PRODUCTIVITY DEVELOPMENT BASED ON TECHNOLOGICAL INNOVATION STRATEGIC PLANNING FRAMEWORK; CASE STUDY: TECHNOLOGY-BASED FIRMS BY PRIORITY OF OIL INDUSTRY

DESENVOLVIMENTO DE PRODUTIVIDADE, COM BASE NO QUADRO DE PLANEJAMENTO ESTRATÉGICO DE INOVAÇÃO TECNOLÓGICA; ESTUDO DE CASO: EMPRESAS DE BASE TECNOLÓGICA POR PRIORIDADE DA INDÚSTRIA DO PETRÓLEO

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Abstract: *Innovation is becoming a key component of the knowledge economy based not only on the level of organizational performance, but increasingly as a source of productivity growth at the organization and national level, and it can be argued that any economic growth based on productivity After the eighteenth century, the events were rooted in innovation. The driving force of the knowledge economy is knowledge society, which plays a key role in the development of knowledge economy. The study of the literature of these companies and the studies conducted on the reasons for their failure to fulfill their role and mission, and their lack of importance and ineffectiveness, show that most of these companies did not have a specific strategy or their strategies with the appropriate framework and not implemented. Accordingly, the question that arises is the strategic planning framework for technological innovation suitable for the development of productivity in these companies?*
Keywords: *Technological Innovation, Strategic Technology Management, Dynamic Capacity, Productivity, Multiple Case Study.*

Reseumo: *A inovação está se tornando um componente chave da economia do conhecimento baseada não apenas no nível de desempenho organizacional, mas cada vez mais como fonte de crescimento de produtividade em nível nacional e organizacional, e pode-se argumentar que qualquer crescimento econômico baseado em produtividade século, os eventos foram enraizados na inovação. A força motriz da economia do conhecimento é a sociedade do conhecimento, que desempenha um papel fundamental no desenvolvimento da economia do conhecimento. O estudo da literatura dessas empresas e os estudos realizados sobre as razões de seu fracasso no cumprimento de seu papel e missão, e sua falta de importância e ineficácia, mostram que a maioria dessas empresas não possuía uma estratégia específica ou suas estratégias com a empresa. enquadramento adequado e não implementado. Nesse sentido, a questão que se coloca é o quadro de planejamento estratégico de inovação tecnológica adequado ao desenvolvimento da produtividade nessas empresas?*
Palavras-chave: *Inovação Tecnológica, Gestão Estratégica de Tecnologia, Capacidade Dinâmica, Produtividade, Estudo de Caso Múltiplo.*

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Introduction

One of the most important elements in the arena of national and international authority is science and technology, and it will be. The growing importance of the role of knowledge in economics has led to the creation of a knowledge- based economy theory globally based on many countries in recent decades to policy, planning and movement to strengthen their scientific and technological bases. The influence of the knowledge- based economy has led to the emergence of the management branch of innovation and technology in management domain. Innovation is becoming a key component of economic policy making not only at the level of each enterprise, but increasingly becoming the source of growth for the national economy (Musaii, 2002), and it can be noted that any economic growth has been made up by the creation of knowledge - based business for sustainable transformation of knowledge into wealth, and is associated with research and development activities that contribute to the development of knowledge - based economy in society. Mahdavi, 1390)is the driving engine of the knowledge- based economy, which plays a key role in the development of the knowledge- based economy. These companies contribute to the fields of science and wealth, the development of knowledge - based economy, the fulfillment of scientific, economic and economic goals of research and development outcomes in the field of innovative technologies., 2003). Technological innovation has now become the most important driver for achieving competitive position in many companies. Its causes are partly due to globalization and markets. Foreign competition encourages companies to produce distinct products and services and constantly contribute to innovation while investing in innovation helps keep costs low (Schmidt, 2007). Knowledge- based business employs more of the advanced technologies and innovative processes in products, services, and processes. G. Additionally, knowledge- based & mccarthy (2006) also holds a high percentage of intangible assets and intellectual capital, high percentage of intangible assets and intellectual capital, products with short life curves and margins (Astiri, 2009).

In numerous internal and external researches, many different challenges for management and governance are identified and identified. Such challenges include non - effective management, improper orientation of companies to satisfy the need of society, the existence of turbulent and turbulent competition on local and external markets, insufficient technological presence for the emergence and development of new products is one of the important elements to overcome these challenges, design, implementation and control of technological innovation strategies that play an important role in competition in the international arena according to its key position. In other words, one of the most important elements is the strategic planning framework of technological innovation, so that the firm is able to take advantage of competitive advantage over the acquisition and exploitation of competitive advantage.

The main problem of this study is to provide a framework for strategic planning of technological innovation in order to help knowledge- based companies to play their mission effective. The main purpose of this study is to determine the capabilities, processes, actions and tools required to guide technological innovation in strategic - level organizations so that these organizations can play their mission in the national system of innovation and contribute to improving their competitiveness through enhancing their technological and technological capabilities.

Due to the importance of the oil industry in the country's economy and the importance of technology in the competitiveness of this industry, the achievement of new technologies based on technological innovation is to increase the competitiveness of the industry in the international arena. Considering the role of knowledge- based companies in providing technological capabilities to the oil industry, strategic planning of technological innovation in the oil industry is of great importance to the country.

Accordingly, in this study, the theoretical pattern of strategic planning of developed technological innovation (theory) and then to test the theory of theory - testing) will be used in a multi - case study.

