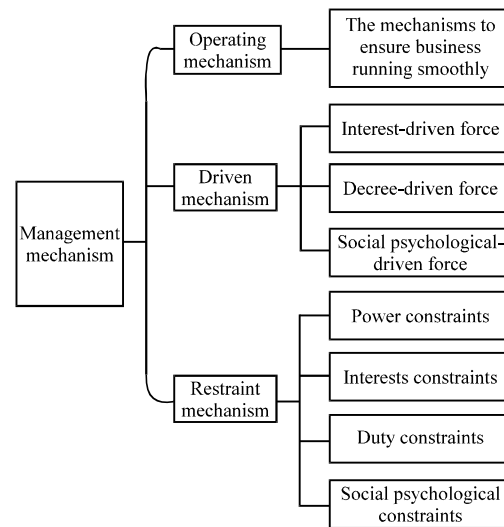


Fig. 8: Constitution of management mechanism

units and organizations who has the upper and lower level relationship. Management mechanism focuses on the principles and mutual relationship of the internal part, it emphasizes on the inner containment and constraint of the internal objects and these mechanisms can make the management system, method and process be well implemented. Management system and mechanisms are closely coordinated with each other. One aspect alone is difficult to organize normal operation.

The grid enterprise management system is a reasonable scientific system that the core is all levels of the organizational structure of the power grid enterprises, as well as the “responsibility-right-interest” allocation system. It is the basic backbone of the organization. It focuses on the organizational structure and the “responsibility-right-interest” allocation system.

The grid enterprise management mechanisms are the main management methods and operation means to maintain the business activities to run smoothly, it reflects the internal function relationship of the activities, as well as the relationship between the various departments (units). Their construction emphases are operation mechanism, driven mechanism and incentive and restraint mechanisms.

**AN ENTERPRISE MANAGEMENT SYSTEM AND MECHANISM INNOVATION DRIVEN FORCE MODEL BASED ON TECHNOLOGY INNOVATION DRIVEN FORCE MODEL**

Based on the integration of enterprise technology innovation models of technology-pull model, demand-pull model, technology and market interaction model, technical specifications and technical track model, N-R relationship

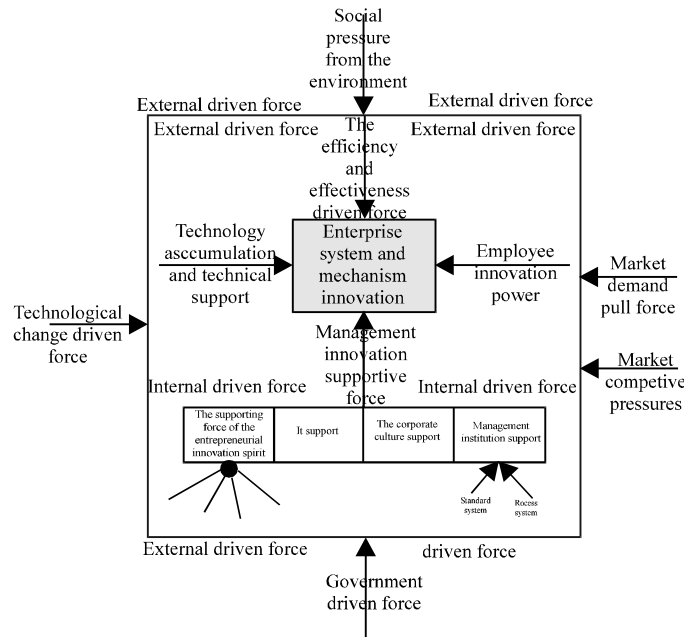


Fig. 9: Nine factors driven-force-model for enterprise management system and mechanism innovation

model, we formulate a “nine factors” driven-force-model for enterprise management system and mechanism innovation as shown in Fig. 9. The driven force of enterprise management system and mechanism innovation includes four internal factors and five external factors. Internal driven forces include effectiveness and efficiency driven force, technology accumulation and technical support, management innovation supportive force (including the supporting force of the entrepreneurial innovation spirit, information technology support, the corporate culture support and management institution support) and employees’ innovative power. External driven forces include technological change driven force, government driven force, market demand pull force, market competitive pressure and social pressure from the environment. According to general technology innovation driven force model, the nine factors can cover the entire driven force source of enterprise management system and mechanism innovation.

