

IMPLEMENTATION AND MAIN FEATURES OF INNOVATION IN MANAGEMENT SYSTEM

Diploma thesis by
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Abstract

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The reason for the review is to show the importance of innovation in the rapidly growing economic environment. The proposal provides an overview of the success of innovative models. The proposition gives benefits related the acknowledgment of innovation itself and its various phases and demonstrates the problems that might be confronted by the top management.

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INTRODUCTION

This study work provides a consistent and integrated framework for organizational innovation management using axiomatic design methodology and general system theory. This approach provides a scientific and systematic way in the effective design of the innovation management framework.

The combination of innovative ideas and good organizational innovation management is key to sustaining competitive organizational innovation in the long run. It is broadly accepted that innovative firms lead to having larger market shares and higher growth rates and profits than non-innovative organizations. For this reason, the concept of innovation management has been the focus of intensive academic and industrial research aimed at finding ways to gain a global competitive advantage. As innovation becomes more important for grasping an opportunity and a competitive advantage, how it is managed becomes vital. In fact, achieving successful innovation is not simple for most organizations because they cannot be easily rendered it sincerely. Innovation is also an easy way to get into financial hardship due to the risk intensive features. This raises the question of how to obtain and sustain innovative success for the long term. Innovation provides organizations an advantage by increasing the performance, attracting new customers, protecting operating ones, strengthening ties with the distribution channels and maximizing profit for the firm.

CHAPTER I

Theoretical bases of Innovation Management.

Long-lasting innovation is seen as one of the basic requirement for maximizing profit as mentioned before. Economic growth is relying on innovation and has become the main economic resource. Growth and new sources of employment during the economic recession opportunity. But, unfortunately in the economic crisis, since companies want to reduce costs, some of their early victims are the amount of money spent on innovation activities. From another point of view in the global economy, where economic actions can be made cheaper in low wage economies such as China, then the main road is probably the only way to find new and better products and processes; In other words, to innovate. It should be noted that innovation is also important for developing countries. For example, the ability to successfully innovate is a prerequisite for the success of economic and industrial development in developing countries. It is important to note that various authors deal with different aspects of innovation in the developed or developing economy, so it is important to pay attention to these different points of view, and this study tries to address this issue through its own investigations. Innovation itself has been studied at several levels: macro, micro and project level. There is no universally accepted definition of innovation. The researchers in each area conceptualize innovation differently and declare that they have different opinions about the impact that a firm has on the productivity, growth, survival and performance. However, they emphasize that the criteria used to conceptualize innovation in different disciplines are not completely independent of each other. For example, economists tend to identify only early adopters as innovators in terms of profitability and more performance. On the other hand, Managers have different opinions about the nature of innovation, it is important to clearly understand the aspects of innovation. According to the Oxford Business and Management Dictionary, innovation is "new approach to designing, producing, or marketing a product that is innovative or has an advantage over its competitors."¹. Others say that innovation is the emergence of a new idea and its application to a new product, process or service.

1.1. Importance and essential features of innovation in the Management field

¹ <https://en.oxforddictionariep.com>

Innovation can also be described as the recruitment of newly acquired knowledge; this provides a new product or service that the customer desires; This invention can be simplified to commercialization. The difference between invention and innovation is explained by various researchers such as Schon, Biemans and etc. To sum up, an innovation relates to a commercial product, while an invention is located at the end of the research activities directly. Accordingly, it is assumed that an invention precedes an innovation.

Slappendel also emphasizes the concept of "innovation" in 1996 as the method of new ideas are already shaped, developed or rediscovered. In his conceptualization, the innovation process involves design and development, adoption, implementation and diffusion. While new products are often thought of as the edge of market innovation, process innovation also plays an important role.

Comprehensive definition of innovation by Schumpeter (1961), although developed many years ago, is important for the following:

- Promotion of a product (new or better to consumers)
- Production methods (specific to the industry's private sector, which are not necessarily based on new scientific findings and may have previously been employed in other industrial segments).
- New to open up new markets
- New Use new resource resources
- Competition The new ways of competition (which can lead to the restructuring of an industry)

There is also a question of how a new innovation should be. Hobday (2005) a definite definition, innovation, a new market improved product or process. This definition does not capture additional innovations that can provide a great gain in productivity and product quality; They are often a source of structural change and economic growth.

As mentioned earlier the term of “innovation” has different levels of definition.

“At the macro level, the innovation is seen as a technical matching process, ability to market opportunities, including various interactions and types of learning”²

But, Porter argues that a company's innovation is determined by the four attributes of its local environment that these factors are: factor conditions (natural resources, , skilled labor, capital and training institutions); demand conditions; relevant and supportive industry and firm strategy, structure and competition. For this reason, at the macro level, the innovation system has an impact on innovation in every country.

“Innovation system approach successful innovation requires different players to have different roles together with common goals, to develop a research community, common vision, government and industry.”³

National and regional innovation systems cover a range of interconnected actors, such as industrial firms, governments, universities and labor markets, which characterize the context in which firms operate innovation processes. The creation of such a system can play an important role in this process. technological development in developing countries. Some researchers compared the national innovation systems of 15 countries and It showed that the differences between these systems are different institutional arrangements, including university research, education and industrial R&D systems; financial Institutions, public infrastructure; national trade and monetary policies and of course Management skills.

In summary, albeit this research intends to concentrate on the innovation process within the company, it can be seen that factors of macro factorial monitoring may also be useful. For this reason, the role of the innovation system and the factors that exist in the system are explained.

There are various types of innovation itself. Innovation can be classified according to the degree of change associated with it⁴. For this reason, innovation includes both large and small changes. According to a basic definition, great change is regarded as radical innovation, and smaller changes are incremental innovations.⁵ It can be said

² Freeman and Soete, 1997

³ Foxon et al., 2005

⁴ Damanpour, 1996

⁵ Urabe, 1988

that the innovation takes place along an axis, and the radical change can pass from the incremental one. Innovation involves a range of sustainable or incremental innovation (reshaping functionality) as destructive or radical innovation (breakthrough, paradigm shift). This can lead to minor changes in reliability, performance, size, or specific product features; On the other hand, radical breakthroughs in products, processes or services can provide special and attractive features or significant cost improvements. Many other studies have identified the meaning of radical and growing (incremental) innovation. For example, Ferguson and Ferguson (1994) have pointed out that incremental innovation requires the use of an improved product that has at least one additional attractive feature or a better capability, but with the same properties, as compared to the previous one. In comparison, incremental innovation requires only a marginal departure from existing applications and greatly enhances the existing firm's potential.

On the contrary, radical innovation takes place when a new market opens and the innovative firm starts to meet an unseen demand (Ferguson and Ferguson, 1994). Such innovations create fundamental changes in the industry's or company's activities and deviate from existing activities. In other words, radical innovation means new products arising from improvements in technology or knowledge. In radical innovation, improvements or performance characteristics are achieved for the first time; In addition, technology and materials represent major changes in terms of new importance, significant cost and time to the market. For this reason, it can be said that radical innovation has the highest technical and market risk. Process innovation can also take many forms. For example, Ferguson and Ferguson (1994) have discovered a way to implement lower-cost inputs, believing that new techniques can be identified that make it possible for the firm to use less, at least one entry or less. Although innovation involves a discontinuous change, it usually happens in an incremental way. Products are rarely new to the world and processes are mostly about optimization. For this reason, on average, radical innovations adopted by firms not that much as incremental innovations.⁶ New or destructive innovation in the world accounts for only 6% to 10% of all innovation projects. Radical innovations present a more serious challenge to the current political influence and cause more resistance in their practice; The more original ones appear to be more complex than the members of the

⁶ Damanpour, 1996

organization and creates more ambiguity about the structural requirements for developing and implementing them.⁷ Research has shown that the economic effect of increasing innovation and continuous improvement is greater than radical innovation.

A number of studies show that the cumulative gains in productivity are usually greater over time than they are from radical changes.⁸ This greater benefit of incremental innovation may be due to lower risk. For this reason, firms often direct about 80 percent of innovation activities to develop existing products and only 20 percent to create new products.⁹

Urabe says that a new industry is often in its first stages, radical product innovation is the most common form of innovation. However, the cumulative effect of increased innovation through small changes in established products seems to have a more significant economic impact to maintain a competitive advantage. Studies have suggested that radical innovation has a longer life cycle, that it is difficult to predict, slow down or terminate progress, and often involve cross-functional teamwork. Incremental projects are more linear and predictable, contain less uncertainty and should be simpler cooperation relationships.

On the other hand, frequent innovations are often seen through business partners and with higher spatial levels of interaction. They have come to the conclusion that pure science is more effective than applied research that focuses on commercialization without encouraging advanced innovations.

In sum, any innovation, radical change, can occur in the range of increase. As discussed earlier incremental and radical innovations are related to their environment and are not an absolute term. Studies have shown that more factors have an effect on radical innovation than increased factors, and consequently the rate of radical innovation is less than incremental.

1.2. Basic indicators and criteria of the innovation activities

⁷ Damanpour, 1996

⁸ Tidd, Bessant and Pavitt, 2005

⁹ Nieto, 2004

It is known that different kinds of innovations can be created by different sized companies. Although there are many different ideas about the relationship between size and innovation, it can be said that company size may have more influence on the exchange interval. It is increasing from innovation to radical.