Literature Review

Innovative and knowledge- based companies often regret the fact that their competitors and imitators are more likely to benefit in the process of technological innovation. Since it is one of success policies since it is one of success policies since it is one of the policies of success. Teece, 1986). The

study of innovative companies literature and examining their failure to play their role and mission and not achieve sustainable competitive advantage suggests that most of these organizations have not had a certain strategy or strategy, or their strategy is formulated with the appropriate pattern. On the other hand, in many large innovative enterprises, many managers, however, are familiar with the strategic management approach, but each has a particular interpretation of the issue. Knowledge- based organizations across the world face multiple strategic and operational challenges such as role change, financial supply bottlenecks, tighter competition in the global arena and financial support. To succeed in dealing with these challenges, these companies have to focus on their activities from falling into a strategic role of innovation and instead by adopting a fundamental approach based on the strategic role of innovation, it has a deep focus on its activities and achieves success and gains in organizing, organizing, internal processes and competencies in creating sustainable competitive advantage (Thuriaux, 2010).

On the other hand, Pellikka in 2014 presents a list of these challenges by reviewing the literature on the challenges involved in the commercialization process in small - oriented technology firms (Pellikka, 2014).

Table 1 - The challenges in the commercialisation process of technology - driven companies

Challenge Type	Challenge description	Resources
Marketing	Failure to recognize the optimal performance of the product	(Burgelman, Maidigue, & Wheelright, 2001; Heydebreck, Klofsten, & Maier, 2000; Jolly, 1997; Ziamou, 2002)
	Failure to reach the market and acquire and exploit information from customers that are essential to commercialization.	(Ford & Saren, 2001; Jolly, 1997; Mohr, Sengupta, & Slater, 2009; Schilling, 2005)
	Failure to allocate commercilization and marketing activities	(Ford & Saren, 2001; Mohr et al., 2009; Pellikka & Lauronen, 2007)
	Failure to recognize the right time to start your product marketing effort	(Gans & Stern, 2003; Mohr et al., 2009)
	Failure to build close relationships with business partners, leading users and product enthusiasts	(Athaide, Meyers, & Wilemon, 1996)
The commercialization environment	The availability and content of the innovation support services for commercialization.	(Kelley & Rice, 2002; Klofsten & Jones-Evans, 1996; Malecki, 1997)
	Infrastructures of the local technological environment and business ecosystem for commercialization.	(Adner & Kapoor, 2010; Gans & Stern, 2003; Heydebreck et al., 2000)
	Failure to supply sufficient resources for commercialization.	(Dodgson, 2000; Pellikka, 2008)

Financial	Failure to enable adequate financial resources in the commercialization	(Heydebreck et al., 2000; Malecki, 1997; Pellikka & Malinen, 2014)
	Limited access to financial resources in the commercialization process.	(Burgelman et al., 2001; Pellikka, 2014; Van Auken & Neeley, 1996)
	Failure to effectively manage financial resources during commercialization.	(Gaskill, Van Auken, & Manning, 1993; Kelley & Rice, 2002)
	Distortions of the capital structure for commercialization	(Van Auken & Neeley, 1996; White & Bruton, 2010)
International	Failure to provide adequate resources for the international community	(Autio & Sapienza, 2000; Renko, Carsrud, Brannback, & Jalkanen, 2005)
	Experience in the International	(Spence, 2003; Wren & Gabrielsson, 2011)
	Failure to create international distribution and distribution channels	(mcdougall & Oviatt, 2000; Mohr et al., 2009)
	Insufficient information on client references and international markets	(Karagozoglu & Lindell, 1998; Storey, 1994)

To achieve success and survive in the long term, knowledge- based companies need appropriate planning strategies so that they can prevent a wide variety of challenges that would lead them to avoid further gaps and irreversible loss. The need for smes to think that the development and delivery of new products that satisfy the consumer needs will be required to achieve extraordinary success; it will not be a good strategy for achieving success and gain. Teece (1986) indicated that although this can be true regarding the product itself, it is not true about the knowledge- based company. He suggests that innovators need a good strategy to succeed in technological innovation. Iranian multinationals are no exception to this rule, but also face many challenges such as economic sanctions, stagnation, inadequate protection laws, and confrontation. Therefore, the application of a diverse range of strategic management tools of technological innovation will respond to these pressures to increase the effectiveness of their performance. They face increasing pressures for change and should use administrative tools and tricks to overcome these pressures. That is the main focus of that strategic planning of technological innovation (Bandarian, 2011).

An integrated analysis of the internal situation of industry and external trends influencing the industry clearly explains the key technological challenges and critical issues of industry and active companies, which can help knowledge-based organizations to provide innovative and innovative solutions and to enhance firm technological capabilities in order to competitiveness. Accordingly, strategic management and identification of appropriate strategies for such organizations are very necessary (Lansley, 2010).

Considering the different implications of strategic management among corporate managers, the question arises whether strategic management of technological innovation can save these knowledge- based organizations from the turbulent environment and overcome the challenges posed and ultimately make a sustainable gain for the firm by creating a technological empowerment in competitive fields? One of the factors that is important in endogenous growth theories is technological progress. This has been expressed by different economists in the form of different models, confirming a lot of empirical evidence.

