

Practical and Theoretical Issues of South Korean Model of Innovations

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Abstract—The research paper contains the different issues of innovation management in South Korean companies. The structure of forming and innovation management in the companies of small and medium business of South Korea is considered. The typology and features of innovations' development of the Korean companies, strategic management and marketing of high-technology products are researched. Theoretical aspects of innovation management and field research are considered.

Index Terms—Model of innovations, innovation management, strategic planning.

I. INTRODUCTION

For the last 20 years South Korea built an innovative ecosystem with a high share of high-technology sectors and small enterprises. According to administration of small and medium business of the Republic of Korea, in 2015 in the country there were about 3 million small and medium-sized companies, 99, 5% of total number of the entities. These companies — the most important source of workplaces, 87% of the active population of the country are engaged in them. In 2015 small and medium business provided a half of GDP and 43% of South Korean export. And a share of small business in general structure — 97% [1].

Rapid development of economy of the Republic of Korea in the 90th years which received the name "Miracle on the River Hang gang" turned South Korea (SK) from the agrarian, destroyed by war country into steadily growing, high-technology economy. By different estimates of SK enters the first five of the countries on innovative development [1]. Thanks to efforts of the state, in 60 years in the country the economic model which is steadily growing, quickly reacting to global changes was created. However, over the last 10 years, decrease in growth rates of economy of SK both real, and potential is noted.

The main questions of this research are: how does South Korea improve its economic indicators so fast; what exactly competitive advantages have Korean companies nowadays; what the main tools of innovation management in Korean companies.

Today in South Korea many universities departed from the traditional functions to gain only knowledge. Most of them

deal with issues of commercialization, intensively developing innovative business. In this sphere also began to show activity and many research institutes. Development of these processes attracted interest and of various financial organizations and the consulting companies connected to processes of commercialization of results of Research and Development. As a result in South Korea constantly increase both expenses on science, and their share from GDP. For example, in 2004 they constituted 2, 64% of GDP that it was higher, than in many developed countries. At the same time the share of a public sector constituted 24, 5% of total amount. Expenses of a private sector and foreign investments – 75, 1% and 0,4% respectively. The share of an external source of the funds allocated to South Korea for Research and Development is at very low level (0,4%) that is much lower, than at France (7,2%), Great Britain (20,5%) having the similar sizes of the income on research activities [2].

II. LITERATURE SURVEY

A. Classical Theories of Innovations: Drucker's Theory

The innovation is understood by the modern authors not only as release of new products and implementation of new technologies, but also changes in management of firm, the organizations of business, in relations with consumers. The main condition of innovative organization activity is that everything available grows old. That's why Heads are obliged first to think of how to make the products, services obsolete, but not to wait until it is made by competitors. It is almost impossible to create products having high degree of novelty and a demand without application of innovations.

At the heart of Drucker's theory is his idea of a new - information - a society characterized by constant change [3]. Here Drucker largely followed his master to the American economist Joseph Schumpeter Austrian origin, which connected with capitalism periodically introduced into the economy "creative destruction." In the world of the future of "creative destruction" is a fundamental feature of society as a whole, and not just the economic sphere. Professionals, managers coming epoch will be faced with the need to adapt to the situation of periodic transformations, when the latter no longer be seen as an exception, and will become the norm of life. In periods of radical structural reforms Drucker wrote in a book published in Russia in 2003 under the title "The objectives of management in the XXI century", - survive only the leaders of change - those who sensitively catch the trend changes and adapt to them instantly, using for their own benefit opportunities. But, moreover, in the business, as well as in public life today cannot succeed if you do not generate

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change, constantly wondering about the reasons for the lack of effectiveness of various aspects of the work. Drucker highlights several features of the leaders of change, which should be regarded as constitutive features of hypothetical future elite:

1) Readiness for constant change and the ability to self-generate them, abandoning the old and familiar forms and methods of work;

2) Understanding of the need for re-education in the process;

3) The willingness to engage in the process of work as a manager, which involves consciousness the ultimate goals of the work, a self-assessment of its results, as well as an independent formulation of the criteria of this assessment.

Only people who have these three features can consciously participate in building the future, which is to take up as Drucker says, is risky, but not to take even worse.

