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Strategic Selection and Empowerment of Supplier Portfolios Case: Oil and Gas Industries in Iran

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Abstract

Supplier selection and empowerment can become a competitive advantage in portfolio of projects. The general industry trends have focused recently more on consolidation and streamlining the supply base as part of overall supply chain rationalization to weed out suppliers that do not meet company needs. The strategic process of supplier management is replacing the function of purchasing. The proposed model here takes from company's strategy incorporating top level policies and requirements. This paper aims to develop a fundamental framework for Supplier Portfolio management, including supplier selection and empowerment, based on the company's corporate and procurement strategies, to combine similar requirements from various projects into attractive package of business for suppliers who are then selected not only based on their price and quality but also by strategic partnership initiatives and long-term development outlooks. In this model, outsourced items are grouped into two distinct 80-20% Pareto sets. The first set, 80% of non-critical items, with 20% price, may still be purchase with simple or traditional methods. The second set, 20% of is chosen within Supplier Portfolio methodologies looking at corporate, business, and procurement strategic elements. The model is applied to project-based Oil and Gas industries in Iran, where numerous development and expansion projects are underway using local and international suppliers for Goods, Works, and Services. Strategic Selection of supplier portfolio has saved cost and risk in overall procurement, and increased effectiveness and quality of supplies. The model may be generalized to other industries worldwide, where project procurement is on-going business for a large set of projects with common requirements.

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1. Introduction

In the past two decades, an exploding trend in frequency and percentage of outsourcing has occurred in various industrial and construction projects. Particularly, for Oil and Gas related projects, a diverse group of suppliers and consultants are often selected to provide a range of products and services. Various guidelines have been developed and used internally and publicly, notably the World Bank Guidelines for Suppliers and Consultant Selection, to help both sides in the bidding and proposal activities.

As companies outsource many of their project activities, or even the entire projects, and buy more of the services and materials from outside specialists and suppliers, the way to select and manage the supply of products and services to their projects becomes increasingly important (Polychronakis *et al.*, 2007). Historically, projects managers have been internally focused. However now, they have to look beyond an internal view if they want to manage their projects efficiently, effectively and competitively.

Only in recent years and in some industries, efforts are underway to combine requirements of multiple projects and to single source certain key items in order to benefit from economies of scale and long-term relationships. The unique nature of projects has caused sporadic requirements from suppliers with varying times and priority levels. Best practice has shown that a firm should focus on empowering the suppliers for better quality and responsiveness, while demands are leveled for continuing flow of supply.

Procurement has long operated as a standalone function. The relevant activities traditionally confined to receiving materials requests from users and translating these into purchase orders or other contractual relationships with suppliers (Cavinato, 1992). However, the strategic process of supplier management is replacing the function of purchasing (Cousins, 2002) involving a smaller numbers of highly qualified buyers, decentralized control of non-value adding items and greater planning activity horizons.

The general industry trends have focused recently more on consolidation and streamlining the supply base as part of overall supply chain rationalization to weed out suppliers that do not meet company needs. Confirming this movement (Adobor & McMullen, 2007), it is observed that large firms are streamlining their operations by seeking larger first-tier suppliers that can deliver high volumes. But, some efforts may be justified for leveraging supplier diversity for corporate performance, by using local or small suppliers.

Sourcing may be done on a short-term basis as an operational activity for a project. However, sourcing should also be considered as a critical element of procurement strategy, which can provide projects and companies with a competitive edge. A supplier, therefore, should be selected based on both long-term and short-term potentials. The company gains further bargaining power, in terms of time, price and quality, when combining the requirements of several projects within a given period for a set of qualified suppliers.

Oil and Gas industries in Iran, in particular, provide an excellent case study for this situation. A large number of projects have been underway within Iran's Petroleum industry within the past two decades, with hundreds of domestic and international suppliers working to provide goods and services in each project. However, each project is considered and planned individually, and requirements are determined and ordered without strategic factors. Using our model can yield tremendous benefits all stakeholders.

The proposed model takes from company's strategy incorporating top level policies and requirements. It divides items into two groups, with a procurement model for each. Regular items are procured based on cost, while critical items are obtained from suppliers who conform to company's strategic requirements, considering a portfolio of similar projects. The model is applied to Iran's Oil and Gas industries, in particular. However, the concepts here may be generalized to projects in other industries worldwide.