**STUDY ON MANAGEMENT SYSTEM AND MECHANISM INNOVATION DRIVEN-FORCE MODEL OF GRID ENTERPRISE AND ITS APPLICATION CASE**

**The formulation of management system and mechanism innovation driven-force model of grid enterprise:** We formulate a management system and mechanism innovation driven force model of grid enterprise using the

above basic model, as shown in Fig. 10. According to the “nine factors” driven-force-model for enterprise management system and mechanism innovation, the corresponding factors of the management system and mechanism innovation driven force model of grid enterprise are as following. “Social pressure from environment” is embodied for “the pressure from public misunderstanding of the natural monopoly industries” and “the pressure from public misunderstanding of the central enterprises”. “Technological change driven force” is reflected in “the new round of energy technology revolution” and “the rising of the smart grid technology”. “The government driven force” is embodied for “the central enterprise reform trends”, “the management innovation requirements of the SASAC”, “the power system reform trends” and “the electricity regulatory trends”. “Market competitive pressures” and “Market demand pull force” are reflected as “customer service requirements and alternative energy transportation methods” and “the growth of social electricity demand and the pressure of energy resources to optimize the allocation, respectively”. “The efficiency and effectiveness driven force” is embodied as “enhance the efficiency of operations and management” and “improve the level of effectiveness of the company”. “Technology accumulation and technical support” is reflected in “the accumulation of scientific and technological innovation” and “UHV technology push force”. “Management innovation supportive force” is embodied as “the

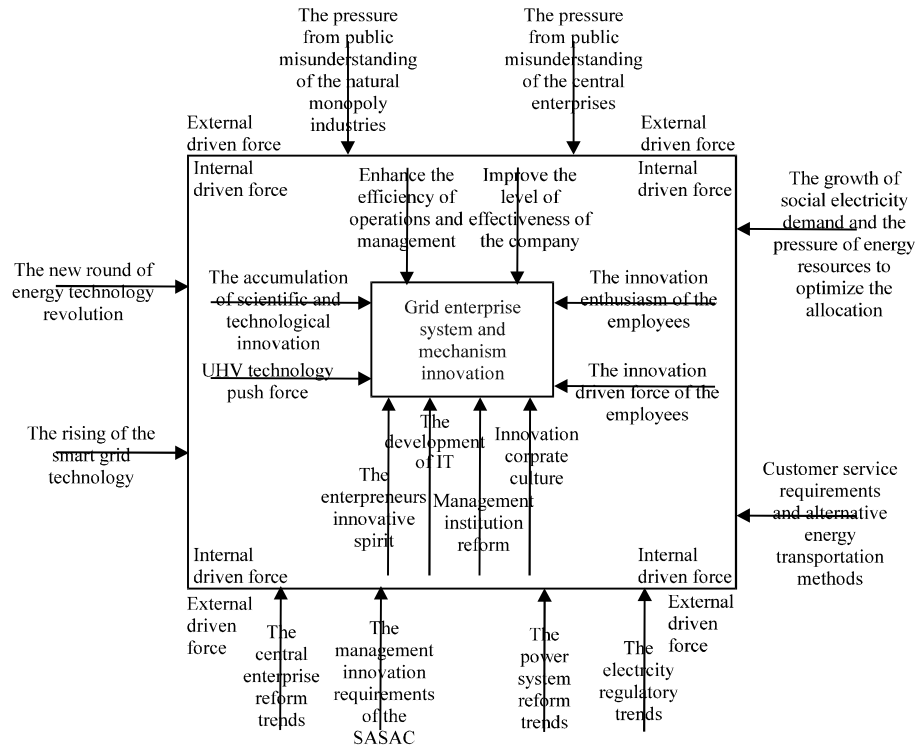


Fig. 10: Management system and mechanism innovation driven force model of the grid enterprise

entrepreneurs innovative spirit”, “the development of IT”, “management institution reform” and “innovative corporate culture”. “Employees innovative power” is reflected in “the innovation driven force of the employees” and “the innovation enthusiasm of the employees”. The grid enterprise management system and mechanism innovation driven force model considering the above 20 specific driven factors can explain the driven force sources of the grid enterprises to carry out the management system and mechanism innovation.

**An application case study of state grid corporation of China (SGCC):**

SGCC has promoted the intensive management of human, financial and material resources comprehensively since 2009. And it began to explore the construction of the “Five Big Systems” (“Five Big Systems” are big planning system, big construction system, big operation system, big maintenance system and big marketing system. “Big” means to build a system that can operate in the all organization layers smoothly.) in 2010. It implemented the test operation of the “Five Big Systems” in 2011 in Jiangsu, Chongqing. And it promoted a comprehensive implementation in the whole company system in 2012.