Drucker has developed the science of innovation as a functional process that can analyze, organize and direct. According to his report, "The discipline of innovation" and the comments of his colleagues, the process of innovation is based on three imperatives:

1) Distinct consciousness of its mission. The meaning of this requirement is imperative to distract from the immediate performance, understand its meaning, a higher purpose, obviously superior to all achievable results.

2) Concentration of results. The main thing here - the ability to distinguish between the "mission" ("pie in the sky") and "specific task" ("bird in the hand"). The innovation does not take place if the last issue first and vice versa.

3) The imposition of strict evaluation technology applied in the case of multiple failures determined to abandon it. It is the refusal of unsuccessful processing methods is not yielding the anticipated results. If there is no willingness to abandon the usual, but inefficient activities, a chance to make an innovative breakthrough will be very low.

Drucker insists that the success of any - commercial and non-commercial - the company currently depends on its ability to constant critical re-evaluation of its work, guided by the above three imperatives. In addition, managers should always keep an eye on consumers not produced their product companies, namely people who have refused for one reason or another from its consumption. Any innovation must expand the number of consumers, rather than reduce.

B. New Theories of Innovations: Barnett's Theory

H. G. Barnett was Professor of Anthropology at Oregon University when he issued *Innovation: the Basis of Cultural Change* (McGraw-Hill publishers, 1953[4]). The title of the book shows a clear problem with innovation: it involves change. Suppose you don't want change. You're happy with status quo. You teach physics and know your job. The last thing you want is any massive revolution, but that's not what you're thinking when you reject radical revolutionary ideas. Instead of thinking like an evil conspiracy member, you think quite rationally and reasonably: "most new ideas of a radical nature are wrong, so I'll save myself a few hours of annoying timewasting by rejecting this paper without checking it out carefully. The probability that it will be a mistake to do so is one in a billion or less. Why not spend a pleasant evening with

my wife or friends instead? Even if I do get it wrong, I can defend myself by saying the paper wasn't clearly written or whatever, and as a last resort I can simply put up my hand and admit to making an error and 'only being human'. I've nothing to gain by defending this guy, and everything to gain by ignoring him." This is actually a rational enough, non-conspiracy, explanation for much of the censorship that innovators in physics do experience, especially when the have really radical ideas, aren't well known, and when the mainstream is obsessed with speculative superstring quackery which is popular. The rejected author usually ends up in a row because the subjectiveness of the "peer" reviewer is pretty obvious. The author will respond that the "peer" reviewer has ignored the substance of the paper and hasn't been objective or offered constructive criticism, but has just rejected pro-forma on the basis that the type of content is "unsuitable" (closing down the discussion without leaving any room for a "time wasting" discussion of exactly what the problem is). In a sense this is the age-old conspiracy of status quo dominated "mainstream science" against radical ideas, for as Barnett states on pages 69-70: "Murray's study of nineteenth century scientific theories is relevant at this point [5]. His aim has been to show that important new ideas of so recent a date were almost without exception ignored or rejected by the scientific fraternity itself because they did not conform to one or another of the accepted doctrines of the leaders of opinion. The observations and discoveries of Jenner, Simpson, Lyell, Pasteur, Darwin, Lister, Helmholtz, Metchnikoff, and scores of lesser contributors were greeted with disdain or incredulity. Repeatedly their critics refused to even be shown. Helmholtz, for example, had difficulty getting physiologists to pay any attention to his ophthalmoscope. Most illuminating of all is the fact that one dogma fell only to be replaced with another [6].

C. Zaltman's Theory

Several approaches have been taken to defining an innovation. Various writers have used such criteria as: qualitative distinction from preexisting phenomena (Barnett, 1953); functionally new (Federal Trade Commission, 1967); degree of acceptance within the relevant social system (Bell, 1963); effects upon established patterns of consumption or behavior (Robertson, 1971); newness as perceived by an objective investigator (Engel et al, 1968; Jacoby, 1971); and newness as perceived by the relevant unit of adoption (Zaltman and Lin, 1971; Rogers and Shoemaker, 1971) [7].

Of these various approaches the one with the most significant implication is that which emphasizes perceived newness by the adopter. Zaltman and Lin "Consider as an innovation any idea, practice, or material artifact perceived to be new by the relevant unit of adoption." Rogers and Shoemaker (1971) have established essentially the same position. This idea of perception should not be confused with the idea of the perceived characteristics of the innovation once it is established as new. That an individual or some larger unit of adoption perceives an idea or object as new is one thing, what Produces this perception is another matter [8].