2. Background

The classic paper by Peter Kraljic (1983) proposed that purchasing must become supply management, to ensure long-term availability of critical materials and components at competitive cost coming for the

risks and complexity of global sourcing. His concepts were for operations, where products are produced continually. He then classified purchasing materials requirements into 4 types: strategic items, bottleneck items, leverage items, and non-critical items, with corresponding procurement policy for each type.

Figure 1 present the basic concept in Kraljic’s model. A company’s need for a supply strategy depends on two factors: (1) the strategic importance of purchasing in terms of the value added by product line, the percentage of raw materials in total costs and their impact on profitability, and so on; And (2) the complexity of the supply market gauged by supply scarcity, pace of technology and/or materials substitution, entry barriers, logistics cost or complexity, and monopoly or oligopoly condition.

↑ High Importance of Purchasing ↓ Low	<p>II Materials Management</p> <p><i>Procurement focus</i> Leverage items (e.g., electronic motors, heating oils, hardware)</p> <p><i>Time Horizon</i> Varied, typically 12 to 14 months</p> <p><i>Items Purchased</i> Mix of commodities specified materials</p> <p><i>Key Performance Criteria</i> Cost/price and materials management</p> <p><i>Typical sources</i> Multiple supplier, Chiefly local</p> <p><i>Supplies</i> Abundant</p> <p><i>Decision Authority</i> decentralized</p>	<p>IV Supply Management</p> <p><i>Procurement focus</i> Strategic items (e.g., scarce metal, high value components)</p> <p><i>Time Horizon</i> Up to 10 years, by strategic impact</p> <p><i>Items Purchased</i> Scarce and/or high value materials</p> <p><i>Key Performance Criteria</i> Long-term availability</p> <p><i>Typical sources</i> Established global suppliers</p> <p><i>Supplies</i> Natural scarcity</p> <p><i>Decision Authority</i> centralized</p>
	<p>I Purchasing Management</p> <p><i>Procurement focus</i> Noncritical items (e.g., steel, rods, coal, office supplies)</p> <p><i>Time Horizon</i> Limited, normally 12 months or less</p> <p><i>Items Purchased</i> Commodities, some specified materials</p> <p><i>Key Performance Criteria</i> Functional efficiency</p> <p><i>Typical sources</i> Established local suppliers</p> <p><i>Supplies</i> Abundant</p> <p><i>Decision Authority</i> decentralized</p>	<p>II Sourcing Management</p> <p><i>Procurement focus</i> Leverage items (e.g., electronic parts, outside services)</p> <p><i>Time Horizon</i> Variable, depending on availability vs. short-term flexibility</p> <p><i>Key Performance Criteria</i> Cost management & reliable short-term source</p> <p><i>Items Purchased</i> Specified materials</p> <p><i>Typical sources</i> Global new suppliers with new technology</p> <p><i>Supplies</i> Production scarcity</p> <p><i>Decision Authority</i> decentralized</p>
← Low Complexity of Supply Market High →		

Fig. 1. Stages of Purchasing Procurement (Source: Kraljic, 1983)

The fundamental philosophy and purpose of Supply Chain Management in operations management is to provide value to the customers. Concepts and models are developed as the main derive for aligning the customers, the providers, and the suppliers, while increasing the competitive position of the company (Stedler & Kilger, 2002; Morgan, 1997). A proper procurement process in project-based organizations similarly can help their cash-flow and ultimately their profitability (Kerzner, 2003; Green, 2006).

The traditional view towards purchasing has been changed, in project management too, tremendously. New roles and challenges have been put upon purchasing/procurement as a producer of value, integrator of organization activities, and promoter of organizational core competencies. Procurement or outsourcing is also a key factor in strategy implementation and in corporate entrepreneurship (Soellner & Mackrodt, 2000). Procurement has become a strategic weapon for the organization in the new millennium.

Due to energy and financial shortages, rapid price increases for raw materials and components, and fierce competitive pressures, companies are looking for ways to decrease expenses and to transfer higher value propositions in projects to the customers. Therefore, procurement function is now a key component of corporate planning and control cycle (Leenders, 2002). In this regards, developing, improving and managing supplier relationships has become a key factor in managing the project-based corporation.

Managing supplier relationships, from an organization's point, is categorized in 3 levels (Yeo, 20020):

1. Individual and isolated relationships for dealing with certain functions. The objective may be time or cost reduction, quality improvement, variance reduction, and safeguarding.
2. Portfolio relationships between the company's suppliers themselves. In this cross-effect type, relation with one supplier would affect the other suppliers.
3. Portfolio relationships between the company and its suppliers. In this total cross-effect type, relations with all suppliers with the company are included and considered.

