



Original Research Article

Providing Risk Management Strategies in Procurement and Supply Processes

Ronak Rahimian

Department of Environmental Civil Engineering-Water and Wastewater Engineering, Ahvaz Branch, Islamic Azad University, Ahvaz, Iran

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ABSTRACT

The main purpose of this paper is to provide a risk management model in the current processes of procurement and supply of equipment of project-based organizations in order to improve procurement management and effective performance of the mission. Procurement and supply is an important process for life survives of an organization and project, and it is a vital guarantee for achieving the goals and, in the first place, their success. In the procurement process, it is responsible for identifying, analyzing and providing appropriate solutions for responding, controlling and monitoring risks in the economic and production cycles. The lack of uncertainty and increase in influential factors in the purchasing and procurement process as well as complexity of purchasing systems have made it difficult for managers to achieve their goals. Depending on the type of activity and level of sensitivity of their assets, each organization and project deals with a different level of risks and hazards for which the risk management process should be implemented while challenges affecting the process of supplying required items should be prevented.

* Corresponding author: Ronak Rahimian

✉ E-mail: ronak.rahimiyani@yahoo.com

☎ Tel number: 00989382800418

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GRAPHICAL ABSTRACT
**INTRODUCTION**

Project purchase and procurement management includes all matters related to the timely purchase of goods and services required to carry out all project processes and performance finalization. Procurement includes a wide range of items named, preparation of initial plans and designs, raw materials, facilities and equipment, manpower and specialized services and etc., which must be received from suppliers at the required time [1]. Also, although in most cases the purpose of project procurement is to carry out the necessary steps to procure goods and services from outside the organization; however, an important part of the task of project managers is to provide the necessary equipment for the project inside and using production capacities within the project. Today, with the growth of technology, especially in the field of information technology, the nature of supply and purchase are changing rapidly which are affected by intense competition, new business activities, products' quality, product design and processes, focus and decentralization, innovation, assurance of long-term supply of the product and etc. [2-5]. In fig. 1 Providing Risk Management Strategies in Procurement and Supply Processes is shown. On the other hand, procurement management and project purchase is a comprehensive, systematic and accurate solution that integrates the basics of communication with sellers and contractors that is inquiry processes, tendering, buying, monitoring and controlling.



Figure 1. Providing Risk Management Strategies in Procurement and Supply Processes

Ideal purchasing and procurement management process, accurate registration and automation, optimization of business interactions and connections provided a great chance of enhancement in this field of economy [6]. The ultimate goal of project purchase and procurement management is to complete and deliver quality and timely design. Procurement, as one of the areas of project management that involves risk and uncertainty, plays a significant role in achieving the goals of project-based organizations. The ISO 31000 standard defines risk management as the coordination activities used to guide and control the organization in relation to risk. Mistakes in the process of selecting equipment not only affect the implementation of programs in different units, but also an important guarantee for the quality level of their services. Procurement plays an important role in the proper implementation of projects and as a result achievement of organizational goals [7]. The most important benefits of strengthening procurement are

reducing costs and project execution time while providing the possibility of focusing on sensitive and centralized project activities, improving services, increasing efficiency, reducing transportation costs and so on. The procurement process has a very high uncertainty due to its breadth. Although the cost of risk management may be seen as a major obstacle to avoiding risk analysis but it can face the organization with a lot of problems if ignored. Therefore, these two foregoing process are interrelated, and risk management should be considered as a vital part of the procurement management process [8]. In such a way that it can be used effectively and efficiently in all stages of preparation. Krezner [9] introduces risk management as an activity or endeavor to address risk, which includes risk planning, diagnosis, identification, analysis, creation and development of risk management strategies and finally its monitoring. By managing procurement risk, organization can identify potential underpinnings for problems that adversely affect the outcome of procurement. On the whole procurement risk management programs should include special steps as followed. First of all information about the fields of procurement, including objectives, scope, procurement strategy and key stakeholders and then risk management responsibilities. In the next, identifying and analyze of risks as well as registration of identified items, prioritized them and finally monitoring of the system for providing a great cycle of treatment process. On

the other hand active procurement management may be a result of good risk management. Senior executives must play a leading and motivating role in risk management. Employees must be adequately trained and equipped to apply risk management and its principles must be considered in all aspects of the business. According to Dallas [], some factors are main reasons for the success of risk management which can be named as implementation of a specific and approved management plan, providing specific solutions that can be transferred and implemented for everyone, adopting a clear and repeatable framework of activities, providing deep cultural supports and finally monitoring the system in a cycle continuous system as a key factor [10].