There is some empirical justification for considering an innovation as the result of a perceptual process for we know that sensation, in which perception is embedded, is,

fundamentally, a matter of energy change or differentiation. Experiments in sensory deprivation demonstrate that a certain amount of differentiated and changing input is necessary for mental balance in the human being. In other words, the individual needs to perceive change in his environment if he is to perceive anything at all. Recognizing innovations is, of course, a major way of introducing change in one's environment and various physiological, psychological and cultural conditions ensure such recognitions. In a very real sense innovations are the output of a perceptual process.

III. INNOVATION MANAGEMENT IN SOUTH KOREA

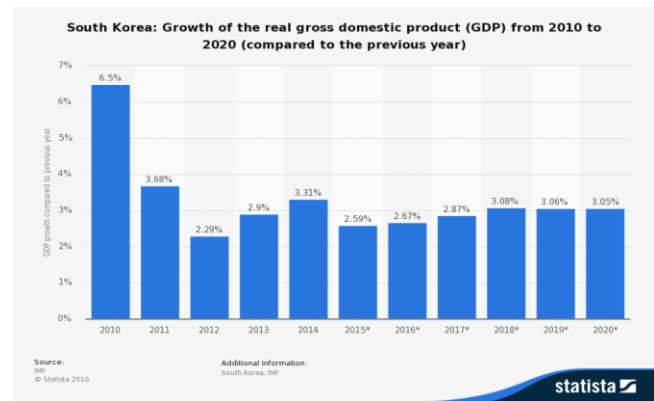
A. Economic Indicators of South Korea

The last decades the economy of South Korea grows on average for 8, 6% a year [9]. In many respects such growth is promoted by state policy of support of small and medium business. The first feature of a South Korean way is that all innovative processes in the country are very centralized and system — state regulation, decisions consistently are implemented at all levels of imperious hierarchy. The second feature — system of "champions" from which such giants as Samsung and Hyundai grew up. The state extends the innovative companies and provides them support at all levels, from internal privileges and grants to an exit to the international markets. Thanks to these two features for short term the country made breakthrough and completely updated the economy.

Activities of the Korean incubators began in 1991 (on the basis of experience of technological incubators of Israel) and were initiated by the Korean institute of technologies. First private incubator (Jungbu Industrial Consulting Inc.) was created in 1993. In the same time the first national incubator (Ansan Business Incubator) opened. The majority of incubators were initiated by the government, and, despite crisis of 1997, promoted revival of national economies and development of national innovative system. Further for development of the regional industry and technology and successful revival of regional economies the Korean Association of science and technology parks as governing body of innovative processes in operation was created. The main programs became at this time: programs of a construction of infrastructure for a startup of the companies founded on high technologies; special programs for laboratory a startup of the companies; development programs of the ideas; future development programs of the entrepreneurship based on technologies.

According to the report of a research institute of Hyundai rates of potential growth of economy of Korea over the last 10 years decreased from 3.9% to 3,2%. So potential growth rates national of production decreased to 4, 4% in comparison with 8,9% in 1991, 7,9% in 2000 and 5,8% in 2010. Decline in production and rates of a surplus of high technology production from 6.0% in 2006, to 4.3% in 2010 and to 2, 1% in 2016 is noted. Service trade performance decreases as well from 7, 8% in 1991 to 2, 9% in 2011 [10]. The actual growth rates of SK economy also decreased, according to data of the World Bank in 2015 growth rates of GDP of SK were reduced

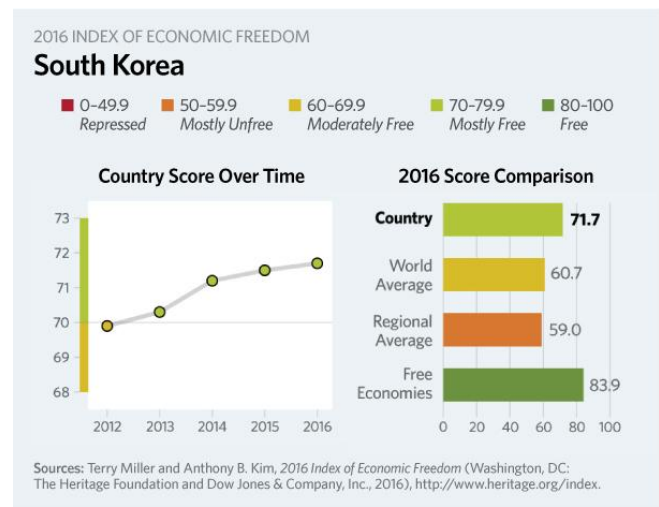
to 2,6% (Fig. 1).