As a result, product and process innovation has been chosen from different innovation classifications (although most of the literature and empirical work are focused on product innovation examples), since innovation is often thought to be related to a product or process. Gobeli and Brown focus on more products than product innovation, although stressing that the product innovation process in general can only be applied to the innovation of processes with small adjustments like renaming phases. In addition, despite the fact that the company has an influence in the context of innovation vast number of the innovations within companies are related to increased development. For this reason, this study focuses on empirical innovation which is far from radical innovation. Although there are some differences between the manufacturing and service sectors, it can be said that the general definitions of innovation are the same for both. However, this study focuses more on the manufacturing industry. Innovation can also have an impact on an increase in radical change.

Analysis of many innovations over the years shows that most failures stem from some weaknesses in the way the processes are managed, even with technical difficulties. Success of a firm's innovation may depend on its commitment to the capabilities of the innovation value-added chain of innovators, suppliers and complementary innovations. Successful innovation management is concerned with the development and improvement of effective routines and processes. To do this, companies must define effective and routine routines and processes, and facilitate their enterprise-wide implementation.

In summary, innovation involves inevitably high-risk activity and management must take into account management's direction and risk to be successful. Researchers sought to address innovation management from a different perspective.

Many studies have examined the various stages of the innovation process. Cooper proposes a stage-door model adopted by many firms to manage the innovation process, a model that enables firms to manage, control, and manage their innovation

efforts. This model acknowledges that product innovation is a process and can be managed like any other process. Stage door processes have roots in earlier models, the first generation used for product development, developed by NASA in the 1960s.

Oke states that a major criticism of Cooper's scene-door model, such as other organizational factors that may affect performance factors, certainly focuses on process factors. Cooper says that the model is fully implemented in physical design and development of the product is designed to deal with the business, not just the technique.

Wheelwright and Clark present another model for the innovation process. Models have six steps in which projects are defined, tracked, and evaluated according to a predetermined set of decision criteria. These are idea, feasibility, talent, preparation for launch, post-launch evaluation and presentation competition.

Gobeli and Brown indicate that the product innovation process consists of four basic stages: Discovery, Decision, Development and Delivery. This model is also known as the 4D model (**fig. 1**)

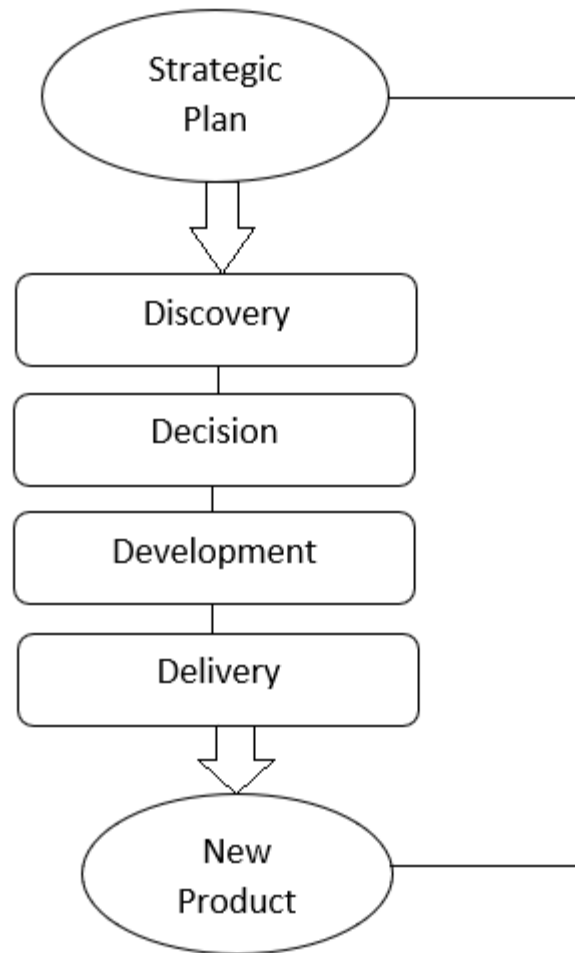


Figure 1 – Phases of Product Innovation Process (Gobeli and Brown, 1993)

Defining the innovation process in four steps allows a generic form for discussion of questions and solutions. In addition, they mention that although the research focuses on product innovation, it can also be applied to process or operational innovations at the same time.

While reviewing this framework with various product managers, they approve the process innovation framework and suggested that the fourth stage should be called "Distribution" instead of "Delivery" due to the fact that most process innovations are adopted by the innovating organization.

Due to the amount of ambiguity in the innovation process is high, defining the innovation-decision process as the process through which a person (or other decision-making unit) passes; to build up a basic knowledge of an innovation, to make a decision to shape, embrace or reject the attitudes towards innovation, to implement new ideas and finally to approve this decision.

In conclusion, I believe that each core innovation model should have 5 main stages in order to be successful. These 5 stages are:

- 1) Creativity - At this stage, the company should consider all signs related to the environment (internal and external) and threats and opportunities for change. For this reason, this phase can be defined as the identification and identification of an idea for a new product. Apparently, considering the source of creativity, one of the most important issues in this phase. Basically it comes from the brainstorming of results of the customer needs, the team then rated the company's own products and the competitors' products according to the needs of the customers. Compansors can also implement as a scenario planning. To explore the environment for destructive innovation. In summary, at this stage, the company should consider the internal and external environment in order to find new ideas for creativity. As discussed earlier in this chapter, different factors such as customer needs, competitors, Research and Devolopment can be a source of creativity for the firm.
- 2) Selection - At this stage, companies based on their strategic vision of how to improve or how the firm should decide which signals are worth responding to. In other words, at this stage, the company should analyze the advantages and disadvantages of each innovation. Companies have had more success with the transparency and standardization of the evaluation process because employees have been more comfortable when they can guess how their ideas will be assessed. At this stage, the main issue is that the early adoption emphasis can often offer competitive advantage to the firm, but sometimes early adopters may led to serious disadvantages too. In summary, at this stage companies should choose the best idea for future developments. strategies and criteria. Moreover, as mentioned earlier, the timing of decision plays an important role in the success of innovation.
- 3) Trial - Firms should get an idea during the trial (incubation) phase and form a prototype to test at small scale. Two important responsibilities at this stage are: the acquisition of a source of information for innovation, and the testing of the project

under uncertainty conditions, will provide comprehensive problem-solving. At this stage, the company should consider the market and technical considerations, the actual design and development of the new product should be done so that it can be tested on the prototype market. Instead of applying a new design to all its branches, companies should apply the design in only a few places to see how to get it. Subsequently, when the customers respond positively, they apply the new design to many other branches, bringing their innovation to the next level. At this stage, where some of the activities are similar to those of the R & D department, the firm should prepare prototypes and consider these prototypes on a small scale to find potential problems and resolve them before proceeding to the next stage.

- 4) Diffusion and Implementation - Diffusion is ultimately the process of winning an enterprise-wide acceptance of an innovation, and implementation is the process of building the necessary structures, care and resources to produce it. The practice involves turning the first idea into something new and presenting it to the market for maximum profit. This phase takes place in the heart of every innovation cycle and most of the unsuccessful attempts happens during this stage. Many innovation projects are unsuccessful as a result of the inadequate handling of the application phase; for this reason the application phase is considered to be one of the hardest ones. However, during the implementation phase, the uncertainty should be replaced by information obtained from various sources, such as risk analysis and management methods. Apparently many companies are fully aware of the fact that by taking full account of the previous steps, they can reduce the risk of failure of innovation implementation.
- 5) Evaluation and Learning - Learning ability is crucial for a company's innovation performance. Companies benefit from processes to obtain information, rely on the organizational knowledge base (official documentation of past projects, individual memorabilia or experiences), knowledge to identify changes in the environment and to maximize opportunities. The competence of knowledge management can be particularly valuable because competitors have difficulty understanding and evaluating implicit knowledge that a company possesses. It is also argued that product innovation requires a comprehensive amount of information from different functional units. Effective information exchange in the new product development process is also vital to achieving successful results. In fact, information sharing has been recognized as an important factor in success in developing new products. From my perspective, one of the most important ways to reduce risks and failures

during innovation applications is the ability to assess performance and learning from existing faults.

Peter F. Drucker, a major researcher, and professor of management and entrepreneurship lists various principles that must be respected by innovators in his book namely, "Innovation and Entrepreneurship". These principles are classified in the process of innovation in Do's and Don't's.

Do's	Don't's
Opportunity analysis	Make innovation smart
Innovation is conceptual	Handle many things at the same time
Innovation should be simple	Innovate for future.

Table 1. Do's and Don't's of innovation implementation process by P.Drucker.