Regarding the unique position of knowledge firms in the development of national economy, which is mainly due to their scientific assets in the national and international dimensions to support technological and innovative industries in order to enhance their competitiveness (Rush et al., 1382). On one hand, and on the other hand, one of the most important factors that has been given special attention in the policies of the resistive economy is the lead of the knowledge- based economy. In this regard, the supreme leader of the revolution called for improving the global position and

increasing the production and export share of products and services and achieving the first rank of knowledge- based economy in the region as one of the goals of the resistance economy. One of the things that can help the country achieve its production levels is to understand the necessity of producing knowledge- based in society.

Thus, addressing knowledge- based firms and proper management of knowledge- based firms in the strategic level for optimum and effective implementation of the assigned mission is a priority, which is a prerequisite for the development of strategic management of technological innovation with the characteristics of these companies.

The main dimensions or components of strategy are process, content (or outcome) and context, De wit (2004) believe. The process consists of steps or steps of formulation and implementation of strategy. Content refers to strategy or decisions and strategic actions. Decisions and actions related to the formulation or implementation of strategy. The context involves all factors relating to the specification of the organization or the environment in which the organization is operating. The context can affect both the process and the content of the content.

The models of strategy formulation from the following process, content and context, and concluded that the Little, Porter et al. Propose a rational process for developing technology strategy. The critical point in the findings of Dr. Arasti, after reviewing the models presented in his paper, is that none of the models have followed the resource - based approach that has the process, or the location of the firm environment in the event of substantial changes, none of the models have developed a step-by-step process from the analysis of the environment, and after analyzing the capabilities and internal weaknesses of the technology strategy. Ford and Severn models do not provide a process for strategy formulation. The Mintzberg model also has the focus on the content and the output.

Teece (1986) developed a model for selecting a technological innovation strategy. In the paper, the factors influencing decision - making strategy of technological innovation are described as fundamental structural blocks; these factors include intellectual property system, complementary assets, and dominant design. He sees the complementary assets as a set of assets, infrastructure and competences that are essential to support technological innovation products. These assets are classified into three common, specific, and specific categories.

Intellectual property system is one of the company's environmental factors that support the firm to gain profits from their innovation, or vice versa, and so the arrival of others is difficult to enter. The most important dimensions of such a system are classified into two groups of the nature of technology and the capability of lawful protect.

In the dominant design, Teece, citing the development stages of science including the predominant phase and the dominant design phase and based on Abernety and Utterback (1975), reads a period of time, and after many test failure in the market, one or more of the many projects similar to each other as a more dominant form and fully responsive to all consumer needs.

Then, with the introduction of two strategies, they describe the continuum of a continuum including complete integration and full contract of technological innovation strategies. After the introduction and explanation of the effective factors in the first step and then the introduction of strategies in the following, the intersection of the key states between factors to choose the strategic options is proportional. Rothaermel (2008) summarized strategic options in different states between the intellectual property system and the dominant design.

Susan in 2004 aims to develop a three - step process of strategic management of technological innovation involving acquisition, leaverage and protection. It is demonstrated in this study how corporate managers improve their companies through acquisition, leaverage, and conservation of technological competencies to successful innovations in their companies. Acquisition is a process through which firms develop new technological and technological competencies, or update their old competencies. The process involves acquiring merit from other organizations or working with them to achieve new technologies. This process also involves attracting or attracting technological knowledge from other organizations or public sources, and creating technological competence through research, experimentation, and other learning processes. Leaverage is the way companies obtain value from their financial competencies. This process involves the transfer of knowledge or capability to different units of the organization, products or markets, and the exploitation of

existing competencies and integration and reconfiguration of them. Protection is a process through which firms perpetuate the monopoly and value of their technological competencies. Firms using different mechanisms, such as legal ownership rights, hiding, maintenance of key employees, sub-activities, and sharing information in a strategic way protect their technological competencies. Furthermore, the complexity, specificity, specificity, implications associated with the collection process and also, the barriers to organizational learning (such as heterogeneous resources)are also effective in protecting technological competencies.

Teece took part in 2007 to formulate a three step process of strategic management of technological innovation. Teece explores the integration of strategy literature and innovation following the provision of a conceptual framework including the key elements required for empowerment in the context of entrepreneurial adaptation, and in this regard, it provides a conceptual framework for each part of these capabilities in order to provide a detailed institutional framework for the concept of dynamic capabilities, which follows briefly.

1. Feeling (and shaping)opportunities and threats: sensing (and shaping) new opportunities include monitoring, creating, learning, and interpretive activities with regard to new business opportunities. Opportunities are identified by the firm with different access to information and the creation of new opportunities by new information and technology. To determine opportunities, businesses must continue to explore, search, and explore among technologies and markets at local and international levels. Teece provides the framework of the main elements associated with the sense of market and technological opportunities.

2. Exploitation of opportunities: exploiting a new opportunity (technological or market - based), must be targeted through products, processes or services. Usually this requires investment in the development and development activities. In the early stages, different paths for investment may be possible; but after one pattern dominates the other patterns in the technological space and market, strategic choices are limited. The aim of targeting opportunities requires maintaining and upgrading technological competencies and complementary assets, and is a mature and mature opportunity for the firm to take a serious investment on specific technologies and projects to gain market acceptance. Also the achievement of resources from opportunities requires organizational innovations such as design and deployment of a new business model. In general, having a proper balance in the capabilities of exploration and exploit opportunities is a major necessity in the current variable business climate. Teece provides the framework of the underlying elements associated with attraction and exploitation of opportunities.

