Applying BSC in Order to Development and Export of Engineering and Technical Services in Iranian Oil and Gas Industry

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Abstract: Years ago, the world underwent a shift in wealth, but now something is happening and we are facing this change, in the nature of wealth. Today all the categories of wealth tend to be knowledge based. WTO statistics show, the global economy focuses on knowledge-based products and a country like Iran with 100 years of experience in the oil and gas industry can achieve advantages through exporting engineering and technical services. But it is not always so smooth; lethargy in the Iranian oil and gas industry shows that knowledge is not solely enough and extremely needs special strategies for development. We think the theory of BSC is able to achieve it and improve many weaknesses such as structural false on the way of developing the technical and engineering services. This paper discusses the ways through BSC that enable Iranian oil and gas knowledge to achieve its goals via developing technical and engineering exports and financial advances.
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1. Introduction

More than a hundred years ago, the first traces of the world's huge hydrocarbon reservoirs emerged by the exploration of the oil fields. At those times, an approximation of the volume of these reserves hardly occurred to one's mind. But in the meantime, the countries dreaming about the conquest of the future, devised their development strategy.

Today, few countries possess the advanced technologies of exploration, extraction and processing of oil. Among them, there are countries deprived of this natural wealth, which their past wisdom in devising a development strategy has led the countries with oil to depend on them today. Among the countries possessing the advanced petroleum technologies, there are countries that possess oil resources as well. These countries have paid special attention to development of their petroleum industry, in order to gain independence in the manner and extent of using these resources. Although nowadays the Iranian petroleum industry has reached a certain degree of credibility that can organize the national projects and be relied upon; it seems possible to reach to a more secure position in technical and engineering services, extend it overseas, and access to new oil markets, putting more wisdom into action. By doing so, we can be accountable for the needs of our projects, and along with the world's big oil companies earn income out of this capability as country owning the technology.

Undoubtedly, if the development strategy of the oil industry is based on extension and export of services and technologies of the oil industry, we can expect to witness the flourishing of the private sector in this area, and also gradually substitute the incomes earned from these activities for the oil revenues in the national budget. But we will be successful in achieving this vision, only when in addition to understanding the very serious weaknesses in the Iranian oil system and ability to implement rational strategies in order to improve this system, we try to pull it out of lethargy and structural instability. In this regard, knowing the strategies whose implementation has made considerable achievements is of vital importance. The Balanced Scorecard (BSC) is among these approaches. The present study tries to shed light on how the BSC model (based on its potentials) has the ability to help the Iranian oil system to address and solve many intractable problems that make it impossible to achieve the strategic objectives.

2- Strategies for development of technical and engineering services in Iranian oil system with the BSC approach

The development of technical and engineering services has always been considered as a requirement for the development of the Iranian oil industry. Mentioning the position of the development of technical and engineering services and stating it in Iran's 1404 vision statement, indicates the importance and the place of this issue. But until today, Iranian oil

industry despite many efforts has not had much success at creating a competitive advantage in the field of technical and engineering services, neither in domestic nor the international arena. Capturing global markets by other companies solely confirms this fact.

There are several problems that have finally led to impedance in the realization of many strategies, lack of an appropriate value chain, and the loss of considerable wealth in Iranian Oil industry. The main reasons that have caused these problems in the development of oil industry in sectors such as technical and engineering services can be categorized as follows:

1- Existence of very fragile structures,
2- Structural dispersion, and the lack of integration in achieving the strategic objectives,
3- Lack of a systematic, rational, and strategy-based approach,
4- Weaknesses in management and leadership;

By 1996, we have witnessed the configuration of Iranian oil industry, but during the period 1997 through 2005, the company building approach ruled the Iranian oil industry. This approach was based on decentralization and separation of all sectors, in such a way that all administrations and activities transform to separate firms in order to reduce the pressure on the oil industry. As a reason, today we have a huge mass of companies which are defined as the subsidiaries of the oil industry. In many cases, this mass of companies have confronted the management with many problems, to extent that sometimes it has been necessary to call for the help of international counselors to reform the structure (Journal of Energy Economics, Vol. 144, p. 143).
Iranian oil industry has experienced both the restrictive policy and expansionary policy in two vital periods. Both approaches have similar weaknesses. These weaknesses have root in the 4 mentioned categories: weaknesses that have finally impeded the achieving of objectives and caused problems in the creation of added value in the oil industry. These weaknesses can be summarized as follows:

1. Administrative institutions are designed to complete a mission and achieve a series of objectives, and their changes basically a function of the changes in these objectives. Change in mission can be a consequence of changes in the external environment, and changes in the market, changes in the business space, changes in the future vision, or changes in the organizational strategy, all of which are usually considered in strategic studies. But almost none the organizational changes have been based on the strategic studies, in such a way that we witness dispersion in the macro-structural system of the industry.
2. Productivity is another very important issue, which indeed has been the missing link in these changes. The productivity status of these units, before and after transformation into companies, is very important and needs to be studied. In the overwhelming majority of cases, the number of staff has increased; the number of buildings has increased, and managers have a higher degree of freedom to spend allocate funds; but there is no tangible difference in the products' indicators of quality and quantity. This dilemma is among the most important problems of national development. Thus, it is extremely necessary to measure the productivity level of activities, especially before and after any structural change by defining some specific indicators. Any kind of structural change that would not finally be reflected in the improvement of efficiency and productivity indicators will be seriously questioned.
3. Failure to establish rational frameworks and infra-structures in order to develop this system outside the national boundaries
4. In many parts of the oil industry, specific specialized fields have been and are facing a severe shortage of human resources. The existing structural dispersions, in a sense debilitate the synergy among these limited resources and intensify the specialization poverty.
5. Some kind of a hardware-based vision has been dominant in the structural changes performed in the oil industry, meaning that the prevailing thought was based on the notion that the structures themselves can solve their problems. As a reason, issues such as training the managers, changing the financial structures, establishing the logic of economic assessment in performing the projects and plans, determining the productivity indicators, and many other arrangements that could have provided the preliminary context for the organizational software-based independence towards a higher level of efficiency, are neglected.
6. Along with the structural changes, it has been essential to consider the interactions among different sectors and companies. Unfortunately, it has not been done in most cases, and the complexity of these interactions has made it very difficult to organize and manage the huge oil industry.

With such problems in the petroleum system, it seems useless to discuss the change in the field of technical and engineering services; because every change program requires the consistency of its components. This process is well described in the Burke-Litwin model illustrated in figure (1).

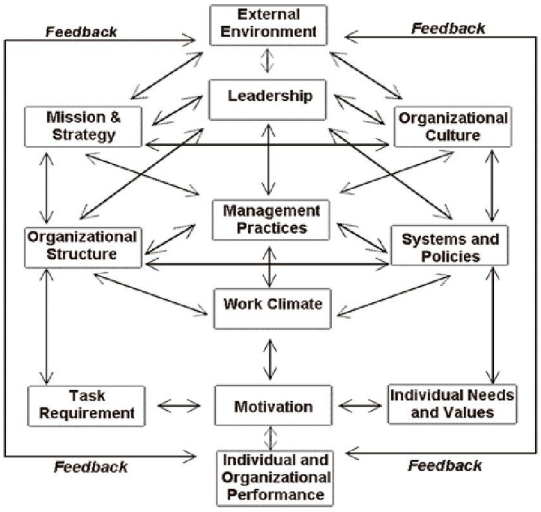

Figure (1) - Burke-Litwin model (Source: Burke and Litwin, 1992)

The Burke-Litwin model encompasses 12 items. The prerequisite of each change program is the consistency of these components. Moreover, the 3 items of Leadership, Mission & Strategy, and Organizational Culture have the highest impact on change effectiveness (Burke and Litwin, 1992); whilst the main challenges in Iranian oil enterprises are these 3 components (Iran's Vision, Feb. 2012). Also according to the mentioned 6 weak points, one can observe the lack of a rational consistency in other items of the Burke-Litwin model. Indeed, failure to understand the vital connection between the mentioned components and indecision in devising rational and comprehensive plans in the Iranian oil industry, has led the development strategies such as technical and engineering services into a deadlock. In the absence of these plans, other negative consequences such as major system gaps, loss of the long-term and short-term objectives within the structural chaos of the system, and neglecting the value chain will be considered as natural in this type of oil industry.