Continuous implementation

In general, most sources have expressed risk management studies at all stages of the procurement process, including planning, implementation, control and termination of procurement, but the most important steps in most resources are procurement planning and contracting [11]. Ideally, the text of a contract should take into account all the important risks of high-complexity procurement and cover issues related to them. In summary, all risk management measures in the preparation process of the above patterns can be expressed as followed (**Table 1**).

Table 1. Summary of risk management measures in the process of preparing the mentioned patterns

Factor	Management Process
Procurement Planning	Most sources emphasize implementation of risk assessment phase, which includes identification, analysis and ranking of risk in the first executive phases of procurement, which is procurement planning. Also risk profile must be prepared, which has details such as risk identification, its effect, risk owner, risk responder, risk response, the root and finally source of the risk.
Implementation	A number of sources specifically considered risk management at key stages and decision-making points, such as tendering and contracting, which emphasized its implementation. A number of sources have broken the contract, which is a step in the process of preparation, into other steps, the most important and common of which is how to respond and allocate all the risks in the contract.
Controlling	Most sources agree that after creating a risk profile, risk management activities should be continuously reviewed during implementation and, if necessary, corrective action should be taken and risk profile should be updated, as a number of No risks have occurred or new risks have occurred.
End of Procurement	Most sources document the lessons learned at the end of the preparation.

Managing the Risk of buying goods outside through hedging

One way to reduce the risk of price changes is by hedging. Hedging is the same as trading risk cover price fluctuations. It is an asset [12]. Therefore, financial instruments designed such as higing can be used as a common method to limit the effects of risk and reduce costs in the field of highly volatile commodity markets such as chemical market due to price and exchange rate fluctuations. Of course, simultaneous higing of different goods, if done with natural diversity, will be more desirable and useful, even if corresponding goods are uncoordinated [13].

As a result, the cost for the higing of the total set of goods will be lower compared to the cost of a separate higing for each item. This is especially true if the goods are related to each other or to a common surplus [14-16]. Table 2 lists the risk factors for foreign purchases along with definitions. It should be noted that each product

has its own characteristics and typically requires a team of managers and reliable professionals to understand and track the fluctuations of each product. Efficient portfolio strategies at higher levels for different products require careful coordination among purchasing teams of each product. Also, it is necessary to pay attention to the effective establishment of risk management strategies in the organization and use of higing contracts to cover the risk of fluctuations. Price and exchange rate require an understanding of the need to establish organizational infrastructure for supply management in the organization. The key to market success is accountability, which is achieved through time management, optimal implementation through access to critical market information, analysis, decision-making and access to the current and desired position in the market [17-19].

Table 2. Risk factors for foreign purchases along with definitions [20].

Factors	Definitions
Quality	Supplier capability to deliver desired quality products. Any product that is delivered with a lower level of desired quality will lead to the loss of the company's credit.
Cost	The overall efficiency of the company's cost model, as well as the nature of the costs, such as optimized or medium-priced securities and etc., depends in particular on the price of a commodity rather than its choice depending on differences in value-added services or benefits.
On-time delivery	Non-delivery problems cause the inefficiency of the supply and distribution network, which may lead to potential delays in raw materials and sub-components, which ultimately result in financial losses.
Capacity/ capability	The ability of design engineering to design products that meet production goals which complement and validate the production process. The ability of manufacturing organizations when raw materials are available for determination and diagnosis. Use available capacity to meet demand with different volumes and frequencies.
Flexibility	Product flexibility to overcome the frequent upheavals of its technology and the family nature of the product and similar changes in production or assembly processes
Technical and scientific resources	Technical and scientific resources such as the supply structure - which is incompatible with the parent company - may cause problems and errors in in-house communications. Knowledge resources such as sharing and integrating existing knowledge are very important for future employee training.
Financial and insurance issues	Financial stability is measured by the provider with many factors such as stock value, turnover, profit and loss account, and conflict with several businesses. All risks are covered by insurance, which covers a variety of issues, from engineering risks to financial risks, procurement and distribution. This issue basically stimulates awareness of risk and protects the company from it.
Management policies	Supply management policies that enable the forecasting of future opportunistic areas and decision-making of strong, unbiased investments.
Incidents	Incidents within the company are due to adverse events such as work-car accidents or