The successful identification of technological and market opportunities and selection of technological and product features, design of the business model and the commitment to investing in opportunities can move the firm towards growth and profitability, thus increasing profitability, the level of firm capital, and thus a dependent orientation on the path. In this context, one of the key prerequisites, Sustainable growth of profitability of assets and firm structures is the growth of firm growth and environmental developments. Again, the configuration is necessary to maintain the firm's evolutionary adaptation and revision of momentum; since success contributes to the corporate governance that needs to change in them, and these changes occur through gradual or radical innovations. For the successful targeting of opportunity managers, managers need to fix perceptual constraints and trends of the dominant intellectual framework that underlie the current assets. Teece identifies the main elements associated with the opening of the configuration within the following framework.

Commercialization strategies for technology entrepreneurs are presented by Gans and Stern (2003) to develop and categorize strategic environments. They classify the different strategies of startup and mature firms in a conceptual framework.

These four environments then describe the strategy. The idea plant: In this context the mature companies can control the complementary resources required to be commercialized. On the other hand, the protection of intellectual property rights is strong and the start - up companies can get their share from the market by recording its patents and selling its goods to the mature companies. Green competition: Consider the conditions that complementary resources are not critical to the incumbent firms for commercialization, and the diet of conservation of intellectual property rights is strong. The innovative companies have the idea that they can be well in the

commercialization of the commercialization. Business - based Idea Business: In this context, the complementary resources at the disposal of the incumbent firms for commercialization have critical importance and the problem of revealing trade secrets. It is obvious that in this environment, the budding company possesses no new idea and protects its commercial secrets; therefore the incumbent companies put imitation on the agenda. Aggresive advantage: Consider the condition that the protection regime of intellectual property rights is weak and the mature companies cannot control the complementary resources required for commercialization. In this context, incumbent and budding companies are at a level for commercialization. The leadership of the technology is fleeting, and the mature companies can choose to recognise opportunity and imitate and capture the share of budding companies. Accordingly, Gans and Stern describe the strategy of new and mature firms.

Gans and Stern framework can be considered as complementary to the framework developed by Teece (1986). They classified the environment with two factors of dominant design and the diet of intellectual property and expresses the strategies of innovators. The purpose of the contract is to deal with the idea or contract of partnership with the owner of complementary resources.

Christoansen Reader (2011) is introduced in it to develop an open conceptual framework of open innovation. Firstly, by explaining the gap between how firms can move toward an open innovation within their innovative framework, how to invest in this new framework of innovation and accelerate innovation, and to accelerate innovation by providing a powerful conceptual framework of this gap. He points out that although open innovation as a strategy depends on the interactions between the organization, there is little understanding and knowledge in firms over the management of the processes and activities of the company to explore these interactions. Processes and capabilities are explained in this conceptual framework for effective movement to external knowledge sources. According to Reader (2011) this conceptual framework will help to clarify how firm's capabilities can affect and subsequently invest in open innovation strategies.

At the beginning of this paper, with the description of the branches and the dynamic capability process, he tries to review and analyze the needs of companies to internal competences and processes, and then in the second phase, the conceptual framework is presented to the six cases.

Research Methodology

To solve the research question, design and explanation model for strategic planning of technological innovation in founding knowledge firms with the priority of oil industry, is a mixed method of research. In order to construct the theory, the case study method was developed and a few cases were used to test the theory. The research method is mixed with sequential exploration.

In the study of exploratory research, the researcher would seek to investigate the uncertain situation. For this purpose, we first gathered qualitative data. This stage describes him as an infinite description of the phenomenon of guidance. Using this early identification, the possibility of formulation of hypothesis on the occurrence of the phenomenon studied. Afterward, in the next step, the researcher can test the hypothesis through gathering data, so in this type of mixed inquiry designs, qualitative research is more important. In addition, in the sequencing sequence, qualitative data and then quantitative data were collected. Finally, the researcher is trying to compile a quantitative perspective on the basis of quantitative analysis of qualitative phenomena.

In the case of the necessity of using mixed research methodology, the researcher can examine the aspects of a phenomenon by using quantitative research methods. On the other hand, if the researcher intends to address the underlying aspects of a phenomenon and its understanding in the fields of human, social and behavioral sciences, the use of quantitative methods does not lead to tangible results. Therefore, in this case, qualitative methods can be used; but they use qualitative or qualitative research methods to better understand phenomena, but if it can perform quantitative and qualitative research on the phenomenon of interest, it is aimed at better understanding of phenomena; therefore, the aim of the research plans is to provide more evidence for better understanding of phenomena (Abbas, 2009).

Using the developed case method (Burawoy, 1988) is used as a guide to analyze the data. In this approach, some empirical data collected through case study is used for extension theory.

This study extends to the integration of concepts and theories using the case method, which is carried out with the aim of integration and incorporating existing bodies. By reviewing the literature related to their problem domain, researchers use empirical data to fill in gaps, reveal defects, and accurately describe the meaning and extension of its coverage area. The methodology approach extended through many cycles, including the coping of the data and the theory, is conducted in each iteration the analyst leads to more data and derives more concepts and theories. The case method is generalized from two running exchange. To analyze the data and analyze the data and analyze the data and analyze the data and data collection, as follows: reviewing the data analysis papers.

In this study, because of the nature of the research question, the strategic planning framework of a theory already exists, but there are relevant contextual frameworks in this field, the necessity of using this approach is justified in the development stage of the research theory.