The following are listed as Do's:

- Innovation occurs by an opportunity analysis. These opportunities are possible unexpected events, process requirements (need for a new means), unexpected changes in the structure of market or industry, conflicts in the process, demographic shifts and distortions in perception.
- Innovation is a perceptual and also conceptual activity. Unbeaten innovators work on the enigma of how innovation should be to capture an opportunity. Later, they go and observe customers and find out what their expectations and needs are.
- For being successful, innovation must be focused and simplistic. If innovation is not simplistic, it will not work. Everything that is new becomes frustrated: if it is complicated, it can not be corrected or solved. All successful innovations even the complicated looking ones are amazingly simple in reality. Innovation should begin as "small". It's based on something concrete. Originally, it requires some capital, some characters, and a petite limited market. Successful innovation is directed at management. If an innovation at the origin is not commanding for leadership, it is a high chance that it is not going to be innovative.

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Do not's listed by him as follows:

- Innovations should not be "smart". Innovations should be managed by uncomplicated people. Everything done very quickly for plan or completion is anticipated to be set at abortion.
- Many things should not be done. Innovations require intense energy and a common endeavor. It also requires that those who realize innovation have a mutual compromise.
- Do not implement innovations for future. Rather it should apply to solve today's issues. It may be a long-term influence of an innovation, but it takes a longer time to reach its height. It must be a resolution for today's problems.

1.3. Necessity of passing into innovation economics

To understand development path of different innovation models we can look at its historical improvement stages. Roy Rothwell who was one of the key researchers in innovation management field and provided a useful historical perspective on innovation management. According to him the evolution of innovation has come closer to the more complex models from simple linear models. After researching the nature of innovation, he set out five generations of innovation that provided a historical overview of innovation management between the 1950s and 2000s.¹⁰

The first generation which is known as Technology Push Model (TPM) emerged during the first 20 years after the Second World War when the unique economic growth rates increased developed market economies through rapid market expansion. New businesses mainly based on technological opportunities have emerged and these developments have resulted in rapid job creation, increased prosperity and an associated consumer explosion. As a result of these developments, it seems that consumer demand is growing rapidly and companies are focusing on creating a new

¹⁰ A FRAMEWORK FOR INNOVATION MANAGEMENT BASED ON AXIOMATIC DESIGN: INNOVATION ORIENTED ORGANIZATION by Burak KUZUCU.

product range in order to meet the developing product demand. In that case, the process of commercialization is not surprising that technological change is generally perceived as a linear development. It started with a scientific discovery, advanced with technological development and finished by companies in markets. The main feature of this generation was more research and development acts lead to successful companies and their products.

The next generation which is commonly known as MPM (Market Pull Model) started after mid-1960s when production efficiency continued to increase significantly and welfare levels remained high. The new products were basically based on existing technologies and in many sectors supply and demand was balanced. Due to intense competition during this period, expansive technological change and new product investments have decreased. On the other hand, rationalization investments in technological change have been increased. Then large and highly productive companies struggle for market share, they focused on marketing. Approaches to innovation model shifted due to demand side factors and this concluded with the emergence of the second generation.

Afterward, at the end of the 1970s, increasing structural unemployment, demand saturation and high inflation rates were the main characteristics of that period. Consolidation and rationalization have been increasingly emphasized at the focal point of company strategies and of course experience. In addition, accounting and finance issues have brought an important focus on control and reduction of costs.. Under the constraints of resources, it became frequently necessary to learn the innovation's success to reduce the proportion of wasteful inefficiencies. As a result, a series of detailed empirical studies on the innovation process have been published to model the first successful innovation process. According to the results of those studies, technology push models were extreme and had more general interaction process between technological capabilities and market needs. In this period, success has been associated with making most tasks competent and balanced.

Then, in the early 1980s, companies that focused mainly on technologies and businesses and were on the verge of economic recovery. That essentially leads to the next generation, namely Business Process Modelling. Some important events happened. Amount of strategic alliances amongst companies quickly increased. Also

small firms were involved in intensive external networking activities as well as large enterprises. As the product shortens the life cycle, the pace of growth in the adoption of time-based strategies by competing firms has become an increasingly important factor. As an important feature of this period, Japanese companies were recognized for their remarkable competitive performances in world markets. The two main characteristics of innovation in leading Japanese companies are analogous development and integration. Japanese companies were integrating their suppliers into a unique development process of products in early phase. For analogous development, the different in-house departments of the companies were working on the project at the same time rather than consecutive production.

Finally, in the early 1990s, the speed to the market was still important, network communication continued and enterprises implementing better manufacturing strategies and these all lead to the next generation which is also known as Integration of the system and networking. The innovator is an important factor for the competitiveness of the company, especially in areas where technological change rates are high. For this reason, in a highly competitive environment, many companies are forced to increase product development rates to survive.

The fifth generation innovation model is actually a development of the fourth generation innovation model, which is replaced by a technological change of technology. The fifth-generation innovation model provides some information on the nature and extent of the activities that innovation firms are promoting to develop such as flexibility of product development, speed, and efficiency of it. The main features of this model are smoother and more flexible organizational structures, electronic supported product development, general organization and system integration, developed internal databases, and efficient external links. In short, the key aspects of the fifth generation innovation model are networking, flexibility, integration, and parallel computing.

Innovation is the last line of business in today's business world and helps companies achieve lower cost, superior performance, and new products and services. The capacity of a company to successfully manage innovation for competitiveness is crucial in a setting where technologies, competitive positions, and customer demands can change almost overnight and the life cycle of products and services is shortened.

Innovation is not only important for a limited high-tech, manufacturing or large-scale group of companies; Innovation is universal regardless of need, size, sector or technological complexity. For this reason, it is not surprising that the concept of innovation management has become the focal point of intensive academic and industrial research aimed at finding ways to achieve a sustainable competitive advantage.

However, innovation is not a stable process in the classical sense. On the contrary, it is a complex, non-routine process that confronts the organization with unknown dilemmas and uncertainties, usually by production processes. Complexity and uncertainties, as well as risks and costs, make innovation a difficult process to manage. Moreover, global trends are increasingly demanding in terms of effectiveness.

Attempts to formulate an innovation theory have two positions. One is an internal position that highlights the company's assets or resources. The other is the external market-oriented position.¹¹ There is no conflict between these two positions. They emphasize different aspects of modern innovation and can be considered complementary. There is an interaction between external and internal forces, and if the internal processes do not work, there will be no innovation.

From other perspective, managing innovation is not only about developing products that meet the real needs of customers, but also about what best fosters and improves a company's different aspects such as logistics, service, management, marketing, and technology. That's why understanding how to manage innovation successfully is crucial at a time when innovation is almost a mandatory survival strategy.¹²

Theoretical basis and implementation of innovation into businesses also improves over time. One of the recent breakthroughs in management field is increasing usage of open innovation which as a term has gained importance with more than a decade of experience, as well as academics and business practitioners, both of which have great potential in innovation practice. Benefits of pursuing a successful open innovation process include access to information sources outside the firm's boundaries, time to

¹¹ Porter, 1990

¹² Peter Drucker 1999

market new products and services, maximization of intellectual property, expansion of the company's knowledge base, among others. Companies such as IBM, Procter and Gamble, Xerox, Philips, Siemens, Intel applied open innovation practices with positive results. Successful examples of these firms show that open innovation can be a sustainable trend that forms the basis for gaining competitive advantage. However, the implementation of a successful open innovation process can be complicated because it involves various functional areas of management; and its terminology, classification, scope, and applications are not fully accepted. This section introduces the concept of open innovation and its first contributions. Later, he explains how the scope of the term expands in the last decade. Finally, the field ends with a new scope call with multiple perspectives and contributions.

The reasons behind the change of the old innovation cycle are by providing some examples of how the two paradigms conflict with each other and how they can use their open innovation potential. Chesbrough's contributions have gained a great influence in the field of innovation management and have become very popular among academics and practitioners. The basic concept of open innovation states that ideas can come from within or outside the organization and can be marketed indoors and outdoors (**fig. 2**)

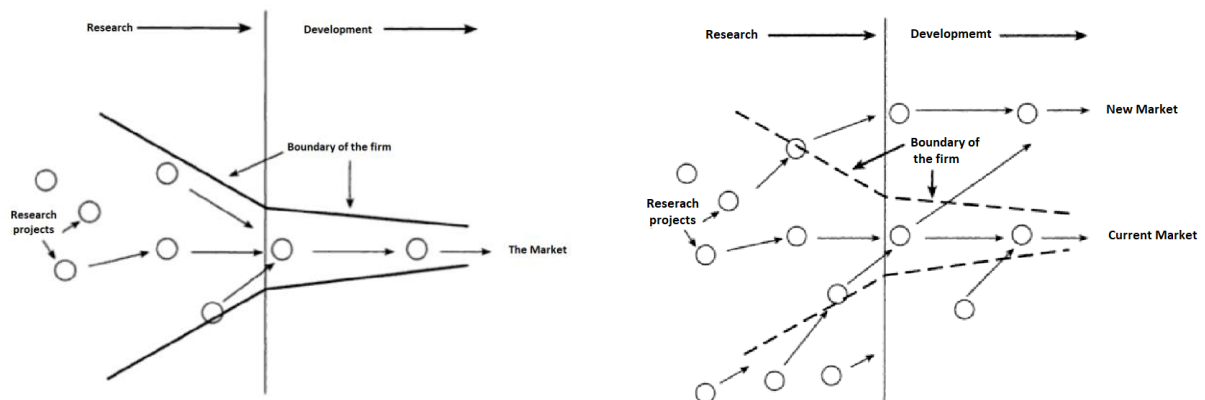


Figure 2. Old and new (Open Innovation) paradigms for Managing Research and Development Projects.