Source: The World Bank (<http://databank.worldbank.org/data/reports>) [11].

Fig. 1. Growth rates of SK GDP as a percentage.

The government of South Korea changed system of science funding, having begun to finance specific projects. In January, 1999 the law on creation, functioning and development of research institutions which were transformed, proceeding from the German and British management system was adopted. As a result all research institutions were under single control of prime minister's department that gave freedom to institutes from excessive control of the relevant ministries. Korean government supports the economic growth, that's why indicator of economy freedom rapidly grew last years (Fig. 2).



Source: Terry Miller and Antony B. Kim, 2016, Index of economic freedom (Washington, DC, The Heritage Foundation and Dow Jones and Company, Inc, 2016)(<http://www.heritage.org/index>) [12]

Fig. 2. Index of economic freedom (South Korea).

According to a new management system 5 research recommendations were created, each of which acted as supervisory authority for control over activities of institutes. Despite a number of the positive moments, such approach has also certain shortcomings: first, from the point of view of a management structure, excessive influence of the government on research recommendation affects; secondly, as a result of functioning of excessive competitive system, there are not clear criteria of distribution of the government budget; and, at last, lack of independence and identity of directors in research institutions affects efficiency of certain researchers (low job

satisfaction and a high staff turnover).

B. External Environment: Loan and Adaptation

Most innovative institutes of development were created here in the last 20 years. In 1998 the Ministry of Commerce, Industry and Energy had a specialized program for work with medium and small business from which in 2007 the program for support of startups was selected (consulting, grants, legislative initiatives, etc.). Approximately the same functions in Russia are performed by Skolkovo Foundation and Fund of assistance. In 1999 there was Korea Institute of Science and Technology which united seven leading universities and nine scientific centers. In 2000 Korea Techno-Venture Foundation was created, tasks of fund include development of a national venture industry through programs of promoting, forming of entrepreneurial culture and commercialization of technologies with a global potential. For the next five years specialized tools, for example the centers of microelectronics and the nanocenters, investing programs with focus on the technological companies were created. In 2011 there was the Department of Economic Affairs of knowledge (Knowledge Economy Ministry) integrating the corresponding functions of already mentioned Ministry of Commerce, Industry and Energy, the Ministries of informatization and communications, and also the Ministries of Science and Technology [13].

Initially South Korean upgrade was constructed on borrowing and adaptation of foreign developments and support mainly of the large companies. In the 1990s the state started the On Border of the 21st Century program which was devoted to development of key technologies in priority industries. Accurately cluster's system of support of a technological entrepreneurship was for this purpose developed. In each cluster there is a leading university which becomes the center of all scientific and technological activity, there are science and technology parks, incubators and other platforms for support of startups.

Through filters of incubators and science and technology parks there passes a large number of the young companies. The system of monitoring is built. As soon as in this flow the potential star is found, it gets to system of support. The state helps grants and privileges, assists in ensuring demand and to products conclusion to the international markets. Actually the product demand of this company is created from above. Most often it means that the startup within the country will have only one client — one of the large companies ("Chaebol") [14]. However it guarantees steady demand and an opportunity to save up forces for entry into larger and perspective markets. We tested the similar scheme of a cooperation of small business and large companies last year within GenerationS accelerator. We found the interested people in large Russian and foreign corporations, together with them selected perspective technological startups and built processes of implementation of their technologies in production chains of corporations. Following the results of GenerationS about 60 transactions are studied. Within the existing innovative ecosystem it is the decent result collected in fact manually. But within the country it is, of course, a drop in the ocean. In Russia support of large corporate partners is an opportunity for a startup to get off "the grant needle" and to

exist let and in hothouse, but nevertheless in market conditions.