In the next step, we use three methods of quantitative research - descriptive, survey, correlation and case study. If a scholar wants to examine a case of many aspects (large variables), he uses the case study method. The study can be restricted in terms of time and place. Therefore, it can be a single unit, or system with a specific border, consisting of many elements and factors associated with each other. The main purpose of each case study is to observe the dimensions studied under review. In a case study to understand the depth of a case, the researcher intends to examine the characteristics of the case, its environmental conditions, influencing factors and the overall aspect of any aspect that may make the case more apparent. In this study (Abbas, 2009), in this study, a process framework is developed to explain the phenomenon of strategic management of technological innovation in firm - based knowledge firms (i.e., explanation of the desired phenomenon from different angles), so only and only in case study method one can analyse the process pattern in a number of firms and provide far more practical offers to this set of firms in order to understand the phenomena of innovation. The research method of the case study is also qualitative in the way of qualitative research methods as well as in the way of quantitative research methods. If a scholar intends to study theoretical case study, his case study is among the methods of qualitative research, and if the researcher tries to analyze several cases only based on theory or framework, his case study is considered a quantitative research method in this study, the case study of the second type was considered. In the other hand, instead of study case study, instead of case study, case study method has found more applications that consider external validity problem somewhat better. Therefore, the study of multi - case study with the aim of testing and theoretical test is that in the research method, multi - case study has been used to analyze data from case analysis (within - case), analysis between case (cross - case)and analysis of theme (Theme - analysis). In general, the case study is based on three heuristics (with the purpose of building framework), descriptive and descriptive (with the purpose of testing framework). The type of case study of research is more descriptive in the second stage of the study because the strategic management framework has already been built in the first stage, and in this stage only a few items in terms of the built framework are evaluated and analyzed, and then based on the results of the analysis, some suggestions are presented to assist in each case.

In this research, library method has been used to study theoretical and scientific bases as well as the existing patterns of technological innovation of technological innovation. In the first phase, the field method is used to collect data required using tools such as semi - structured interviews, observation, audio and video and other means of motivation such as for design, framework explanation and questionnaire and interview tools. The second phase was used to test the framework of questionnaire and interview. The spatial domain of research is also limited to innovative, innovative, research and technology - driven companies with the issue of oil - related issues. The qualitative research community comprising managers and employees of the case studies (knowledge- based companies, managers of science parks and technology and ...), experts and policy makers in the country (vice vice president of science and technology and research center of the country), scholars and experts from the university and industry and for a quantitative part of managers and study studies. In this study, because of non - random sampling, a particular sample is not chosen and the important issue is in the number of theoretical saturation. According to the need to collect data from qualified people, sampling was carried out at each stage of the targeted

method of class. Using this method, the choice of people with a belief and belief has been averted and the result is more effective.

Considering that in this study the research methodology is used and the general identity of the research is mostly qualitative to quantitative, so the discussion of how to assess the quality of research in terms of validity and reliability in this study is different from quantitative (or even qualitative) research.

According to Rigg (2003), four main tests to examine the quality of a qualitative research design include acceptable and reliability, which have taken various measures to provide each of them in the research stages.

Findings

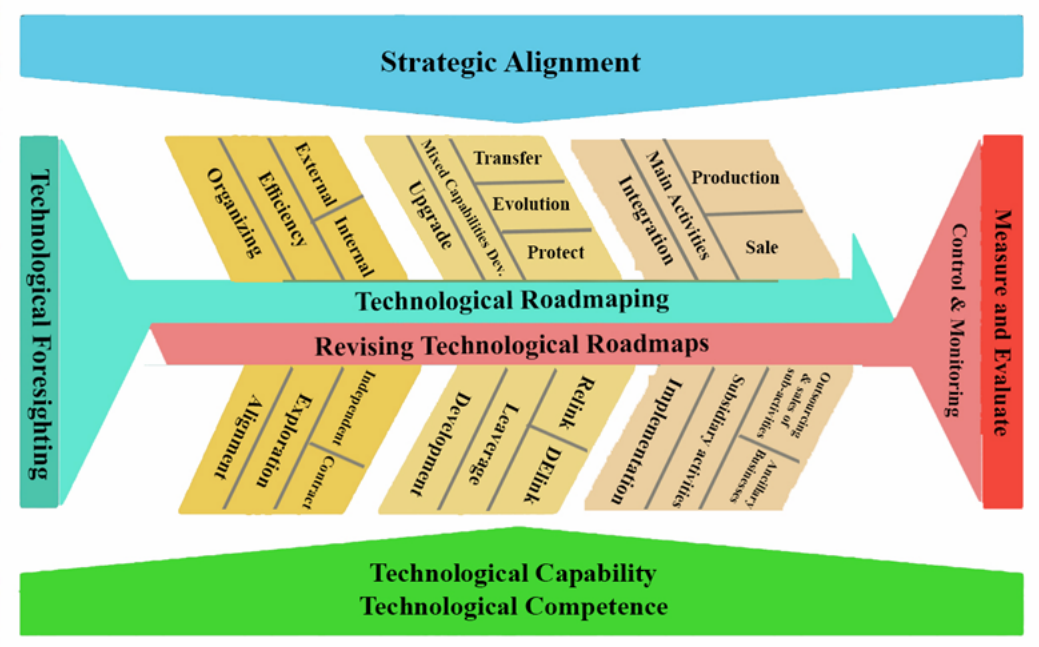
In the first section, based on the interpretation of 21 interviews conducted with managers and experts, the strategic planning framework of technological innovation is designed, then in the second part, explanation of the developed model is based on the status of 4 firm - based knowledge firm priority with the priority of oil industry.