From learning point of view, in a portfolio of suppliers (Markowitz, 1952), using a portfolio approach in managing a supply base, may help optimize the supply risks and outputs as a whole (Wagner, 2004). Portfolio concepts and models are a way for allocating scarce resources within an organization to diverse supplier relationships (Olsen & Ellram, 1997). This way, due to high transaction costs and relation risks, closer relationship with suppliers is maintained in project procurement management (White, 2005).

In analyzing case studies, there are generally three ways for categorizing supplies based on Kraljic's method, which are generally Consensus Method, One-by-One Method, and Weighted Factor Scoring Method (Gelderman & Van Weele, 2003). In later models, goods are first categorized based on ABC analysis and 80-20% rule, and then they are further separated into four Kraljic's categories to come up with an appropriate action plan for handling supplies and supplier relationships (Van Weele, 2004).

Supplier management within project procurement is a new and important area. Thus, novel questions and issues for consideration are emerging in this area. One obvious issue is the extent to which organizational culture and structure affect the supplier management process (Cameron & Quinn, 1999). At the same time, suppliers have recognized that improved customer-supplier relationships increase key account customer retention and loyalty, allowing them to compete more effectively (Abratt & Kelly, 2002).

Progress toward effective supply management can only be gradual, and the company has to surmount many obstacles to implementation along the way. But the rewards are well worth the effort. An attitude of "procurement as usual" will make the company vulnerable to competitive pressures. But an enhanced strategic awareness, greater flexibility, and stronger entrepreneurial thinking in the procurement area can improve the supply security and lower the input costs and lead-times of any industrial company.

3. Proposed Model

The proposed model uses the idea from Kraljic's model, distinguishing two types of suppliers. Tier A suppliers are critical and strategic suppliers, usually about a 20% in number but 80% in value, who should

be considered as an extension of the organization. Suppliers in this tier should be selected strategically and empowered with continuing sponsorship and assistance. The rest of the suppliers, Tier B, which may be selected on a need basis, and compete for the business based on price, speed, or other factors.

Supplier Portfolio Management Execution Model (SPMEM), Figure 2, is the engine for categorizing and applying the proposed model guidelines for Tiers A and B. Supplier Portfolio Management Execution model is only one part of a 3 module overall model, where both company strategies and the supplier portfolio information are input and processed to improve on the supplier execution. Suppliers in Tier A and Tier B are clearly distinguished in the way they are selected, treated, empowered, and managed.