	fires, which may be due to a lack of security and environmental health.
Marketing share	If the supplier has a large market share, this will give him the leverage to organize and divide customers based on contractual agreements based on fans and critics.
Internal legal problems	Legal problems that occur within the company; for example, disagreement between the trade union and management.
Continuity of supply	Continuity of supply may be due to access to strategic materials, depending on the location of the supplier, relationships with high levels and the effect of leather whipping as a result of different cycle times (time from ordering to delivery).
Supplier of the second row	All competitors are sourced from two similar suppliers; for example, sourcing two semiconductor manufacturing companies from the same metal smelter. This may threaten the continuity of the supply.
External legal problems	Legal issues arise due to external entities such as customers and etc., and the applicable prohibitions and restrictions on the use of certain types of materials, products and services.
Demand	Difficulty in accurately predicting customer demand. Reduce the pressure of rapid and sudden growth in demand
Natural disasters/ manmade	Natural disasters such as earthquakes and volcanic eruptions, which depend on the location and location of the company, may be much more dangerous than other factors. Man-made incidents, workers' strikes and strikes, etc., do not necessarily depend on location, as they can even have far-reaching effects on society from distant places.
Economic or political stability	Adverse changes in the political situation may cause fluctuations in the country's economic health, which may have the opposite effect on the stock market. Also, a change in political position may be the result of government laws and policies on long-term issues
Marketing properties	The low profit margin quickly increases the market price of certain raw materials for the supplier. Is the market growth commensurate with the supplier's growth or for the supplier? Is the market size for the supplier are too large or small? It has a specific market

CONCLUSION

Procurement has a great impact on the effectiveness, efficiency and economy of the project. If the required procurement is not provided to the project in the required time or order deadline and preparation of required materials are extended, it will definitely affect the project activities. Required efficiency of engineers and experts in this field in project-based organizations, understand technical-engineering concepts, processes, types of activities and executive methods in the procurement phase and purchase of goods and services, via recognizing the relationship between processes in this sector with design-engineering, construction and project implementation. Application of all kinds of goods, supply methods, terminology of cargo transportation, pricing techniques, types of contracts, inspection and warehousing processes and etc. are practical and professional. This will provide the necessary experience to increase productivity and interaction with other departments and have extremely positive effects on the project. Therefore, appropriate methods of procurement purchase requirements should be identified and managed in an effective process. Applying certain principles can help the project to

perform properly and in a timely manner to guide purchasing and procurement activities for the project managers as an important activity. In this situation some issues are vital as preparing an integrated program in such a way that procurement schedule, order schedule, procurement order time, warehousing and inventory control, along with planning for other project processes, are integrated. Also accelerating procurement cycle by announcing the timing of materials and services required to suppliers and concluding contracts with reputable vendors. In addition, providing purchase agreements with producers and setting it up carefully according to the terms of each contract. The conclusion of a contract with the sellers should not be limited to the options selected by the project team. Such a contract can be both formal and informal. On the other hand, anticipate appropriate alternatives to goods and services that are expected to be delayed or even to all required goods and services can be a good chance. Also, if it is decided to provide the required items within the organization, the project team should seek the help of its production specialists if necessary. The acquisition of the technology required for the production and engineering of investment projects

can, in the long run or even in the short term, lead to the utilization of economic projects by the implementers of development projects. Finally, it is better to create a file for each of the orders separately so that complete information of each order is recorded and stored in the relevant file. These files allow corresponding design team to fully control each order; they can access the information in each order in the shortest time and at a lower cost, and track the contents of the contract in full.

Conflict of Interest

No conflict of interest was declared by the author.

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