The first source of data collection was interviews conducted with 21 managers and experts. The analysis of these interviews enabled the researcher to construct concepts that integrate them together to understand a deeper understanding of how to formulate the strategic planning framework of technological innovation. In order to explicitly clarify concepts, a key event approach was used to identify the content and create more opportunities to describe concepts. For this purpose, a number of questions were made during which the interviewees were asked to describe the content, categories, and / or relations between them in greater detail. These questions, contrary to the earlier open questions, emphasized a specific type of interviewee experience. The focus of interviews focused on those individuals perspectives on the strategic planning framework of technological innovation.

Main phenomenon - the strategic planning framework of technological innovation

The main objective of this study is the framework that outlines the relationships between the central and pivotal issues of the study. The categories are defined as the concept representing major research theme. Each category is supported using a number of subsets or attributes that define the category. In the form of technological innovation, the framework of strategic planning of technological innovation is a framework within the framework of future technological innovation, developing, revising and organizing the combination of technological trajectories, integrating and enhancing core and secondary activities, strategic alignment and strategic management. The original source contains the entire framework lead managers to use strategic planning of technological innovation in their enterprise. The presence of basic knowledge companies in environments with rapid technological change has led them to be known as dynamic framework.

Figure 1- framework of the main phenomenon of research



The strategic planning framework of technological innovation states:

- - Future predictions of technological innovation: According to this framework, managers of the founding knowledge firms first pay attention to the environment outside the organization and the system environment, and this is due to the outside of the organization's records and how it is formed and studied in the philosophy of its existence. At the same time, with the discovery and creation of the organization and searching in the environment, they are acting on the prediction of technological innovation than to forecast technological innovation. In this framework, after drawing and explaining the future of technological innovation, in some cases organizations and companies are determined to codify the mission, vision and values, and in more general terms of existential philosophy.
- - Developing, reviewing and updating the combination of technological trajectories: According to this framework, a combination of technological paths that are aimed at technological competencies constitutes the core of the core. Creation of a large view of business in knowledge firms is founded by preparing and developing a mixed roadmap. In these hybrid systems, the technological trajectories are the type of technological evolution that consists of competitive and pre-competitive research. Based on this framework, a roadmap of technological trajectories as central element in all components plays a key role and must be reviewed and developed at times, steps and developments and internal and external changes of the firm.
- - The alignment of exploration and exploitation activities: According to this framework, the foundation knowledge firms are as important as firms operating in the environment with rapid technological changes. The most important element of the amdixterity is the theme of exploration and exploitation that was proposed by March (1991). Accordingly, the functions of each of the exploration and exploitation sectors are as follows:

o Exploration: The search for the identification of current and future challenges and future industry and finding new technological opportunities resulting from exploitation business, as well as technological competitiveness to protect and support the exploitation business, constitutes the exploration part.

o Exploitation: implementing independent technology development projects for technological trajectories and the current and future challenges of industry and implementing contract research projects for research projects demanded by individual customers constitutes the

exploitation sector in the business.

Historically, exploration and exploring new knowledge create opportunities for developing new capabilities; however, it limits the scope of modification and refinement of existing capabilities and maximum utilization of their potential. Alternatively, excessive exploitation of existing capabilities can lead to a rigid (dogmatism) situation and the creation of a constraint on the discovery of new options with better potential. Therefore, March states that organizations need to act balanced on exploration and exploitation.

- Development and promotion activities of technological innovation: in interviews conducted with experts and experts and managers of knowledge firms, is one of the most essential components of this development model, the creation and exploitation of technological innovation capacities of firms. This innovation of technological innovation involves two distinct phases: separation and linkage. Penrose (1959: 25) says that resources are a collection of services that can be defined independently of their application, including considering innovation and technology in its own and apart from embedding in products, and re - integration means using that innovation and technology in new products to be devoted to new customers (2002) is identified and identified in the isolation of technological competence as separate and independent, and its alternatives are thought to be used. In link, new customers who can be identified with the competences identified in the isolation serve them in the isolation and are produced in the service of the resources related to supply and new products and services, while retaining its intellectual property. The separation involves separating the technology from the particular product that is embedded in it, and the recognition of this competence is independent. Separating the link between technology and product means that from the current product a step is gone and competencies (competencies) of embedded technological innovation can be identified. Hamel and Prahald (1994) argue that managers need to avoid looking at their company in order to take advantage of their merits and examine decency on which products are formed. According to Hamel and Prahald (1994) the definition of the core competencies, managers must try to assume the configuration of a particular product from the processes that are now embedded in it, and imagine how to apply this competence in the field of new products, whether commercialization of technology can occur through product development or intellectual property. In any path of commercialization, the technology function must be understood before the benefits of technology are related to different market applications. This is why it is necessary to determine the specifications of the conditional technology to obtain protection from the patent document, as it is essential to show the technology function in the area where the patent document is used.
- Implementation and deployment of core activities and technological innovations: In business - driven business innovation, the firm knowledge firm is exploiting an exploitation of core activities assigned to the implementation and deployment of technological trajectories designated in the technology mapping system; and on the other hand, business sub - activities include identification of technological spillovers, the identification of technologies and those technologies that together form a macro technology. In this section, these components are identified and optimally exploited, including, intellectual property, sales, and production of new products and ... exploitation.
- Strategic alignment: Due to the large dynamics of the internal environment and the outside business of the 21st century, particularly the areas of innovation technology, alignment at strategic levels between all the factors and components of the successful organization should be created, reviewed and monitored. Clarke made a model in 1994 which was based on Scott Morton's opinion in 1991 (Kazman, R and H.M). Chen, 2002). In this model, the five critical factors that affect the strategic objectives of the organization and affect alignment have been stated. These five factors include structure, management processes, individuals and roles, technology and strategy. The model shows that the relationship between technology and strategy is not straightforward or direct. Relationships may be affected by technology factors and the internal and external socio

- economic environment. In the study conducted in 2012 by the Pentateuch (2009), the choice of new business areas is consistent with the firm's capabilities (adoption of decisions and business strategy) consistent with the firm's technology strategy of important decisions that must be made by corporate corporate governance. Successful business is the integration of technology innovation with production, marketing, and human resources to meet the goals set by the company. In this study, the alignment between macro strategy and technological innovation strategies is frequently cited in the study of the selected firms.