C. Control Policy of Innovations

As for system of grants and privileges, it in South Korea ambiguous, but proves the efficiency. Getting to science and Technology Park or an incubator, the startup receives a huge number of privileges and grants, and it isn't obliged to pay them if his company becomes successful. If isn't present — it is necessary to return. And there is gradation. If you fail on the fault, then all amounts of the state support need to be returned to the budget. If it is impossible to return, you are included in black lists and won't be able to apply for new rounds of state support any more. If you fail because of the partner, for example the university couldn't conduct the necessary researches or collect a prototype, and then the state can remit to you a debt. It is very Asian approach. And actually this manual control by innovations in the country, but passes a huge number of the young companies through these corridors.

Despite flows of the young companies which pass through system of support in South Korea problems with entrepreneurial culture are feature of Asian mentality too. Practically all South Korean universities are open for the international students; they try to attract children from abroad that at universities the dynamic environment for experience exchange and creation of joint projects was created. In the country there are practically no venture funds and private investors who offer startups "smart" money and help to develop the companies. Now South Korea is engaged in development of venture system, first of all to decentralize the market [15].

For example, Russia and South Korea are similar on a number of introductions: strong centralization, domination of the big companies in economy, the low level of entrepreneurial culture and high prestige of the academic education, high level of paternalism, great hope for the state and poor development of the venture market. In South Korea now, as well as in Russia, a talk on need of increase in efficiency of innovative system is carried on. The system focused on interests of several "Chaebol" showed the efficiency in the past and made Korea the leader in the field of innovations with goods of almost Japanese quality at almost Chinese prices. Thanks to accurately built up innovative process when all country for many decades borrowed the best and worked on increase in efficiency and reduction of price. To my opinion the problem is: this system doesn't guarantee success in the future where these breaks, revolutionary products and the new markets depend on the creative potential of talented entrepreneurs.

Today the main efforts of national research programs are directed to the solution of programs of transition to the knowledge-intensive economy that will allow South Korea to be among the countries with developed economy. To achieve these objectives, the government emphasizes need of effective use of scientific and technological resources on the basis of the principle of "selection and concentration". The current national programs include the following directions: boundary scientific research, creative researches of initiatives, creation of national research laboratories, development of biotechnologies, development of nanotechnologies, space and

aeronautics, etc. The main sponsor of basic researches is the research fund. For encouragement of scientific research at universities the government determines research groups which can conduct joint surveys with research and engineering and research and regional scientific centers. Such collectives received public financing for nine years provided that they will pass intermediate estimates of results of researches which are conducted each three years. Today 43 projects which are carried out by research centers are financed; 57 projects which are carried out by the engineering and research centers and 54 projects which are carried out by regional scientific centers [15].

Important aspect of further innovative transformation of South Korea is the baseline plan of actions directed to upgrade of a management system of scientific technology development, providing such measures as investment management in research sector, increase in knowledge of society of science and technologies, development of a human capital in science and technologies, assistance to a transfer and commercialization and globalization of technologies. It serves as the fundamental document for achievement of effective objectives till 2025 and supplements five-year plans of scientific and technological and innovative development. Its main strategic approaches consist in investment into the scientific and technological sphere by the principle of "selection and concentration", ensuring effective use of creativity of scientists and engineers, forming of communication of internal national innovative system with global world system, expansion of public understanding of scientific technology development, effective use of results of scientific research and technological developments. "Road map" which describes the purposes, ways and terms of their achievement, and also the expected results was developed for implementation of this plan.

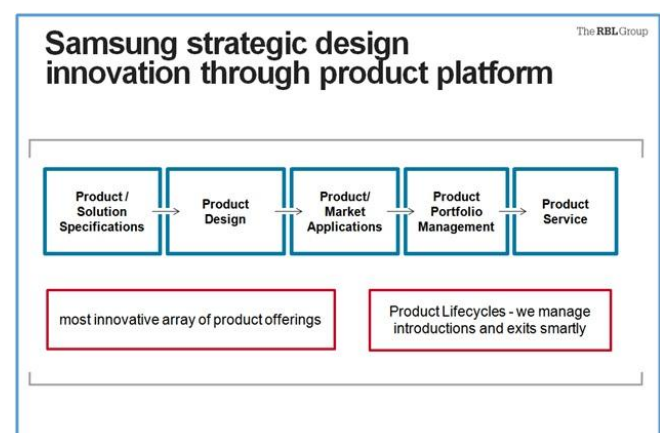
Later the plan was modified, and wider part and the high status are in the new edition assigned to the sciences and technologies providing national prospect of the Korean society and promoting development and increase in competitiveness of the country. The main directions of the revised plan are development of national scientific and technical innovative system, the choice of strategic objectives of scientific and technical development and concentration on them, strengthening of engines of future growth, systematization of regional innovative potential, creation of the new workplaces conforming to requirements of society of knowledge, attraction of the population to distribution of scientific and technological knowledge. In the long term vision of development of science and technology till 2025 includes: transition of the leading role in national innovative system from the state to private structures, increase in investment soundness, put in researches and developments, rapprochement of national system of researches and developments with the international standards, compliance of new technologies a conclusion and to results.