The definition of open innovation is not completely understood. Since the complex is a developing issue, different authors have slightly different opinions on this issue. Chesbrough's definition is as follows :

“Open Innovation is a paradigm that allows companies to use both external and internal ideas and internal and external ways to market as they work to advance their own technologies. Open Innovation combines the needs of internal and external ideas with architectures and systems that are defined by a business model.”¹³

Later on, Lichtenthaler described it differently:

“An open innovation approach refers to systematically adhering to the dynamic capabilities of a firm during the innovation process, with the task of capturing large technology management tasks, namely technology acquisition and technology exploitation internally and externally. For this reason, open innovation processes include a wide variety of internal and external technology resources and a wide variety of internal and external technology commercialization channels.”¹⁴

After the term introduced, the field of open innovation has expanded. Scholars discuss the terms and what they should cover. In addition, the development of ICT and forms of new cooperation extended the scope of open innovation to areas such as mass resource use, mass funding, the cooperation of citizens, professional consumers (also known as prosumers), co-creation, and platform ecosystems.

First layer is a set of strategies for building block of the open innovation that is created by the company's business model and the resource base that includes its knowledge base and capabilities. The next layer includes processes for exploring and evaluating open innovation opportunities. These processes may involve searching for new sources of information through networking, screening, and observation, among others; processes for evaluating, screening and merging opportunities. The next layer includes possible collaboration modes with external parties. These modes are called open innovation mode or collaboration modes; and various forms such as risk capital, strategic partnership, and free disclosure. Finally, the final layer describes an example

¹³ Chesbrough (2003)

¹⁴ Lichtenthaler (2008)

of an open innovation model that defines the organization structure, internal teams, and external parties. These are the different layers of the overall model.

Balancing the risks and benefits of using existing assets and markets and developing and testing new opportunities. Then, the business model is glanced and compared with the strategies that investigate gaps and inconsistencies. It is important to fully understand and communicate the business model to the organization. The resource base is then analyzed, including knowledge areas and capabilities; is defined according to the strategic objectives, defines the desired level of knowledge and ability and identifies areas where the company is superior. Once these steps are completed, the innovation process is opened by scanning and researching the environment to identify and select opportunities. There are various forms for the discovery and screening of opportunities. The next step involves analyzing the company's business model. It is crucial to understand the functions of a business model and how it supports the strategies; In other words, understand the logic of the company. As indicated in the literature review, a business model can be seen as the realization of a strategy. At the general level, the business model explains how the organization creates, transports and captures value. Includes processes; organizational form; internal structures, income model; interfaces with customers, suppliers and other external parties; activities; and others.

To analyze the business model, it is recommended that you have a holistic view of the company's operations and interactions. This can be done with tools such as business process modeling, system analysis, business model canvas among others. If the business model is conceded, then it is possible to analyze how the innovation process supports the strategy. Furthermore, it could possible to observe whether the business model is appropriate for the strategy, whether it identifies problems, inefficiencies and contradictions; For example, a company that follows a technology leadership strategy with higher investments in R & D operations seems to have some sort of misalignment.

CHAPTER II

Analysis of the innovative approach in businesses and ways to improvement

Inovativness of a firm is assessed at different levels and from a broad perspective, depending on the firm's strategy and the market conditions that depend on the firm's ability to respond appropriately to changes in the environment. It allows a firm to adapt to the competition and achieve success on the market. A company's resources are consistent with a resource-based view that explains how talent and competencies are rooted in competitive advantage by channeling innovation. Systematic innovation can lead to the observation of unexpected, market restructuring, incompatibility, different innovative opportunities, industry and within or outside a firm that has vital importance in defining the demographic structure, process needs and localized, buried and research-based knowledge.¹⁵

With a comprehensive overview of the literacy product, the framework of an innovation-focused organization has been developed using the axiomatic design methodology to identify the basic components of the general system approach and framework for identifying the basic concepts of innovation management and to separate them into subdivisions. -Components. As a summary of all relevant information and information, an innovation-focused organization can be described as a well-defined organization. Innovation process operates on an innovation-friendly organizational infrastructure, performs supportive activities to facilitate innovation activities, and develops innovation-focused relationships with environmental actors. The basic components and subcomponents of the innovation-focused organization are described in order to more clearly illustrate the proposed framework.

Successful innovation strongly depends on how a company chooses and directs projects, how it coordinates inputs from various sources, and how they relate to customers. An internal procedure is essential to keep all innovation projects under constant review, so that the work is done simultaneously on all fronts, but remains harmonious and consistent. Innovation requires a systematic process leading to a conclusion. The innovation process is a gradual process of reducing uncertainty through a series of problem solving stages, progressing through the screening stages,

¹⁵ Peter Drucker 1993

and implementing selection and applications. Organizing and systematizing innovation development activities is the basis for building an innovation-focused organization. A well-designed innovation process enables the identification, evaluation, development, implementation and use of new solutions more efficiently and effectively. The innovation-focused organization focuses on a systematic innovation process and performs strategic and operational activities on how to address opportunities for innovative solutions.

2.1. Diagnostics of innovation implementation in the business organizations

The innovation process is divided into three main stages: the stage of developing an idea where the organization focuses on what to present, the stage of solution development that the organization focuses on how to present the innovative solution, and the process improvement process that the organization focuses on how to deliver the solution. general process. The new product development process consists of three phases: producing ideas, technical development and commercialization.

First of all, the idea development phase is to systematically organize ideas development activities such as collecting ideas from different sources, choosing ideas based on organizational strategies, concept definition using collected ideas. The first stages of the innovation process include opportunity identification, opportunity analysis, idea formation, idea selection and concept development. From a similar perspective, the idea development phase consists of two phases: "the stage of producing and evaluating ideas" and the "project identification and feasibility stage".

The most profitable new products will be products that meet customer needs more effectively than competitors' products, so companies need to define these needs. New ideas can come from various internal sources such as employees or external sources such as customers or suppliers. The innovation-focused organization develops ideas channels and effectively manages them to gather new ideas from various sources. Idea evaluation means that ideas collected to filter out harmonious ideas are evaluated based on company strategy.

Once you have gathered relevant trigger ideas from internal and external sources and have made strategic decisions to follow some of them, then the next important step is to turn these potential ideas into a kind of reality; a new product or service.

Once the project has been identified from different combinations of the various ideas, the feasibility of the project is analyzed to investigate the requirements of the proposed concept and its potential impacts. Technological and market researchers are useful tools for determining the likelihood of innovation and the characteristics of innovation claims.

It then systematically organizes solution development activities, such as the solution development phase, the implementation of innovative solutions, and the implementation of the solution to potential customers. Technical skills are important for the initial stages of the innovation process and development activities; marketing features are crucial for the launch stage. The solution development phase consists of two critical steps to generate and promote the innovative solution accurately and accurately at the right time: the solution implementation phase and the solution launch phase. The inputs of the solution application phase are a clear strategic concept and some initial ideas for the realization of the concept. Outputs, on the other hand, are both internal and external markets ready for both an advanced innovation and a final launch. Implementation of the innovation project is very important for the realization of innovation. Dealing with unexpected and unpredictable events and making projects progressively demanding a high level of flexibility and creativity. Parallel to technological dimensions, innovation is the process of defining, exploring and preparing a market for the development of a new product or service to the market. The solution launch phase involves the commercialization process by offering an innovative solution to the market. From that reckoning, the solution launch phase consists of activities related to preparing the market to be presented to the market. This is of utmost importance, as the entire innovation process is successfully completed only by making the decision to adopt innovation in the target market. Marketing and commercialization strategies need to be done carefully to achieve an innovative solution that is successfully marketed.

The inevitable result of launching an innovative solution is the creation of new stimuli to restart the cycle. If a product or service delivery or transaction change fails, it provides valuable information about whether they will change to a more popular location. The aim of the process improvement phase is to design improvement activities for the proposed innovative solution and overall innovation process. This step, with an attempt to oversee the completed project and capture learning from

experience, involves two main activities to improve the innovation process: feedback analysis and continuous learning.

Users are important resources for innovation, and the importance given to dissatisfaction, solvency and super standard claims with innovation information in user information will help businesses to find potential innovation opportunities over time. From the aspect of the innovation-oriented organization, the innovation process does not end after the innovative solution has been used to internal and external customers. Collecting and managing customer feedback provides invaluable information to improve the innovation process.

The knowledge of a company is created, transmitted and expanded through the continuous learning process. Continuous learning increases the capacity of innovation, which is the ability of the organization to implement new ideas and products with success. Different scholars elongated this idea with their own opinions. For example, Hurley and Hult indicated the importance of continuous learning as:

“An organization that is focused on innovation is shared in the organization so that it can learn data, information and information from the beginning of the innovation process. This is the main route to originate future innovation approach.”¹⁶

It has been widely demonstrated that the perceived working environment, including formal and informal elements, makes a difference in the level of innovation in institutions. Much of the successful commercialization of new product concepts is a clear proof that these challenges can be met with the right organizational environment. The organizational infrastructure of an innovation-focused organization needs to be designed to enable innovation, taking into account both formal and informal aspects. Management should facilitate the creation of organizational conditions that lead to market-driven innovation that fits into existing business dynamics and complexities.