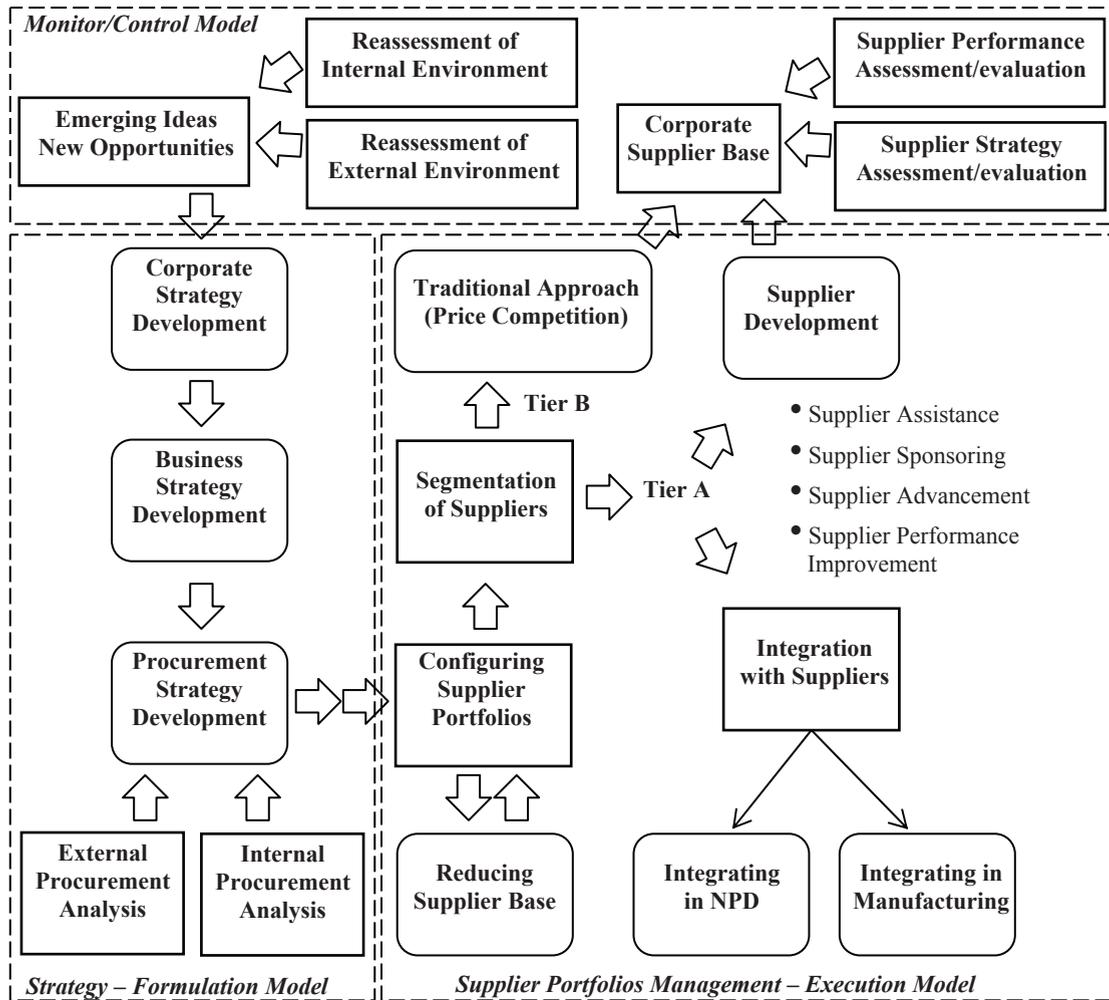


Fig. 2. Proposed Model for Strategy and Execution of Supplier Portfolios

The other 2 parts set boundaries and opportunities for the main model. Both traditional and emergent strategy development are utilized in assessing the internal and external business and procurement factors. As efforts are done to reduce the number of suppliers, with more business and attention to the remaining ones and gaining a better bargaining position, a critical supplier is given access to company's long-term

strategies and R&D Propriety information such as new product development and manufacturing plans.

The idea is the project suppliers are no longer selected based on daily requirements and competition. The suppliers are not treated equally and individually, or sourced for one single project. Requirements for various projects are added and grouped together and then outsourced to a portfolio of suppliers, who are selected and empowered from a strategic point of view. Discriminatory treatment is given to suppliers who provide more critical goods and services, or are strategically in a partnership position.

Tier B is the less strategic components, whose suppliers are easily available. Concepts are taken from literature background and Lean purchasing principles promoted by the Japanese. A strategy at corporate level sets directions for sourcing and supplier development, which is modified as internal and external factors change. Based on product-market matrix, a procurement strategy is then shaped and deployed. Requirements for various projects are then grouped before deciding how to approach various suppliers.

4. IsoIco Case

Iran Shipbuilding and Offshore Industries Complex Co (ISOICO) is an EPC contractor of Oil and Gas projects in Iran. The company has also entered ship building contracts, since 1998, in the Middle East and Middle Asia markets. Although EPC contractor market in Iran is very competitive, this added capability of ship building has provided the company with an added competitive edge in the region. Most of its Oil and Gas clients are within Iran's public sector, which outsource an entire development project as EPC.

It has managed to commission a huge platform jacket, weighing 2000 tons, for the first time in the South Pars gas field phase 14, in cooperation with domestic contractors. Originally, procurement was a typical function within the company, responsible for all the purchased goods and services of various projects. Since 2004, a new SBU was found within the corporate holding, as IsoIco Procurement, with independent legal status, which took the responsibility for all procurement input to other holding divisions.

As over 70% of project value is procured from outside, the new division worked to improve cost and time efficiency. IsoIco Procurement Division, by focusing on overall supplier programs, will be considered a competitive advantage for the mother company in realizing new strategizing in international markets. The division is working to improve agility and reliability by setting standard processes for sourcing goods and services. In 2011, it spent 30 million US\$ in international purchases, in addition to 5 million US\$ locally.

In coordination with top managers within IsoIco Procurement, the new model was applied and monitored. Previously, the basis for selecting a supplier was price. This was reflected in company's guidelines and bidding practice. This policy has brought a large degree of changes in suppliers, which in turn resulted in changes in procedures and quality. The new model maintained this policy for non-critical items, while put the attention on critical suppliers. Results from the new policy was monitored for an 18 month period.

The most critical suppliers, on cumulative requirements and importance in manufacturing, are qualified based on a very comprehensive study of their processes and background and then certified in a supportive manner. A point system was developed to consider reliability, quality, expenses, technology, and time. Incentives were provided to suppliers willing to take on responsibility of maintaining company standards.