In this regard, the authors of the present paper believe the BSC theory (based on its particular rules) has the capability to provide the structural consistency towards the realization of the set goals, and address the 4 mentioned main reasons – failure to understand and resolve which has led to successive weaknesses in this industry. Accordingly for a better understanding, first we define the BSC approach. However, although this theory alone is not enough and it would be better to localize it on the basis of the prevailing conditions, introduction can be considered very critical as the first step.

3- BSC Approach

A study conducted in 1982 whose findings were published in the Fortune magazine, suggested that only 10 percent of well-formulated strategies are practically well-implemented. In other words, 90 percent of strategies are practically failed. In many organizations of this type, the employees hear the statements of strategy, vision, and mission; but cannot understand their meanings. So how can they do their jobs differently or superiorly, and help the organization in achieving the new strategy? Under such circumstances, the managers were seeking to find a powerful means to help them achieve their strategies. Then the balanced scorecard was introduced as a powerful tool in this area (Kaplan and Norton, 2007). After evolution, this tool worked beyond an ordinary means of assessment, and provided a framework for the implementation of macro-organizational goals and strategies (Kaplan and Norton, 2005). Almost one decade after the introduction of the balanced assessment approach (in 1990), over 50 percent of the Fortune 1000 Companies had used the BSC. The method was so frequently used that Harvard Business Review (HBR) magazine ranked it among the top 75 ideas that have had the greatest impact on the 20th century. Indeed, the balanced scorecard is considered as a secondary tool in the planning process, which has the capability to present many measures towards achieving the strategic objectives (Kaplan and Norton, 2005).
The balanced scorecard includes 4 aspects (perspectives), as:

a. Financial perspective
b. Customer and Market perspective
c. Operational (Internal Business Processes) perspective
d. Learning and Growth perspective

Each of these criteria has its own strategic objectives, measures, and specific activities, which together form the basis and the framework of the balanced scorecard. Figure (2) indicates the balanced scorecard model.

The balanced scorecard method was first introduced by Robert Kaplan, renowned professor at Harvard University and David Norton, a prominent management consultant in the United States as a modern performance measurement tool, and then it became a tool to help implement the strategies correctly, or in other words a performance management tool.

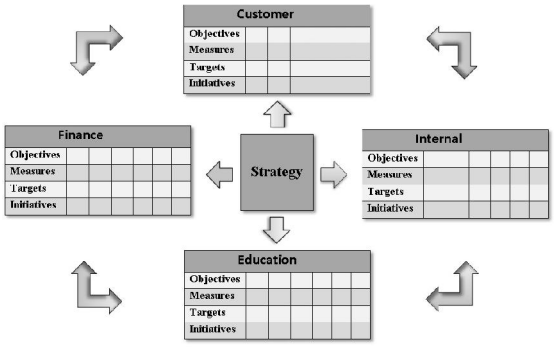

Figure (2) - The balanced scorecard model, the four perspectives of BSC (Kaplan & Norton, 1996a)

Then it was extremely well received by the management experts and organizational executives. Although not more than a decade has passed since the invention of this managerial method, many of the world's largest organizations and institutions have implemented it. The results of the studies conducted in the field show that a high percentage of the managers that have implemented the balanced scorecard method in their respective organizations, have been met with great success (Kaplan and Norton, 2007). A new estimation suggests that over 50 percent of the Fortune 1000 companies have chosen the balanced scorecard as their performance management method.

After passing through three generations of balanced scorecards, we finally arrive at a comprehensive management system that is considered a very efficient method in implementation of strategies. This model includes 6 stages: strategy development, strategic planning, organizational alignment, operational planning, monitoring and learning, and finally testing and adaptation. The following gives a brief description of each stage:

Stage 1: Strategy development using the different approaches of Michael Porter's original competitive advantage framework, resource-based perspective, core competence, value-based management, the Blue Ocean approach, Emergent Strategy, co-creation of value with the customers, and disruptive innovation.

Stage 2: Translating and planning the strategies using tools such as the strategy maps or the balanced scorecard.

Stage 3: Extension of the strategy maps and balanced scorecard to all organizational units, aligning employees with strategy through a formal process, and linking the employees' personal objectives and the payment systems with the strategic objectives.

Stage 4: Operational planning using the tools such as quality and process management, reengineering, process dashboards, rolling forecasts, activity-based costing, resource capacity planning, and dynamic budgeting.

Stage 5: Monitoring of issues, barriers, challenges, and performance results; and strategy improvement on the basis of new information and learning.