Due to complex and uncertain structure of innovation, many promising inventions have the potential to die before they go out into the outer world. The way to reduce risks is the presence of an important individual or group of people who are ready to provide some motivation to support innovation activities and enable innovation

¹⁶ Hurley and Hult (1998)

through the organizational system. The availability of provider features is an important element of an innovation-focused organization.

Most organizations include individuals who promote innovation both formal and informal way such as, inventors, entrepreneurs, technology followers, champions, sponsors. Recognition of these players in an organization is an important step in facilitating innovation.

One of the main factors behind implementation and control of innovation is the managerial influence. An organization that is focused on innovation needs top management influence to ensure that innovation spreads to the organization. The top management team should encourage innovation by creating an environment that is open to creativity and support diversity and supporting risk taking. The management team plays a critical role in inspiration, decision making and limitations in the innovation process. It is a strong predictor for the realization of innovative ideas and the management of corporate innovation. When innovation begins with senior management, taking into account organizational innovation as a way to survive. Top management should adjust direction and expectations for advantage of the company.

Another important factor affecting the company's innovation is the environment. The organizational climate is a set of characteristics of the work environment, which is directly or indirectly perceived by employees as an important force in influencing the behavior of employees. In general, perceptions and beliefs of individuals are regarded as environmental factors that shape expectations for outputs and interactions in the working environment. Innovation requires a critical attitude and courage to see problems. Unconventional imagination to see solutions in a new way. Organizational climate should be designed to encourage creativity and innovation; Innovation-focused organization creates organizational conditions in which innovation can be encouraged or prevented by influence.

Information and information flows are key determinants of successful innovation and new product development processes. For this reason, information technology plays an important role in product development because it extends from facilitating the processing, storage and processing of open information to facilitating people's networks, coordinated interfaces and co-operation for the flow of confidential information.

Since the product development process is an intensive study of information, information technologies can be thought of as an advanced tool that increases the data, information and information volume that can be processed throughout the product development process. Information technologies help partners, suppliers and customers of innovative organizations build innovation networks and thereby engage in collaborative innovation-related activities in the innovation process.

Innovation can come from many sources, but a strong source lies in the minds and experiences of existing employees. Companies need creative workers who are flexible, risk taking, and tolerant of uncertainty. When companies use their creative talents and innovative features as recruitment and selection criteria, it is likely that their employees will have a diversity of ideas and more innovation behaviors. An effective staffing system can help the firm to select and allocate qualified and qualified workforce to perform the required tasks. With the effective staffing program, employees become important new ideas in the company's innovation process.

Innovation initiatives are heavily dependent on employees' expertise, skills and motivation. Recruiting qualified employees is a critical activity for innovation management across the organization, but it does not provide sustainability for employees without creating corporate loyalty. Companies should consider employee satisfaction in order to keep creative employees in the organization.

Innovation initiatives tend to be heavily dependent on the knowledge, expertise and commitment of employees as important inputs in the value creation process. The HR management function plays an important role in influencing the attitudes, capacities, and behaviors of employees to achieve organizational goals and in nurturing the conditions necessary to direct and direct individuals to the development of innovation activities.

Innovative organization develops organizational expertise in terms of demand and content for innovation through training. be exposed to various training programs, learn new knowledge and expertise to broaden their ideas and equip them with innovative intelligence and skills. As regards training, it will make it easier for employees to be exposed to various ideas and innovative ideas.

The innovation-focused organization offers a wide variety of training programs to develop new knowledge, skills and innovative skills needed to perform their jobs to their employees. Trained investments can improve the expertise of employees at all levels of the organization, which can create a potentially endless source of ideas for further innovation.

Performance evaluations and compensation are key strategic human resource practices that companies can use to empower employees' behavior and adhere to corporate objectives. From the perspective of performance appraisal, companies must provide feedback and incentives that strengthen desired behaviors if they want to reveal desired behaviors from employees. Innovation requires high-level participation and employee involvement. If people feel that they will get some rewards for their efforts, they play a partial role in the innovation process.

The awarding system is an important part of innovation management throughout the organization, encouraging employees to produce innovative ideas. Performance appraisal can increase the urge of employees to engage in innovative activities and enable firms to obtain positive innovation results. It is important that innovative employees are awarded and announced to other employees.

A properly planned award system is an effective tool for strengthening anticipated behavior and shaping the development of the desired climate. There is no need for a prize money. Both external and internal awards are necessary to motivate employees to undertake challenging work and to encourage them to create new ideas and develop successful new products.

A sustainable competitive advantage is to differentiate from competitors in an industry sector. In the industrial age, companies would gather as much information and know-how as possible to improve their competitors and innovations in the amount of internal information they accumulated. Today, it is not enough for companies to benefit from the knowledge that their companies own. The new era of innovation forces companies to find new sources of innovation. The evolution of innovation is generally defined by its openness to the situation and its participation in external interfaces.¹⁷ Innovation

¹⁷ Rothwell, 1994

and innovation-focused relationships with the environment are becoming increasingly important to survive in business.

Environmental screening and analysis mean providing demand-focused, actionable information to the outside world; It monitors changes and trends in the environment. It should provide a broad picture of the competitive situation, including its position in the life cycle of the company and industry. Innovation is triggered by recognizing signals in the environment about the potential of change. These signals can be in the form of new technological opportunities or changing elements of markets or they may be the result of legislative influence or competitive action. Outputs obtained from environmental scanning expedite the initiation of the innovation process.

Purposeful, methodical innovation starts with the analysis of the roots of new opportunities.¹⁸ These opportunities can be about technology, markets, ambitious behavior, changes in the administrative or regulatory environment, new social courses. For this reason, an effective screening method is needed to collect the signals to be organized and operated. Companies run in a specific context and are influenced and influenced by this environment. Business environment can be divided into two categories: microenvironment and macro environment.

The microenvironment includes people and organizations that are directly concerned with the company's activities and who are clearly affected by their actions. Micro-environmental actors play a critical role in the success of innovation, while organizations associate regularly with other people in the world. Micro-environmental actors, customers, suppliers, competitors, wholesalers, etc. These participants are considered to be a valuable source of innovation for companies. Tracking and analyzing information on consumer needs, market trends and competitor actions is crucial to seeing innovation opportunities. The company's innovation can be enhanced by blending suppliers, competitors and external sources of information and enriching the company's own knowledge base. The organization for innovation is acquiring new knowledge from rivals and customers and is linked to existing knowledge to create new data solutions.

¹⁸ Drucker, 1985

On the other hand, macro-environment includes circumstances other than direct control of work such as the economy, government policy and social change.¹⁹ Because of its highly complicated and dynamic environment, macro-environmental factors have a significant bearing on the innovation strategies of a company. Monitoring opportunities and issues for macroeconomic constituents play a critical role in the success of innovation. Macro-environmental factors are defined as political, commercial, social, technological and statutory factors. These factors are considered valuable sources of innovation for companies. Monitoring and investigating information on political arrangements, economic conditions, social aims, technological advancements and legal changes are very important in terms of recognizing innovation opportunities.

The market adjustment has a significant positive effect on new product success and, as a result, is an important component of innovation management. Since it is placed in the consumer innovation location, it becomes increasingly important to offer unprecedented and personal experiences to individuals. To make this experience significant, they need to include consumers in the innovation process in order to offer solutions that meet the demands of companies. Working with customers can often provide important information and new directions. In addition, early engagement and allowing customers to actively participate in the innovation means lead to better adaptation and higher quality innovation.²⁰ Combining customers into the innovation process reduces the obstacles to adopting innovations. Companies acknowledge that their customers have become a partner in creating value and learn how to use their client competencies. The company needs to keep its customers close to responding to their partially communicated needs, but more so that they can fulfill what they want in the future. Value of customer involvement in developing new services has the opportunity to facilitate proactive learning about customers and to understand and anticipate hidden customer needs.

The catchword "you cannot regulate what you cannot measure" emphasizes the importance of performance measurement to guarantee effective management. Performance measurement is the selection and use of quantitative measures of

¹⁹ Gillespie, 2007

²⁰ Tidd et al., 2001

functions, processes, and consequences to develop knowledge about the critical aspects of activities, including public results.²¹

In this context, determination of innovation performance is crucial for the innovation-oriented organization to successfully measure, estimate and manage innovation activities across the business. In the history, there are many studies reviewing innovation performance measures. It is widely accepted that it is tough to identify appropriate indicators to cover innovation performance of companies.

Complexity is more featured in technology-based environments where endogenous and outer innovation forces cannot be easily isolated. All of these factors make it even more feasible to find simple models to investigate these environments, producing together the nonlinear nature of the innovation process. Furthermore, as innovation resources become more diverse and separated throughout industries and geographical regions, companies often focus beyond their organizational boundaries, collaborating to create common intellectual property. The processes of producing innovative ideas and ultimately turning them into the market are extremely complicated and complex. As a result, all of these found great difficulties for both management practitioners and administration researchers working on innovation achievement measurement.