In a Landing Craft project for Iran Public Sector, it was estimated that 65% of 7 million US\$ price tag was spent on procurement. Using proposed algorithm 13 items were identified as strategic, which actually form 88% of total value. These items were previously purchased from 13 different suppliers, 4 of which were international. The parts were re-assigned to 5 supplier-partners, with 4 of local suppliers empowered with the company's investment with a 19% discount for total volume discount and company's investment.

5. Initial Analysis

Landing Craft project is a complex one, with over 1340 items procured from a host of suppliers, as it was mentioned above. Initial analysis indicates that only 8% of the items may be categorized as strategic, which actually compromise 84% of total procurement budget for the project, Table 1. This table explains the reason such items and their suppliers require special selection, treatment and empowerment. The other 92% add up to 16% in value, and are obviously of less critical and with strategic importance.

Table 1: Categories of items in IsoIco’s Landing Craft project

Category of Items	Number of Items	% of items	% of total price
Strategic	102	8	84
Leverage	107	8	4
Bottleneck	310	23	7
Non-critical	821	61	5

In a repair project of decaying vessels and offshore structures, IsoIco conducted a similar type analysis and again singled out a few items, which were both of strategic importance and of value and complexity of supplies. Figure 3 exhibits the relative positioning of diverse items using the model proposed here. By focusing on strategic values, with a detailed selection and empowerment plan, the company managed to secure timely and quality supplies to the project, improving time and quality delays by at least 45%.

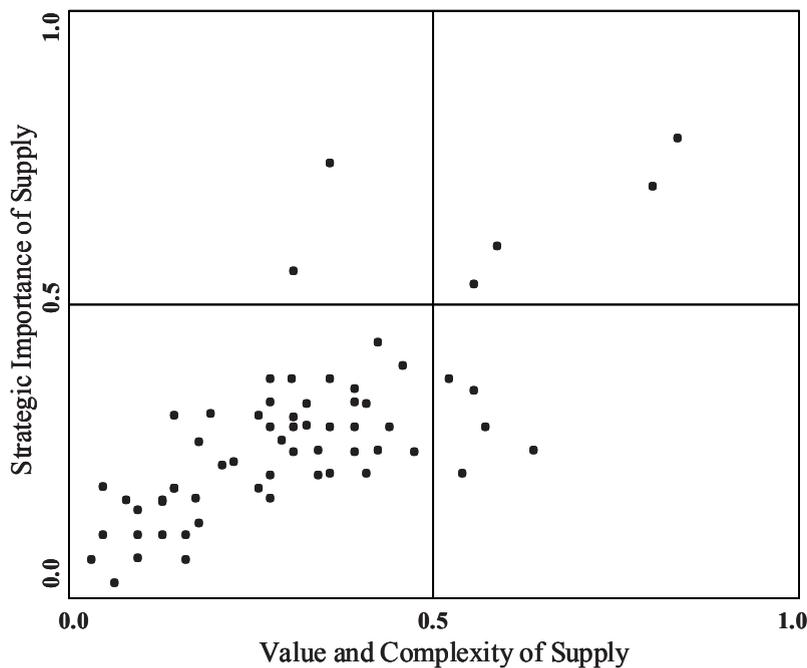


Fig. 3. Items with Strategic Importance versus Value of Complexity of Supply

6. Conclusion

Supplier selection and empowerment can become a competitive advantage in portfolio of projects. A model is developed as a supplier management framework for project-based companies, with similar type of requirements for multiple projects. Within a framework of emergent strategic information, suppliers are selected and grouped into two tiers. The critical supplier tier is then developed and empowered with concentrated effort to become part of integrated manufacturing and new product development projects.

The proposed model is applied to an actual case of IsoIco Procurement in Iran, which uses supplies for over 65% of total price for Oil and Gas projects. The proposed model helped to identify the strategic parts and focus on strategic suppliers, which are fewer in number but larger in volume. Close partnership relationships were established. The end result is closer relationship with a select group of suppliers and as a result not only price discount but higher assured quality and timing of goods and services.

The model may be generalized to other industries worldwide, where project procurement is on-going business for a large set of projects with common requirements. The project requirements, in a portfolio of projects, may be aggregated and summed up on a macro basis to negotiate with the suppliers, who may be now fewer in number but are actually partners in the long-term. The model proposed in this paper was applied to an EPC Oil and Gas contractor in Iran, where its practicality and benefits were demonstrated.

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