SGCC is implementing management system and mechanism innovation which core is “Three Intensive

Management and Five Big Systems”. (“Three Intensive Management” are human resource intensive management, financial intensive management and material procurement intensive management). Through these innovative practices, SGCC has achieved all-round, comprehensive and systematic change of the management system and mechanisms of all the levels of the company. It is an integrative management system and mechanism innovation. The driven force sources of the implementation of management system and mechanism innovation of SGCC are coming from both the internal and external aspects and they are shown specifically as follows:

**Top ten driven force from the outside**

**Growth of social electricity demand and the pressure of energy resources to optimize the allocation:**

Since the reform and opening up, China's economy is maintaining rapid growth for a long time and the future for quite a long period of time it will continue to maintain a rapid development momentum. The rapid economic development has brought rapid growth in demand for electricity and grid companies must effectively meet the demand of electricity. In addition, because of the reverse distribution characteristics of China's energy resources, the grid companies must try to increase efforts in the



construction of the transmission grid, so as to enhance the optimal allocation of energy resources. The requirements of these future trends in China ask SGCC try to change, take the initiative to innovate to meet the need of economic and social development. Precisely, in order to meet this strong demand of electricity, SGCC try to promote the company's management system and mechanism innovation so as to ensure China's energy security and to adapt to the development of electricity needs.

**Customer service requirements and alternative energy transportation methods:** On the one hand, the demands on the quality of electricity service of the customers are increasing continuously. On the other hand, there exist alternative competitive transportation methods of power transmission in China. In order to meet the customers' service requirements and to gain an advantage in the competition of the energy transmission, SGCC must strengthen its management capability building and promote management system and mechanism innovation, so as to meet the customers' demand and promote the formation of the competitive advantage.

**New round of energy technology revolution:** Productivity determines the relationship of production and the relationship of production must be adapted to the development of productivity. Grid technological progress is the fundamental driven force for SGCC to carry out management system and mechanism innovation. With the rapid development of new and clean energy sources such as solar and wind, diversification and cleaning are becoming the basic direction of the new round energy technology revolution. The in-depth development of the energy technology revolution promotes SGCC to speed up changes in the relationship of production, to adjust the management system and mechanisms so as to adapt to the needs of the energy change.

**Rising of the smart grid technology:** Smart grid technology is developing rapidly in the global. SGCC advocated constructing the smart grid that contains all aspects of the electricity such as generate electricity, electricity transmission, sale of electricity, usage of electricity, dispatch electricity. And SGCC advocates constructing a strong and smart grid that the backbone grid is UHV, the coordinated grid develop harmoniously at all levels. The strong and smart grid construction will change the grid structure of the State Grid and it will change the power allocation of China. The technological changes and breakthrough ask SGCC to pay more importance on constructing management system and

mechanism compatible with the grid development, building "Three Intensive Management and Five Big Systems" management system.

**Central enterprise reform trends:** Market-oriented, strengthen competition and equality of opportunity are important direction of the central enterprise reform. As a responsible central enterprise, SGCC is advocating the reform the of central enterprises and actively satisfying the needs of the development of the market, building a competitive and orderly electricity market with equal opportunities for all the companies. Therefore, SGCC actively takes continuous changes on management systems and mechanisms, so as to adapt to the market-oriented development requirements.

**Management innovation requirements of the SASAC:** As the regulatory body of the state-owned assets, SASAC has been pushing the central enterprises become bigger and stronger and asking the central enterprises to strengthen the strategic management and control capability, the ability of co-ordination, the optimal allocation of resources capacity of the headquarters and asking the central enterprises to strengthen management innovation and constantly improve the management level. SGCC actively implements the management innovation requirements of SASAC, constructs "Three Intensive Management and Five Big Systems" scientific management and control system and management mode and has achieved the enhancement of the optimal allocation resources ability.

**Power system reform trends:** Since the promotion of electricity reform in China, it has achieved remarkable success and the rapid development of the electric utility. But with the changes of the situation, the reform demands of further promotion the rural grid management system, the management system of the power transmission and distribution, trading system of electricity, electricity price reform are increasing. To promote reform and meet the requirements of reform and development, SGCC actively promotes the management system and mechanisms innovation in order to adapt the basic trend of the future power system reform.

**Electricity regulatory trends:** With the improvement of the quality and service requirements of the public and the electricity users, improving the power quality of service and improving the reliability of power supply are the main direction of the grid enterprise good service. On the one hand, the electricity supervision will strengthen the regulation on the improvement of the electricity quality

and service. On the other hand, the electricity supervision will also further strengthen the regulation on internal cost transparency and management efficiency of the grid enterprises. In order to meet the electricity regulatory requirements, SGCC actively promotes management system and mechanism innovation which the core is “Three Intensive Management and Five Big Systems”, in order to ensure the enhancement of the service quality and the efficiency of internal management.