From a management standpoint, the main measure is the success of the company. Company's success could be determined by its stock performance, profit, revenue, growth, business value or productivity. However, these common performance criteria based on financial information are not sufficient to draw the overall performance of a company in terms of innovation management. In the progressive and global market, which point to accelerated technological developments, financial notices are better evaluated than financial indicators. An innovation-focused organization should consider a sequence of financial and non-financial performance indicators when scaling innovation activities across the organization. In this context, financial and non-financial production indicators were determined by collecting literature survey outputs to measure innovation performance of companies. In this way, the relationship between proposed structure components and innovation performance indicators can be presented in order to strengthen the effect of the temporary framework components on the innovation performance indicators. In a company, multiple innovation

²¹ Perrin et al., 1999

performance indicators pose to develop a set of steps to better demonstrate the true performance of innovation administration across the organization.

All innovation performance indicators were learned through extensive literature review. In addition to academic resources, annual innovation polls were also sought from consulting firms. In terms of overall mindset towards innovation measures, Boston Consulting Group conducted senior management research, named "Innovation 2009". According to the BCG report, examined companies are focusing on some key enforcement indicators to measure innovation competencies such as profitability, customer fulfillment, incremental revenue, time and transportation cost to the market, Research and Development effectiveness and etc. The performance measurement indicators provided by the BCG report confirm the soundness of the innovation performance indicators collected by a comprehensive literature review for this study. In summary, the performance indicators used to validate the proposed frame components are recognized both academically and professionally.

2.2. Mechanisms of managing IC (Intellectual Capital) in large enterprises

Galbraith, who first used the concept of "intellectual capital", argued that in 1969 this concept was an element of intellectual activity as well as an element of human intelligence. Later Michael Kalecki, in an article in 1975, said to Galbraith, "We are aware of the intellectual capital we have had in the past few decades."

In a different approach developed in these years, it is said that "for intellectual capital, it is the whole of the assets that do not seem to have the owner, which enables the business to continue its activities". According to the definition given by Edvinsson, who is considered as the first intellectual capital manager, "Skandia has been described as having ownership of knowledge, practical experience, organizational technology, customer relations and professional skills that provide a competitive edge on the market."²²

Traditionally, businesses have given more weight to physical investments. However, for businesses in recent times, investment in abstract assets has come to the forefront, which is considered to be one of the key factors that will succeed them in the 21st

²² Leif Edvinsson - "Development of Intellectual Capital at Skandia", Vol. 30, p. 368.

century. Every year, concrete investments leave their place to abstract investments. For example, it is possible to say that until the last years of the 20th century, 70% of America's business investments were made up of concrete products and 30% of them were made into abstract products. Again in the United States, 90% of market values of businesses like Microsoft and Online are abstract assets²³. The market value of these abstract assets, which we can call as intellectual assets, is 11.2 times more than Microsoft's total physical value in 1996, and the market value in the second half of 2000 is 13.3 times more.²⁴

The elements of intellectual capital are generally accepted in the literature as human capital, organizational/structural capital and customer/relational capital. However, in the recent past, similar classifications have been made which have similarities with each other. This triple classification (human capital, structural capital, and client's capital) appears to be more accepted. According to this, it can be said that the abstract assets of a company can be examined in three basic headings.

Human capital is regarded as the main element of the intellectual capital approach. It is the sum of the individual knowledge, abilities, experiences, and behaviors that the organization members possess and develop, that is, the sum of all human elements.²⁵ It represents the training, abilities, experience, and skills of employees who are a set of characteristics of a community formed by competent employees. It consists of a mixture of professional and other knowledge, leadership competencies, risk-taking skills, problem-solving abilities. In this context, human capital has the power to determine organizational members' knowledge, problem-solving abilities, and capacities, life philosophies, creativity, entrepreneurship and leadership abilities, their functions in organizational processes and the qualities of these functions.

People can be rented but people cannot be owned.²⁶ For this reason, organizations cannot keep human capital under their ownership. But they can rent it for a certain

²³ Leif Edvinsson "Some Perspectives on Intangibles and Intellectual Capital 2000", Vol. 1, p. 12-13.

²⁴ P. KUJANSIVU ve A. LONNQVIST, "Investigating the Value and Efficiency of Intellectual Capital", Journal of Intellectual Capital, vol. 8, p. 272-287

²⁵ N. BONTIS, C. W. CHOO, The Strategic Management of Intellectual Capital and Organizational Knowledge, 2001, p. 34.

²⁶ STEWART - Intellectual Capital: The New Wealth of Organizations, 1997 (Translation: Nurettin ELHUSEYNI) p. 111.

period of time. During this rental period, it is necessary to be aware of its knowledge, ability, skills, and experience in order to make it possible to maximize the potential of human capital.

Another common tactic is to focus on practices that will increase employees' organizational commitment and keep motivation levels high. Nowadays, many businesses are making great efforts to keep their knowledge workers in operation, while it is known that many high-level knowledge workers are transferred to other businesses with notable monetary revenues. Therefore, businesses need to develop long-lasting and effective human resource policies to keep human capital in their hands. It has become imperative for businesses to develop human resource policies that enhance organizational commitment and instill a sense of belonging in order to keep employees in their organizations.

Structural capital can be described as the supporting infrastructure that regulates, empowers human capital from the merger of human capital.²⁷ Another definition is that organizational capital is "information that does not go home at night"²⁸, or that all things employees left in operation when they go home at the end of work. As an example of structural capital in this context; patents, copyrights, databases, organizational plans, business guides, hand brochures, strategies, culture, structural systems and structural assets with higher abstract value than other material values.

Basically, two main purposes of the structural capital can be mentioned. These; to ensure that the information that can be transferred to the employees is recorded in a regular manner and that the people who need it can reach the experts and information in a timely manner.²⁹ It is possible to talk about a dependent relation between human capital and structural capital. Human capital allows the formation of structural capital. Structural capital also contributes to the development of human capital. Because even the most despicable people need an organization to use their knowledge, skills, and abilities.

²⁷ M. MALONE, L. EDVINSSON - Intellectual Capital, 1997, p. 35.

²⁸ STEWART - Intellectual Capital: The New Wealth of Organizations, 1997 (Translation: Nurettin ELHUSEYİNİ) p. 119.

²⁹ N. YELKİKALAN and E. AYDIN - "Aile Şirketlerinde Profesyonelleşmeyi Yönlendiren Bir Dinamik: Entelektüel Sermaye Birikimi", Journal of Management Sciences, 2006, p. 134.

Structural capital is an intelligent entity that is difficult to establish in terms of organization compared to human and customer capital, but whose ownership control is easy. Knitting is a knowledge that belongs to you. Considering that the structural capital is a permanent capital for the enterprise, the actual success of the organization will be to transfer and reflect all existing and potential intellectual resources and accumulation to this permanent capital.

The main issue of the client's capital is the information the operator receives through marketing channels and customer relationships. Customer equity, also called relationship capital, is the sum of all assets that regulate and govern relationships with the business environment. The equity capital includes relationships with shareholders, suppliers, competitors, the state, government agencies, and society as well as the business of the business. While structural capital and human capital are more concerned with in-house elements, it is closely related to the people and organizations on the external periphery of the client's capital, which is another element of intellectual capital.³⁰ In this context, according to the structural and human capital, the customer's capital has to cope with the active and strong parameters which cannot be controlled and directed directly. For this reason, the creation and supervision of the client's capital are more difficult than the human capital and the structural capital.

We can list the value-adding components of the customer's capital as follows:

- Markets,
- Customers,
- Customer loyalty,
- Trade name,
- Distribution channels,
- Business cooperations,
- License agreements,
- the desired quality of contracts,
- Franchising agreements.

The development and enhancement of an intellectual capital of an operator depending on the quality and level of knowledge and skills of the people who work in large-scale

³⁰ Ş. ARIKBOĞA – “Entelektüel Sermaye”, Derin Publication, İstanbul, 2003, p. 99.

operations. It is clear that the fit people, at the right time, will be in an advantageous position in the right jobs. For this reason, the most important point in terms of businesses is; it is necessary to know the value of the human resources maintained and to provide the necessary conditions for the operation so that this resource can be utilized in the best way. An important factor affecting the performance of the employees is the knowledge of the employees. But most of this knowledge is obscured. Making this clear is one of the important tasks of the organization. Management of human resources within the organization must be in place here in an effective practice. Eligible human resources strategies and programs should be implemented to encourage employees to produce desired outcomes. Human resource functions that contribute to effectively managing intellectual capital can be expressed as:

1. Culture definition, evaluation, and shaping: Intellectual capital requires a culture to encourage management. Information sharing is not required and is not rewarded, resources are not given to facilitate employees to share information, and intellectual capital cannot be increased if employees are not qualified to carry out information sharing. How the organization sees its employees is primarily influential on how they will invest in intellectual capital.
2. Designing organizational structure and defining employee roles: The organizational structure is constantly changing to adhere to the environment and to combine with internal processes. An effective structure in a rapidly changing environment can be equated to the networks that provide the customer service in the information process. The structures that function in this way; It enables the organization to do all its work effectively, to make full use of the intermediaries, to constantly organize itself, to facilitate the exchange of information between the organization and the environment. Human resources play a key role in creating an organizational structure that facilitates results from intellectual capital.
3. Identifying recruitment and development strategies: A workforce with the ability to develop an intellectual capital pool can be created by training the organization to take the right people and act on them in a way that allows them to create and apply knowledge.
4. Identifying performance management strategies: Defining performance by using criteria that encourage the use of competencies in the next step, for those who are

placed and developed for work through role definitions and competency models developed for selection. Additional measures may be added to the measure that "share the results of others" and "contribute to organizational upshots". Using such a scale will positively affect performance appraisal, thus increasing the likelihood of information propagation and dissemination and affecting behavior.