- Strategic monitoring and supervision the strategic management of strategic management is the critical evaluation of the outcomes and results by which information is obtained for future behaviors and behaviors. In this step, we are assessed using an active information system, single - single components of the strategic innovation framework vis-a-vis expected uncertainties, and if strategies are not implemented with regard to the conditions of the internal and external environment, it will be reconsidered if there is no problem in execution. From pierce's point of view, strategic controls are faced with four approaches: control of hypotheses, in this approach, it is assumed that the number of interaction elements and interaction between entities in a firm's environment is assumed to be difficult to understand, so the plan of planning is associated with the given assumptions; when implementing strategy, management focus is only to ensure implementation of strategy as planned. In this approach, managerial insight is different from a process that relates to conventional managerial control. In other words, controlling for systematic and systematic handling is whether the hypotheses determined at the time of planning and implementation are still valid. The key hypotheses should be identified and recorded during their lifetime, ali ahmadi, ali raza. Hypothesis environmental factors sanctions, inflation, technology, interest rates, regulations, social change are examples of these factors. Industry factors: these factors affect the performance of firms related to the same industry. The process of identifying assumed strategic validity involves gathering and interpreting data and making appropriate responses. Data aggregation is done at all levels of the organization, as different individuals have access to different types of organizations, so it is needed to develop an intuitive perception of strategic public awareness. Interpretation of data in summary, the purpose of this type of control is to control the content and content of strategy rather than ensure strategy implementation as a starting point and check their validity and question whether the plan is still valid. The implementation of the execution step of the strategic management action stage in a set of criteria is the implementation plan, implementation plan, equity capital and the commitment acquired over a time period to implement strategy. In this approach, strategic control strategic control is the strategy implemented as planned? Stop. Is the results generated by strategy are the same results? This type of strategic control when conventional managerial control focuses on all platforms, the focus of strategic control will only be on key factors. Key success factors are a part of performance that must be directed to the constant care of management. Key success factors with focus on internal performance are : improving productivity, improving product / service quality, increasing market share, completing new facilities and ... (mujtaba, 2006) that the complexity of the environment and market a company at a point of time is difficult to simplify to understand and understand the problem. It should therefore be evaluated and monitored to determine whether the proposed application is still valid. In this case there is another important aspect, and it is that, even if the environmental and market conditions can be fully understood at the stage of the plan, these changes will change course in the course of the strategy implementation, and these changes will result in new threats and threats to create the existing program. This problem arises because the planning is a period of time, whereas the changing environment and the market is continuous. Strategic monitoring therefore involves identifying important changes in the environment and the market and responding to issues continuously in the course of strategy implementation. The list of

perspectives under consideration is large enough to cover all kinds of conversions. The work of examining the market conditions and the environment and the interpretation of collected data is carried out by the department of people specializing in large surveys and by two to three senior managers in the micro - assemblies. The answer to these data is based on the impact of the measured impact on these aspects and urgency. An answer can be postponed, the changed aspect of that response is considered as the input to the next step. If the required response is necessary, in implementing the strategy, in the form of adding a new project to the existing projects in the scheme, it is not possible. Adding new additions or removal of certain elements from the program as a response to changes in data recognition results in changes in content and content of the application. This approach of strategic control given the control of the hypotheses and execution control, strategic monitoring can be formulated to monitor a wide area of events inside and outside the company that threaten strategic development of the institute. Strategic supervision business transactions, business forums, negotiation and observations with premeditated intent were all strategic monitoring resources. Control of specific awareness requires deep and often rapid consideration of the foundation's fundamental strategy based on an accidental, unexpected event. This approach for strategic control involves the implementation of a complete strategy review in a period of time. The review aims at making changes to strategy commitment. The review dimensions are broad enough to include all the hypotheses of the planning and all the surrounding environment. Such reviews are due to the broad dimensions of the process, once in one or more years. Since some changes in the environment and markets are very important, such as the oil crisis, many changes are of little importance and may have little impact on the firm's strategy. However, these small effects may have a significant effect on strategy. Strategy review is a fundamental role in identifying and assessing the cumulative effects of such changes, which may otherwise be overlooked and not understood.

- Technological innovation capabilities are the most serious step in the process of technological innovation. For a significant part of the factors contributing to the success or failure of the company, they are taking place at this stage. From the main requirements of the implementation phase, the existence of appropriate infrastructure for business management is from different sides and sides. It is therefore essential to identify the enabling resources generated by a combination of assets and processes. If we want to express the developed model and its rationale in the language of dynamic capabilities literature, build resources into complex capabilities and capabilities capabilities to dynamic capabilities and capabilities capabilities to dynamic capabilities and technological capabilities to competitive capabilities and competitiveness capabilities in competitive and innovative support of related industries. After determining the technological competencies required and technological solutions to achieve them, one must examine the methodology of achieving each of those technological solutions. Methods of achieving any technological solution constitute a spectral technological solution by which the transfer of external technology and the others are endogenous. In the middle of this range, different partnerships and technological cooperation are proposed to achieve technology, including short - term and long - term strategic alliances and joint venture alliances.