**Pressure from public misunderstanding of the natural monopoly industries:** As a natural monopoly enterprise, SGCC has been widely criticized since its establishment and it is facing with enormous social pressure of public opinion. Grid enterprises are born with a natural monopoly attributes but the public does not understand the essential differences of the natural monopoly and other monopolies and always hold that the monopoly enterprise has problems need to reform or change certainly. In this environment of public opinion, SGCC must guide the public opinion, in the meanwhile, it must actively carry out the management system and mechanisms reform, so as to enhance the management efficiency and reduce the social misunderstanding.

**Pressure from public misunderstanding of the central enterprises:** Because of the special status and position of the central enterprise in the market, they have been received a lot of misunderstanding in the society. On the one hand, it holds that the central enterprises are state-owned assets, so the state-owned assets must serve the people of the whole country. On the other hand, it holds that the central enterprises have special resources and markets, so the operation profit is not the efforts result of the central enterprises. These public opinions have spur innovation function for the development of the central enterprises to a certain extent. As large state-owned central backbone enterprises, SGCC is also subject to the above opinions and must be positive to change its organizational structure, optimize the business processes and change management model, so as to promote the preservation and appreciation of state assets.

#### **Top ten driven force from the inside**

**Enhance the efficiency of operations and management:** As a conglomeration of large enterprises, SGCC has a number of Sub enterprises. To play the group operation affection, it must strengthen the management and control and improve the management level. Therefore, SGCC has implemented management system and mechanism innovation which the core is “Three Intensive Management and Five Big Systems”, so as to enhance the efficiency of operations and management.

**Improve the level of effectiveness of the company:** The enhancement of management efficiency will bring the improvement of enterprise efficiency. SGCC promotes management system and mechanism innovation, the implementation of intensive management, professional operation, so as to improve the level of enterprise efficiency.

**Accumulation of scientific and technological innovation:** SGCC attaches great importance to scientific and technological innovation since its establishment and formulates an open scientific-technological innovation system and has achieved fruitful scientific and technological innovation results. SGCC has made a huge breakthrough in transmission and distribution technology and its scientific and technological innovation capability has had the conditions to promote the management system and mechanism innovation.

**UHV technology push force:** With the improvement of the scientific and technological innovation capability of SGCC, in the UHV transmission technology area, it has achieved the world's leading position. Its UHV applications take the forefront in the world. The development of UHV technology has enhanced the optimal allocation capability of energy resources of SGCC and it has changed the structure of the national grid. So it is necessary to change the management system and mechanisms so as to adapt to technological development needs.

**Entrepreneurs innovative spirit:** The management team of SGCC is innovative, full of entrepreneurial spirit and a strong sense of responsibility. This entrepreneurial spirit prompts SGCC actively fulfill the political, economic and social responsibility of the state-owned enterprises. Therefore, the innovation, the courage to change, the promotion on the management system and mechanism innovation become the pursuit of the leadership of SGCC.

**Development of IT (information technology).** It is inseparable from the IT development to support management to implement “Three Intensive Management and Five Big Systems” construction in SGCC. Over the years, SGCC has always attached great importance to the construction of information technology and therefore the level of information technology is among the highest in China's central enterprises. The development of this IT provides technical support for SGCC to carry out the management system and mechanism innovation.

**Management institution reform:** Since the establishment of SGCC, it continues to promote enterprise transformation and the change of company's development approach positively. And it gradually transformed into an

independent corporation from the national government department. In the process, the management institutions have achieved a comprehensive transformation and optimization. In order to adapt to the change of this transformation, SGCC actively promotes the management system and mechanisms innovation systematically and constructs “Three Intensive Management and Five Big Systems” management system.

**Support of innovative corporate culture:** The leadership of SGCC is full of responsibility sense and innovative spirit, so they actively promote openness, innovative corporate culture construction. It has formed of a “five-unified” core innovative excellent corporate culture within the company. The corporate culture is an important support force and foundation to promote the management system and mechanism innovation.

**Company employees enthusiasm for innovation:** In the innovative corporate culture, all the employees of SGCC are full of innovative enthusiasm, so they continue to take up innovative climax. Both technological innovation and management innovation have become an important part of the staff working life. Management system and mechanism innovation is an important content of management innovation, so employees actively participate and vigorously promote, which became an important driven force source.