D. Innovation Management: Case of Korean Companies

The Korean government, beginning in the 70th years, actively relied and used "Chaebol" for implementation of the state economic policy, in exchange providing to large conglomerates the help in a type of preferential crediting,

various exchanges of a patronage and of river. After adoption in September, 1997 of "The special act of support of venture business" four largest conglomerates – Samsung, Hyundai, LG and SK – and some other, such as Kolon, SsangYong, Hanwha, Kumho and POSCO, began to take active part in implementation innovative the politician of the state. In respect of the government on creation of "Creative economy" for "Chaebol" special attention is also paid, and the leading role in creation of necessary infrastructure and financing is assigned. Each of Chaebol chooses certain industries and is responsible for development of science and technology parks and regional innovative clusters in these industries. Korean have Chaebol which firmly were fixed in the first hundred innovative companies in the world rankings not only experience of management of the innovative centers, but also in successful start of innovative technologies on the world markets. So, according to the rating of Boston consulting group, in 2015 the Samsung group company was included into the five of the most innovative companies of the world.

Everything for implementation of the purposes of the government 10 main conglomerates among which there is Samsung Group, Hyundai Group, SK Holdings, Posco, Hanwha, LG Group, KEPCO, Lotte Group, S-Oil were chosen. All this the companies are included into a top of 200 world companies on profit level for 2014, and possess necessary financial, managerial and infrastructure resources, for accomplishment of the tasks set by the government [16]. The Korean companies widely use various means of financing of the perspective companies and projects from which it is especially possible to distinguish internal venture funds and the unions with the strategic venture entities. The company the leader in the sphere of national innovative Samsung Group technologies, and also number 13 among the world companies on profitability, and number 5 among the world companies on innovations, is the main engine of development of innovative technologies in the field of telecommunications, consumer electronics, bioengineering, a construction. Samsung Group is the largest company of Korea, its share in general GDP of SK constitutes up to 36%, and from 24% is the share of Samsung Electronics (Fig. 3 & Fig. 4).

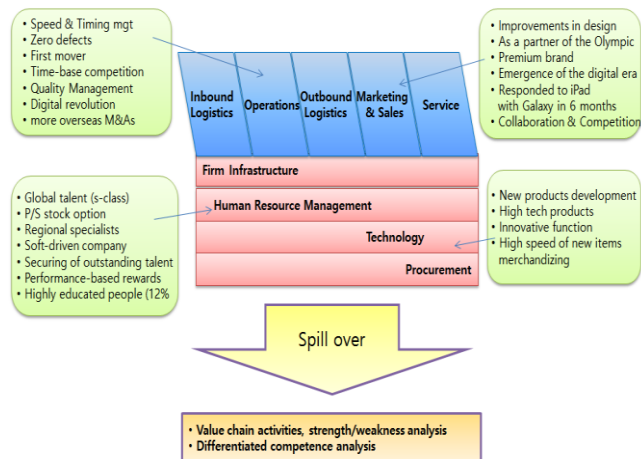


Source: RBL Group (<http://www.rbl.com>) [17].

Fig. 3. Index of economic freedom (South Korea).

In total within the state program on development of innovations it was planned to create 17 specialized centers,

each of which is under authority of one of Chaebol. So Hyundai Group which possesses Hyundai Technology Investment which is engaged in support of high-technology startups at early stages and own research institute (Hyundai Research Institute) opened the center of innovative researches in the city of Kvanzhu under maintaining Hyundai Motors, and the innovative center in the city of Busan belongs KT Telekom.