Model verification: according to the research method of this research, a case study method has been developed, the researcher has used a multi-case study designed model. The questionnaire consists of 14 questions and consists of two parts. Part of the questionnaire s questions has been devoted to receiving the viewpoints of experts (12 people) from the relationship between the model elements and the components defined for the model elements. In the other part, regarding the formulation of the new framework, questions have been raised to confirm the validity and validity of a suitable and desirable pattern, and the viewpoints of experts are presented in this regard.

Nearly 20 % of experts have approved the design pattern of having the elements necessary for developing an organizational mission with the nature of knowledge companies, as well as too many.

Interestingly, the percentage of experts has greatly and greatly approved the design framework for structural duality in the nature of knowledge companies. Nearly 90 percent of experts approved the framework designed to map up on technological trajectories and its appropriateness with the nature of the knowledge organization as a high and very large. Over 100 % of the experts have been highly respected and highly developed, including the ability of technological innovation and its appropriateness with resources and capabilities required for knowledge companies. Nearly 20 percent of experts have approved the design framework from the perspective of the definition defined for the strategic planning of technological innovation with the characteristics of these companies, high and very high. 75 per cent of experts have greatly and very much approved the designed framework for accelerated technological change in the environment due to the usefulness of the organization as well as strategic control and rethinking the mapping of technological trajectories. The presented information suggests that all experts have approved a large amount and a lot of the frame designed to meet the necessary elements. The results show that higher than 90 percent of experts have been highly respected and highly approved, from the perspective of integrity or internal homogeneity Above 95 % of the experts have been highly respected and highly developed within the framework. About 65 percent of experts have approved the design framework from a more flexible aspect of change in the environment. The results indicate that about 78 per cent of experts have greatly and greatly approved the design framework from terms of uniqueness and differentiation and innovation. Also, above 34 percent of the experts, highly and very large, have approved the designed framework from the perspective having stability while being dynamic. The results indicate that above 95 percent of the experts have been highly respected and highly approved of the design framework from the desired perspective and naming convention.

Explanation of the developed model based on the results of multiple case study - framework test in 4 knowledge firms. As discussed in the research method section, after drawing the detailed framework, it is necessary to design a tool that can assess the organizations studied based on this model. Accordingly, the proposed model is designed based on the proposed model in this research.

Accordingly, the status of each of the model elements in the studied organizations was investigated. Based on this comparison, the strategic planning state of technological innovation with developed framework was evaluated and a large image was achieved from how to strategically plan technological innovation in these firms.

After summing up, the researcher could show how the strategic planning of technological innovation in these organizations is concerned. From the site appraisal, a complete list of strategic recommendations for improvement was defined. The data - case analysis enables a comparative analysis of the behavior of the elements and the framework of the framework in relation to data companies ' data, which can determine the effectiveness of each pillar on model behavior. Accordingly, the analysis of common and different dimensions in the study of the case study suggests that the mapping of technological trajectories within the framework of independent research is the most effective pillar and core of this framework. Technological innovation is also an effective pillar.

The four studied firms have joint challenges in the field of technological innovation planning. These organizations can be viewed as a set of impediments, including an incomplete understanding of the organization's ontological philosophy and the notion of strategic planning, lack of strategy for resolving the conflict between exploration and exploitation, lack of adequate attention to sub - activities and exploitation of them, in these companies and the failure of their strategic plans.

Discussion

In this study, research was established based on De wit model (De wit & Meyer, 2004). Next, the nature of the process and content of the strategic planning of technological innovation was investigated. Based on the opinions of senior managers in the knowledge firm, the foundation of the field of petroleum industry was portrayed using the research methodology with the strategic planning framework of technological innovation. One of the most important improvements that this study developed on the path of promotion of strategic planning knowledge innovation has been the transformation of the double strategic planning framework into a implemented and implemented model, and more importantly, involving several innovations in the field of literature. The achievement of this study is the development of an interactive between exploration and

exploitation sectors in knowledge, particularly based on the configuration of organizations. After explaining in the context of four four companies, the foundation of the field of petroleum industry was studied and some evidence supporting it was found in the four companies studied. While the sample was too small to empirically test the model, it allowed the interpretation to improve on a higher level. The resulting analysis of the second part of the study provides a deeper understanding of the model and its elements and this profound understanding is an insight for the potential for actions that must be developed in the context of context efficiency. The designed model has found a questionnaire survey of experts in the survey area and its content validity. However, in order to obtain the applied validity, such a model should be tested on the practical stage.

The comparison of the developed model with literature shows that this framework is the backbone of a strategic planning framework involving strategic planning, deployment and implementation and strategic control. This research has encountered some limitations on the way to doing this. The research method used for the development of the model has been qualitative, and its results for generalization and development require testing in other fields and more numerous. The combination of two design objectives and the evaluation of the proposed model by relying on the same few items may become somewhat more and more vulnerable to the non-expediency and non-bias.

This research suggests various research directions for the future. Showing the usefulness of the developed framework and its elements in other industries as well as exploring the factors affecting this framework can be suitable in other industries and organizational fields.

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