Stage 6: Reviewing internal operational data and external data on competitors and the business environment for testing and adapting the strategy, and starting another loop around the integrated system of strategic planning and operational execution.

Indeed, the first 3 stages are the highway of the organizations' life and survival through heavy turbulences of business. During these 3 stages, the Structural discipline takes form on the basis of the set strategies. The last 3 stages emphasize on the implementation discipline in line with the strategic objectives.

Although many of the components presented in BSC model can be found in other approaches, what distinguishes this approach from other similar approaches, is its four key initiatives including the strategy map, determining the measures, determining the strategic budgets, and creation of commitment to achieve the developed strategic plans which is the vital condition for this approach. Indeed, these four features of the BSC approach have the ability to solve many problems and help achieve the strategic objectives in companies that are very diverse in terms of goals, such as the Iranian Oil Company. Every structure consists of a huge number of activities and processes, which can be called the structural networks. These networks even in a very well-organized and logical arrangement- quickly tend towards senility and lack of true self-insight. Considerable waste of resources, indirection, and deviation from the strategic plans, are the common illnesses of these structures. This is the reason they are sometimes called the fragile structures. In a sense, it is the existence of these shortcomings that highlights the importance of the role of measures, strategic maps, strategic budgets, and commitment in the BSC model. Within the strategy map, all processes are prioritized on the basis of the defined strategies, and then the intra-organizational paths are determined based on these priorities. In the presence of the measures, progresses and regresses can be displayed with a much higher resolution; and with the support of strategic budgets, the reasons that can take the form of excuses to stop moving toward strategic goals, are diminished. Finally, the executive tactics for strategy translation, introducing the strategic orientation, and clarification of the strategy path, lead to create a kind of practical commitment in implementing the organizational strategies.

Since as mentioned before, the three major weak points of this area have root in structural indiscipline or the lack of structural integration, recognition and implementation of these rules is very necessary to draw the oil system and its subsidiaries out of inertia and lethargy. Non-development and indecision in implementation of strategies (such as development of technical and engineering services in oil and gas industry) has root in structural dispersion, fragility of structures, non-prioritization of preferences, and lack of commitment to implement them. The BSC theory would be successful to a very large extent in bridging these gaps.

The balanced scorecard enables the firms to integrate the management procedures and focus on the organization as a whole for implementing the long-term strategies. In the absence of the balanced scorecard, firms are often unable to achieve the acceptable level of integrity in terms of vision and performance, when changing the direction and introducing the new strategies and procedures. The balanced scorecard provides a framework for the management of strategy implementation, and meanwhile gives the strategy a context to evolve in response to changes in competitive environments, markets, and technology. The survey conducted by the Cranfield University indicates that 46 percent of organizations implement a formal process for performance management, 25 percent administer the main performance management system on the basis of a total quality management program, and 75 percent use a performance management system based on the balances scorecard (Kaplan and Norton, 2008).
Headquartered in Norway, StatoilHydro, Oil and Gas Company started its success in the mid-1990s by using the balanced scorecard. StatoilHydro is now among the world's largest companies in terms of market capital (Makhijani and Creelman, 2005). Turkish Petroleum Corporation (TPAO) started using the balanced scorecard system in 2007 and believes that "By implementation of the Balanced Scorecard, the company has aimed to transform its strategies into well-comprehensible business objectives that will enable to monitor the results of related actions at all levels; in other words, assuring the vision to become widespread at the employee base, directing all efforts towards the same strategic route and enabling regular monitoring of the corporate performance and devising action plans for further improvement.". "ExxonMobil is the world's largest company by revenue, at $404.5 billion for the fiscal year of 2007 and also the largest corporation by market capitalization, at $517.92 billion on July 20, 2007. When Bob McCool became the head of Mobil NAM&R in 1992, he made it clear that the performance of the past was not acceptable. Mobil, in the past, had attempted to sell a full range of products and services to all consumers, while still matching the low prices of nearby discount stations. But this unfocused strategy had failed, leading to poor financial performance in the early '90s. This led Mobil to adopt the Balanced Scorecard. The result of implementing the strategy map was that Mobil increased its operating cash flow by more than $1 billion per year and became the industry's profit leader. The division (NAM&R) increased its return on capital employed from 6% to 16%. Sales growth exceeded the industry average by more than 2% annually and cash expenses decreased by 20%. Dealer quality increased each year, the number of consumers using Speed pass grew by one million annually, safety accidents plunged between 60% and 80% and lost oil - refinery yields due to systems downtime dropped by 70%. Employee awareness and commitment to the strategy more than quadrupled."(www.Newsday.com).
TRE-FOR is a reputable company located in Denmark with over 400 employees that supplies energy and provides the related services. This company believes that its project have been executed much more successfully after implementing the QPR Scorecard. Also, Kazakh Company KazMunayTeniz has announced its satisfaction with implementing the QPR Scorecard system, and believes that it has raised the rate of strategy implementation in this company. "When Norway's Statoil launched its business support unit, Global Business Services (GBS), in 2001, it quickly created and implemented a cascade of balanced scorecards for three levels:
1. GBS
2. Functional shared services lines (such as finance)
3. Departmental levels