5. Determine reward strategies: If performance measures involve affecting others' results, and if evaluations affect rewards, performance-based compensation may encourage effective management of intellectual capital. Another prize tactic is variable wage schemes. The funds allocated for the variable wage are allowed to accrue according to the results. This can lead to joint success as the reward funds grow, that is to say, "we won" and everyone can share their success.

There are various methods of measuring and evaluating the intellectual capital.

1) Skandia method: The Skandia Guide developed by Skandia, a Swiss Insurance Agency, classifies intellectual capital components as human capital and structural capital and presents a strategic business plan for forecasting future performance. In this model, a balanced approach is provided between the enterprise's past (financial focus), today (customer focus, human focus, and process orientation) and the future (innovation and development focus).

2) Dow Chemical Corporation in 1993, under the leadership of G. Petrash, created a vision for the management of the intellectual assets of the operator was defined and functional systems and tools were developed. The intellectual asset model developed by Dow operations focuses on tactical management of intellectual assets to achieve strategic objectives. The model was first applied in the field of patents. This model includes continuous phases like a portfolio, classification, strategy, evaluation, competition evaluation and investment.

Stewart, on the other hand, has developed ten basic principles of intellectual capital management:

A. Businesses are not the owners of human and relational capital. They share the ownership of these assets with occupations in human capital, clients, and

suppliers in the relational capital. In order to manage and profit these assets, joint ownership must be accepted.

- B. It is necessary to support and develop teamwork and observation learning to create human capital that an employer can use. Businesses can incorporate different talents into their human capital and provide information sharing because sharing information will make it less connected to the business.
- C. All intelligent and talented occupations do not carry the quality of being. Occupancies that create corporate wealth are those with strategic skills who can do things that no one else can do better and create value for customers. People with these characteristics should be invested
- D. Structural capital is a capability that businesses have and is easily controllable. Since many customers value this very little, they need to be managed so that customers can easily collaborate with the staff of the business.
- E. Information and information should keep in place the expensive physical and financial assets.
- F. Structural capital serves to accumulate information stocks that support customer valued studies and to accelerate the flow of this information throughout the enterprise. For this reason, the information that may be needed is easily accessible.
- G. Information should be privatized according to the customer. For this reason, mass production solutions do not make high profits.
- H. Every business must re-analyze the value chain of the industry in which it operates, from the raw material to the end user, to see which information has a greater significance.
- I. Managers should sum up their attention to the information flow instead of the goods flow. Because nowadays information works itself.
- J. Investing in people, clients, and systems separately do not make sense. Because intellectual capital components work together. These components can affect each other positively or negatively. For this reason, the direction and magnitude of the interaction must be well defined.

Despite the fact that IC (Intellectual Capital) defined properly, it is still hard to measure it for some reasons:

The first reason is historical. Accounting rules, although regularly audited, were formerly designed for tangible assets, such as facilities or machines, which are shown as a source of wealth in the industrial age.

Secondly, it is difficult to gauge some intangible assets. For example, creativity is an unpredictable process with unexpected consequences, along with taking part in the middle of the information-producing process. People can manifest themselves in many ways.

This leads us to the third problem: the unique nature of the IC. It can be worthless for something else (another enterprise) that is valuable to a company. This has resulted in a variety of measurement systems that make comparability difficult between companies and sectors.

Finally, intellectual capital consists of two dimensions. A company's intangible resources, a static concept, can be covered in any case. In this way, human capital (e.g. employees' competencies) and structural capital (for example, rights of intellectual property), the satisfaction of customers or contracts made with suppliers will be addressed under this category.³¹

Non-intangible resources also could be analyzed in a dynamic approach. Companies undertake activities to acquire or generate intangible resources, to protect and develop, then measure and monitor existing resources. These activities sometimes refer to the allocation of resources which are not expressed financially. This progressive nature of intellectual capital means that individual elements are mainly cannot be evaluated. In other words, it is elements of IC that create profit for companies. As a case, some companies with good programming skills enable to make software. Nevertheless, a strong distribution network can be of little value unless accompanied by the loyalty of customers and a sound brand name.

To sum up, the speedy switch in the sub-components of globalization has changed the management understandings of enterprises and the functioning of patronage life. Today, as the nature of competition and the means of change have changed, businesses have realized that material assets that are no longer profitable and contributing to growth are

³¹ Guidelines for Managing and Reporting on Intangibles, Project Meritum, January 2002

not enough. At the lead of the key elements that will make businesses more competitive is the increasing value of intangible assets. These assets are gathered under the heading of intellectual capital. The most important element of intellectual capital is "human capital". Successful management of human capital can only be achieved through effective management of human resources management in enterprises. In this regard, they should broaden the scope of human resource management in the business community for sustainable competitiveness. Modern human resource management should engage in activities to expand the scope on which competencies are based, using human resources more efficiently and transforming inherent knowledge into open knowledge. Human resource models based on competencies have a characteristic that directly affects top management and has a significant influence on the decisions to be taken regarding the mission, vision, strategy, policy, and values of business management. The contribution of sustainable recruitment of human resources will further increase in this regard.

2.3. Opportunities of building efficient innovation system and practices implemented in Azerbaijan.

The proposed methodology for evaluating the potential of innovation capabilities helps characterize the level of management and allow the management of the enterprise to analyze the current situation of the business and to make the right strategic decisions about the future activities of the business. Indicators that can be measured objectively at certain thresholds, as indicators that transcend boundaries, lead to a system that can distort stability and lead to another quality. The quantitative and qualitative characteristics of the indices may vary depending on the legal status, size or area of the operator. Indicators are combined into blocks. Thus, the potential for innovation is based on a comparative basis. The proposed method for assessing innovation potential has the advantage that the indicator system is based on the system of potential innovation indicators, taking into account all aspects of the activity.

The program of "Azerbaijan's development until 2020" foresees the establishment of a new economic model based on effective state regulation and mature market relations, interpreting strategic views and priorities. In this direction, improvement of existing structures of economy, development of non-oil sector, especially telecommunication and IT. Diversification of the economy and the development of the related sectors are

planned by promoting scientific potential and innovation activities. Modernity, human capital formation, rational use of intellectual potential, competitive products, increased living standards, etc. Define development trends in the economy as well. The solution of actual problems depends only on the development of scientific and scientific knowledge and the level of their effective use. Just as in the developed countries, the fact that the nation constitutes a large part of the national wealth in the country is seen as the manifestation of knowledge-based development, in other words, the knowledge and information economy.

Increasing the economy's continuous development and competitiveness, expanding areas based on modern scientific and technological achievement, making scientific research and establishing modern complexes to operate new information technologies. It is also a task to strengthen mutual relations among the fields of science, education, and economy, to operate new management mechanisms, to establish innovation centers, high technological complexes, ICT technoparks, the establishment of business units and organization of activities.

For this reason, the development of modern economics based on ICT and the development of proposals for new trends in development is a topical issue. For this reason, it is not uncommon for the President of the Republic of Azerbaijan to win the project "Fundamental Analysis and Development of the Development of the Innovative Information Economy in Azerbaijan" project submitted by ANAS (Azerbaijan National Academy of Sciences) by Institute of Information Technologies in the framework of the ICT-2 grant competition, It started with a one-year execution in the month. In most European countries, incubator-type technoparks are widely used by innovation centers. The generalized structure of the European model has the following specific features: the placement of a large number of small companies in a specialized building allows for the formation and development of small, medium-sized enterprises that share in collective service facilities; Despite the complexity of the management mechanism, the presence of various founders is more influential than the financial capacity. The incubator develops some by helping them grow and improve their business. Incubators include law, management, marketing, financial resources, technical and technological documentation for start-up companies. in the fields. Firms offer a range of office services, equipment, relatively cheap rental and expansion opportunities. Scientific Technical Improvement of labor-equipment and technological

processes, continuous improvement of the quality of labor-force objects (creation and application of new materials and fuel types), processing and use of effective methods in management. The most qualitative changes in innovation are the "classic" and "modern" aspects of scientific and technical progress. These are:

1. Electrification of production. Electrification ensures the application of scientific and technical progress. Energy sources provide electrical energy, which has a decisive role in the application of technically sophisticated technological processes with efficient creation, complex mechanism, and automatization of production.
2. Complex mechanization and production automation. In accordance with the complex mechanism and automatization of the production, it serves to recover the equipment management function, with the help of various techniques, on the one hand, for the technical operations and auxiliary works, and on the other hand for the worker's working regime.
3. Chemical production. The application of technological reactions based on chemical reactions is aimed at replacing natural resources with artificial and synthetic materials that are "pre-determined" by their priorities.
4. Electronicization of production. The results of this direction of scientific and technological advancement, electronic tools, computer, exposure, satellite communication systems, etc. It is all departments and departments of the company. information Technology. With the help of these electronic devices, measurements, project design adjustments, research and testing work are done and the production process is accelerated.
5. Creation and implementation of new materials. In this direction, the screening process can be used to create late "tired" building materials that can produce quality, new, efficient features that can contribute to durability, corrosion, and radiation. Not only that but also the economic performance of the consumer.
6. Development of new technological production methods. This aspect of scientific and technological progress is of great importance not only in the firm but also in the field of industry and economy and plays an important role in the solution of socio-

economic problems. New technology increases volume without additional resources for production, reduces product cost, increases labor productivity and product quality.