**Innovation driven force of the employees:** There exist innovation enthusiasm in SGCC and a huge surge of innovation driven force. All the staff work together to promote management innovation. In this context, SGCC promotes innovation and reform of the management system and mechanism.

In short, both the powerful driven forces from the external and internal of SGCC have promoted the implementation of the management system and mechanism innovation which the core is “Three Intensive Management and Five Big Systems” and it has given inexhaustible power of change for SGCC.

## CONCLUSION AND SUGGESTIONS

On the basis of technology innovation driven-force-model, this study formulates a “nine factors” driven-force-model for enterprise management system and mechanism innovation and applies it to the grid enterprise management system and mechanism innovation practices. And it carries out an application analysis using SGCC as an example. According to the study, we hold that:

- The grid enterprises should adapt to the external changes actively and actively promote the management system and mechanism innovation. In China, electricity market reform is the basic direction and the grid enterprises must grasp the opportunity for positive change in the management system and operation mechanism, in order to adapt to the needs of future development
- The grid enterprises should actively change the relationship of production based on technology development and productivity advances. The new round of energy technology revolution is beginning and the smart grid technologies are emerging. UHV transmission and distribution technology is becoming an important technical direction for a wide range of optimal allocation of energy resources. These productivity advances will bring changes on the relationship of production. Therefore, the grid enterprises should change their management system and mechanisms as soon as possible based on the direction of technology development
- It is a long-term and ongoing process for changing the management system and mechanisms. When the Grid enterprises promote changes in management systems and mechanisms, they can combine constant change and breakthrough innovation together and they can continue to optimize the management system and mechanisms in the process of transformation

In short, productivity will continue to progress and technology will continue to upgrade. As the relationship of production, management system and mechanism must be adapted to the needs of the development of productivity and the transformation of the former is bound to promote the change of the latter. Therefore, the grid enterprises should make full use of the change forces from the internal and external and should take good pre-judgment, plan the management system and mechanism ahead to make them meet the requirements of the productivity development, so as to promote the development of the productivity.

## REFERENCES

- Acs, Z.J., L. Anselin and A. Varga, 2002. Patents and innovation counts as measures of regional production of new knowledge. *Res. Policy*, 31: 1069-1085.
- Atuahene, G., 1996. Mark orientation and innovation. *JBR*, 35: 93-103.

- Guan, F., 2012. Empirical study on the relationship between intellectual capital and technology innovation-absorptive capacity as moderating role. *Int. J. Adv. Comput. Technol.*, 4: 515-522.
- Jiang, Y., L.P. Luo, H.R. Fang and Y.H. Li, 2012. A study on the monitoring system for quality safety of citrus products based on internet of things technology. *Int. J. Adv. Comput. Technol.*, 4: 182-194.
- Laura, B. and P. Giovanni, 2002. Innovation and spillovers in regions: Evidence from European patent data. *EER*, 8: 1-24.
- Lehrer, M., A. Tylecote and E. Conesa, 1999. Corporate governance, innovation systems and industrial performance. *Ind. Innov.*, 6: 20-25.
- Li, T. and Y. Ding, 2013. Technological capability evaluation model of marine high-tech industries in China based on Borda and fuzzy comprehensive method. *J. Converg. Inform. Technol.*, 8: 715-723.
- Markman, G.D., D.B. Balkin and L. Schjoedt, 2001. Governing the innovation process in entrepreneurial firms. *J. High Technol. Manage. Res.*, 12: 273-293.
- Rhyne, L.C., M.B. Teagarden and W. van den Panhuyzen, 2002. Technology-based competitive strategies: The relationship of cultural dimensions to new product innovation. *J. High Technol. Manage. Res.*, 13: 249-277.
- Wang, J., 2012. Study of high-new technology innovation project performance evaluation with uncertain linguistic variables. *Int. J. Digital Content Technol. Appl.*, 6: 321-327.
- Wang, P. and C.S. Shi, 2013. The research on the innovative enterprise organizational innovation path forming based on dynamic perspective. *J. Cases Inform. Technol.*, 8: 425-432.
- Zhang, C.Y., 2008. Study on technology innovation dynamic mechanism of manufacturing enterprise in our country. Master's Thesis, Harbin Engineering University, China.
- Zhang, G.Q., 2010. Study on dynamic mechanism of enterprise technological innovation. Master's Thesis, Xi'an University of Science and Technology, China.
- Zheng, Y. and T. Guo, 2013. Research on organization innovation of enterprise based on complexity theory. *AISS*, 5: 664-671.