Scorecards at each level contain five perspectives shared throughout the enterprise. Led by Rune Skjæveland, vice president of strategy, finance and control, GBS is working toward becoming a world-class provider of business services by 2010. To that end, the company an example of a generic balanced scorecard strategy map is shown in Figure (3). The scorecard system is typically collocated according to four performance perspectives:
• Financial: To succeed financially, how should we appear to our shareholders?
• Customer: To achieve our vision, how should we appear to our customers?
• Internal process: To satisfy our shareholders and customers, at what business processes must we excel?
• Learning and growth: To achieve our vision, how will we sustain our ability to change and improve?
Integrated oil and gas provider Statoil put its first scorecard in place in the mid-1990s and has successfully used it at multiple organizational levels

ever since. Indeed, the organization now has more than 700 active scorecards enterprise-wide from corporate down to departmental and team levels. For most employees, incentive compensation is also tied to performance based on the scorecard". (The Hackett Group, 2007).

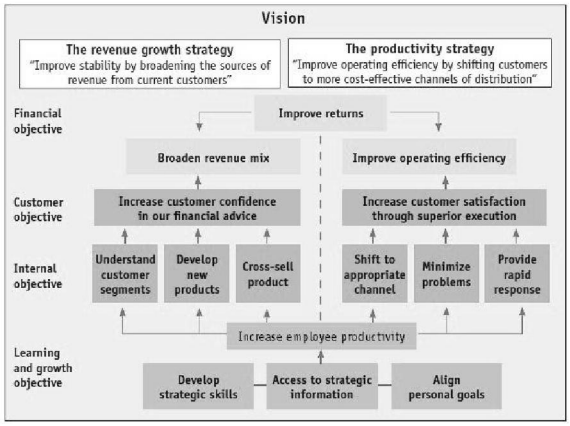

Figure (3) - An example of a balanced scorecard strategy map illustrating themes and strategic objectives (The Hackett Group, 2007)

Located in Indonesia, the oil and gas company CNOOC SES Ltd, which is one of the subsidiaries of China National Offshore Oil Corporation (CNOOC), believes that the key factor of success is having an appropriate tool to link with the strategy map, a tool that would help people collaborate to achieve the defined results. The company uses QRP Scorecard for this purpose.

Discussion

From a strategic point of view, petroleum industry development has been built upon three main pillars: financial resources, human capitals, and technology (Satsa Magazine, No. 62). Indeed, each of these three main pillars is considered a source of capability for gaining capital and creating added value. Survival and development of oil industry and its subsidiaries depend on understanding these three pillars, and devising a rational link and creating an appropriate value chain among them; and this will not happen unless through a set of formulated programs; programs that would provide ways to escape from the four challenges mentioned in the previous lines. By doing so the development of technical and engineering services as one of the three pillars of development will have the potential to enter the path to growth and prosperity. The present study revealed how the BSC model based on its four specific capacities (i.e. measures, strategic maps, strategic budgets, and finally commitment) has the capability to restore the common challenges, and provide a structural integrity in the paths of strategies and commitment in implementing them. Today in Iran, a considerable number of prominent companies have initiated to introduce the basic concepts of the BSC and its underlying power to their employees, facilitators, and corresponding managers. However, the authors hope to witness that in the near future, the majority of strategy-based Iranian companies believe that the existence of proper tools to efficiently implement the strategies, will help them achieve their long-term objectives.

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