Intellectual capital related to the transition to market relations plays a very important role in accelerating scientific and technical progress as discussed earlier. Intellectual capital consists of a series of investments for objects that do not have a natural property form such as patents, licenses, trademarks, research results.

As intellectual capital grows, the scale of innovation increases, innovation, in other words, the innovative process occurs and accelerates. There are five types that result in innovation:

- The use of the latest production technology;
- Application of new quality products;
- Use of raw materials and materials with new physical-chemical properties;
- Transition to new logistics forms;
- Emerging new markets

According to the mission of the President of Azerbaijan, the "Regional Innovation Region" project jointly prepared by the Ministry of Communications and Information Technology (RITN) and the USA's leading consultant company "Booz Allen Hamilton" will encourage innovative enterprise production and export of technoparks, electronic equipment and software products the regional market envisages the establishment of transit information space between the West and the East that will provide broad electronic services to the region countries, as well as, the universities to serve the HR development.

The Regional Innovation Program has five objectives:

1. Accelerate the implementation of technological innovations in medium-sized or small manufacturers. To encourage the progress of small and medium-sized businesses within the region, including the provision of an innovative environment for the design and implementation of information technology in various sectors of the Azerbaijani economy;
2. Establishment of Human Resources Development and Information Technology: To organize relevant training and training to develop IT skills and competencies

to develop human resources as part of the national initiative of the "University of Regional Information Technologies";

3. Estimating the possibilities of establishing an International Information Resources Center: investigating the possibility of applying this trade activity to provide information flow, data and content acceptance, storage and retransmission of various types;
4. Reach new investments, especially foreign direct investment: In order to meet commercial needs in Azerbaijan and the regional market and to support continuous social and technological development, OIC companies investing in scientific and technological activity, research, business process, and creating a less risky, innovative and productive business environment for global technology companies;
5. Export Support in Azerbaijan: Providing a business environment that promotes and expands the production and export of electronic devices and software products and services that can be distributed to regional markets in Azerbaijan.

Azerbaijan has started to build industrial parks in the country to support high-tech, competitive industrial production and entrepreneurship. The aim is to support entrepreneurship, to ensure sustainable development of the non-oil sector, to develop innovative and high-tech competitive industries, to increase the access of the country to local and foreign investments, and to increase the employment of the hard.

I want to state that Sumgait Technologies Park (STP) has been active since 2009. In December 2011, President signed an order to establish the Sumgayit Chemical Industry and Balakhani parks. Another initiative will be the Sumgait Chemical Industry Park. From the President's Reserve Fund, the Ministry of Economic Development has allocated 4 million manats (roughly 2,4 million dollars) for the organization of both technopark activities. For the operation of Sumgayit Chemical Industry ve Balakhani Park, 7 hectares of land has been separated for the establishment of Balakhani Park within the boundaries of the AzeriChemical Production Union. (red. Azərikimya İstehsalat Birliyi).

According to the changes made in the Tax Code, parks created by order of the President are exempt from tax. Thus entrepreneurs, legal entities and individuals operating here are exempted from tax.

According to the Ministry of Economic Development, Sumgait Chemical Industry Park was selected as a consultancy company for the high level of its activities and prepared normative legal regulations and regulations developed from the "Industrial Park Regulation". The General Plan of Sumgait Chemical Industry Park was compiled, the necessary technical conditions for construction and construction works were provided, and a built-in registration system was established. Establishment of production and processing enterprises for competitive products on petrochemicals and other priority sectors is foreseen. For this purpose, it is planned that the external and internal infrastructure of the park, office, consultancy, laboratory supervision, work construction, education, vocational education, entrepreneurial activities and other services will be formed. In addition, an area of 167,66 hectares allocated to this technopark has been brought to a suitable condition for construction, and main road access roads, gas pipeline project and cost estimations and internal infrastructure projects have been developed. The demolition work of unnecessary buildings and facilities in the Industrial Park is about to be completed and work continues with the relevant government agencies to clean up contaminated areas with chemical wastes. The park will have all the necessary infrastructure and all the conditions that will function fully for foreign and domestic investors will be created. For the companies operating in the park, a large package of privileges based on international experience is already available. At the moment, this package is being evaluated by the National Assembly and is likely to be accepted soon. Thus, all conditions will be created to attract foreign investments such as chemistry, petrochemicals.

CONCLUSION

Since the mid-twentieth century, developed countries have been characterized by strong industrial and industrial-based economics. Today, those who say that the road to economic development is industrialized is higher in numbers. Nevertheless, in recent years, economies under the influence of globalization and technological innovations have begun to dominate more innovative economies than industries. Innovations lead to economic growth with added value. But how is the innovation-based economy, the industry-based economy different, or what are the advantages? Contrary to the industry-based economy in the economy based on innovation, raw material ideas. To be precise, with the emergence of new ideas in production, the use of physical resources, labor, and capital, and therefore economic development is ensured. The sector-based economy engages with buyers through mass production. However, the innovation-based customer has been involved in creating differentiation in information technology and product design by offering products to customer groups in different designs.

Production in an industry-based economy is carried out through giant corporations, and economic development is heavily dependent on the activities of giant corporations. It can also be added that such companies are influencing markets and prices in their own interests. However, economic development in the innovation-based economy is achieved through coordination and joint activity through entrepreneurs and independent agent network activities. On the other hand, success indicators in economic development based on innovation are based on different bases. In other words, industry-based economies are measured by the level of "mass customization" and the elasticity of operations, as evidenced by innovation-level innovation and innovation-based production, customer integration, innovation, innovation, innovation, quality control, production cost reduction, production stability and market control.

The innovation-based model of economic development refers to global competition and co-operation, and as a rationale, economic development is achieved through the creation of higher-income "outputs" as a result of the effective and innovative use of high-value "inputs". In addition, the innovation-based economic development model aims to increase productivity and per capita income by investing in informatization and

infrastructure to support innovation-based groups, and the performance indicators of the model are determined by the quality and revenue growth and innovation level in the workplace. Regarding the role of those responsible for economic development, in the model of economic development based on innovation, these persons must operate in a focused way to improve the system of coordination of activities between inventors of intermediary networks, inventors, financiers, and transformers. In general, the innovation-based economy is characterized by the high-quality workforce, a rapid development of the industry, and ultimately production and exports of competitive products in world markets. It is impossible to produce competitive products without innovation, without innovation, in the world of technological progress which is faster and more competitive than ever before in today's world. Figure 4 below shows the link between the innovation-based economy and government incentives. States that want to develop their economies based on innovation should apply an industrialization policy for this purpose. The main purpose here is to increase the use of industrial innovation and the production of innovative industrial products. Because today, the way of economic development in developing countries like Azerbaijan is essentially industrialized. Nevertheless, as we have already pointed out, the innovation process has been successfully applied in other economic sectors other than industrialization. The policy of industrialization, over time, needs to change depending on innovations in the economy and the added value created. That is, a state seeking an economy based on innovation must constantly follow innovations, learn from the experiences of other states, and create favorable conditions for the implementation of innovations in the economy.

There are very few attempts at innovation at the national company level, as companies and entrepreneurs operating in Azerbaijan are often small and large numbers are often lacking or weak in local markets. Current actions are usually carried out by foreign companies operating in the country. However, there is a group of young people in the country, especially who studied abroad may lead to a significant increase in the innovation initiatives of the country, especially in the technical field. There are quite a few initial research and ideas in Azerbaijan. However, these ideas do not mean that there are serious problems in the field of applied research. Subsisting innovative ideas often go beyond the initial research phase. The reason for this is the logistical

difficulties faced by the difficulties in entering international information centers and the infrastructure required to conduct research. Innovative ideas that are successful even in the implementation of the research phase remain a plan or an invention because of the lack of investment needed to earn the economy. Perhaps the first thing to talk about the innovation process and the advantages of an innovation-based economy is to increase the role of innovations in production and economic development. Rather, one of the topics of discussion is the form and scope of government incentives that will serve this purpose. Increasing funding proposal for systematic research is of greater importance. However, as can be seen from the gradual analysis of the innovation process, the scientific research and results of such research are only in the early stages of the innovation process and are not considered innovations in practice.

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