Source: Sang Chul Jung “The analysis of strategic management of Samsung Electronics company through Generic Value Chain Model”, International Journal of Software Engineering and Its Applications, Vol. 8, No. 12 (2014), pp. 133-142 [18].

Fig. 4. The strategic management of Samsung.

Undoubtedly, experience of the Republic of Korea in the sphere of development of innovations, shows, the role of well thought over state economic policy is how important for achievement of the delivered results. According to data of the Ministry of Science, Telecommunications and Planning of the Future the Republic of Korea is in the first place on investments into Research and Development in relation to GDP.

IV. CONCLUSION

South Korea aims to create the necessary conditions to enable the country to overcome the crisis with a renewed potential for innovation, providing increase of competitiveness of the economy. In this regard, one of the priority directions of development is support for education and innovation system. In March 2009, the Ministry of Education, Science and Technology approved the principles of reforming the industry. Modernization of science and education is associated with the implementation of the decisions of organizational and financial nature. Among the organizational and legal measures include the expansion of the autonomy of South Korean universities. This should reduce the level of bureaucracy, to ensure the efficiency and flexibility of management education and research centers, as well as to increase competition in the field of science and higher education [19].

These steps were supplemented by the optimization of the finance industry in 2009 as part of a unified system of grants in the amount of 495.5 billion away [19]. In addition, to improve the level of education, especially in the periphery,

the Government allocated in 2009 265 billion won in direct support of universities. Almost three quarters of these funds is directed to the provincial training centers. Private business also sees the crisis as an incentive to the development of innovation sphere. Under these conditions, the largest companies seek to increase their innovative capacity. In 2009, Samsung Electronics has increased R & D spending by 10%. The LG R & D expenditures in 2009, the business group increased by 25% - up to 3.5 trillion out. It is noteworthy that the LG's investment program in 2009 has been reduced by 8.2% [20]. However, the increase in investment in research and development has led to the fact that total investment in comparison with the previous year has not decreased. SK Group has invested 1 trillion won in the creation of products that meet the highest environmental requirements. Hyundai-Kia Automotive Group also intends to strengthen its scientific and technological potential.

Analysis of the occurrence of specific processes of modern management and organizational strategy economically successful countries, corporations and firms leads to the conclusion that the development of innovative management due to situations of social crisis. Significant changes in the distribution system of the global and national forces of production in the last third of the second millennium connected with the "points of growth" of social crisis management strategies. This is confirmed by the examples of post-war Japan and Germany, and followed the path of the use of technological innovation in South Korea [21], [22].

Whatever may be explained in the following miracles of economic growth in these countries: corporate spirit, the mobilization of the nation, cheap labor or abundance of natural resources - an essential prerequisite, "first impulse" changes turned a conscious adoption of a new management strategy, the rate technical and social innovation. The economical tendencies require the reallocation of resources in favor of the development of high-tech industry, which requires a highly professional, qualified, creative and motivated (i.e., socially responsible) labor. "Newly industrialized countries are using the most modern, advanced technology; their cost structure is similar to the US, their labor - a young, eager for work and is not spoiled high quality of life, strict regulation of working conditions or management theories.

However, the anti-crisis nature of modern management is evident not only at the macro level of national economy that require a strategic vision and a fundamental change in the structural parameters of the social economy, but also enhances the competitiveness of individual production companies. "Innovation management is the stabilizer of the turning points, disturbances quencher. The crisis for innovation management is the subject of study and life safety, particularly in the pre-crisis, crisis and post-crisis situations, - the purpose of the activities.

The anti-crisis nature of the innovative production management has a profound social background, and its implementation is the problem of the survival of the social system - whether it is a "nation" or a "corporation." But to change the cultural standards, reduce the enthusiasm of the national idea, to change common values of defeat in world competition is quite capable, that is, the loss in economic

growth could lead not only to a crisis of production and to a deep social crisis.

One of the important directions of cooperation between the state and business is to give a new breath an old industrial complex. The challenge is to consolidate them to attract local and from other regions of the young skilled workers and professionals. To this end, four industrial center until 2013 one billion dollars was invested. The funds are used to build quality housing, a modern social infrastructure, to improve the environment, the modernization of the transport network and communications system. The calculation is based on the fact that the provision of quality of life at the level of advanced modern designs developed countries will be an important guarantee of securing the best talent on the key areas of advanced industries.

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