ISSN: 2688-8653

Research on Material Purchasing Supplier Selection based on Baidu Map E-commerce Path Optimization System Development Project

Ke Liu

School of Economics and Management, Chongqing University of Posts and Telecommunications, Chongqing, China

Abstract

With the increasingly fierce market competition, new challenges have been raised for the selection of procurement management suppliers. The choice of suppliers directly affects the progress and quality of the project. Due to the irreversible characteristics of the project, the choice of suppliers becomes Particularly important. Based on the characteristics of this project, this paper analyzes the equipment needed for system development and the characteristics of different equipment. It evaluates the suppliers through quality, cost, timeliness of supply and service, and selects what type of supply according to the characteristics of the product. Merchants and different supplier strategies. Finally, through the user's evaluation of the supplier's indicator system, combined with the characteristics of the product, make decisions.

Keywords

Purchasing Management; E-commerce; QCDS; Supplier Strategy.

1. Introduction

In recent years, with the advent of economic globalization, market competition has become increasingly fierce, and the management of project material procurement is one of the end points that companies pay attention to. For a project, in order to implement successfully, in addition to a good project management method, procurement management is also very important, which can affect the profit of the project, the progress of the project, and the quality of the project [1]. Project procurement is an activity to ensure the smooth progress of the project by effectively completing the exchange of resources, and is one of the core contents of project management. Purchasing is an indispensable economic activity in the daily life or operation of an individual or organization (enterprise). It refers to the sum of all activities required to obtain products and services from the outside world [2]. Because the project has the characteristics of one-off, uniqueness, target certainty, action integrity, organizational complexity, and irretrievable results, the problem that needs to be solved in project procurement is: how to maximize the effectiveness and fairness of supplier selection To ensure that resources are used rationally. The procurement costs, procurement methods, relevant roles in project procurement management, the implementation process of project procurement management, quality control in project procurement, and supplier selection in project procurement have a very important impact on the entire project. Based on this, this article studies the selection of suppliers in project procurement, which undoubtedly has theoretical significance for the level of project material procurement management.

With the continuous development of Internet technology, the E-commerce industry has grown rapidly. Electronic networking has not only increased the speed of informatization, but also further achieved the goal of economic globalization. At the same time, the consumption concepts and behaviors of people in the world have also undergone major changes. Based on

ISSN: 2688-8653

this, relevant practitioners should adopt advanced logistics management models to achieve electronic information, professional management capabilities, and integration of logistics management models. This project came into being, that is, to develop a system that can be integrated with Baidu in an E-commerce environment. The map API calculates an optimal banknote transport path in real time to minimize the cost of banknote transportation, including the time and distance of banknote transportation. The development of a system requires certain equipment support to ensure the smooth progress of the project, including site selection, servers, computers, tables and chairs, printers, projectors, virtual machine software, etc. How to choose a supplier to ensure economy, excellent after-sales service, good equipment quality, timely and accurate delivery are the indicators that we need to consider when choosing a supplier. In carrying out procurement management work, the selection and management of suppliers is very important. The qualifications, service attitudes, prices and reputation of suppliers are all related to the quality of the products, the level of cost, whether the delivery is timely, and whether the service is in place There is a direct connection [3]. The quality, cost, timely delivery, and service of the product are the most basic indicators that we generally use when buying products. At the same time, these indicators play a decisive role in the customer's trust in the supplier, and the trust in the buyer-supplier relationship has received considerable attention in the literature [4]. In economics, the quality and price of goods, supplier service level and historical transaction credit rating are endogenous variables determined by suppliers themselves [5]. For customers, the cost and profit of obtaining the endogenous variable value of the supplier's goods in the transaction process are issues that need to be considered when maximizing their own interests [6].

Based on the above analysis, this article conducts supplier selection management in procurement management from four aspects: product quality, cost level, timely delivery, and supplier service.

2. Project Description

The topic of this project is the development of an E-commerce path optimization system based on Baidu Maps, which is mainly for research and analysis on the optimization of cash transport paths in Chongqing. The cash transport vehicle plays a vital role in the cash dispatch between the bank and its branches. The cash transport vehicle travels between the bank and its branches every day. In order to adapt to the current rapid economic development trend, the number of institutional customer points has increased exponentially. , The geometric progression of cash flow is getting bigger and bigger, so that banks are facing more and more severe challenges in cash transportation and safety precautions [7]. Now the bank's money transportation is handed over to professional escort companies. In this way, planning the bank's money transportation vehicle adding money path plays a very important role in improving the efficiency and safety of the money transportation, reducing the money transportation cost, and restructuring the interest rate. . Because there are a large number of operational research and decision-making problems in the process of cash transport operations, the scheduling of cash transport vehicles is one of the important issues to be solved. It has a direct impact on the speed, cost, and benefit of cash escort. In the activity of transporting money, there are mainly three essential roles: distribution center, vehicle, and service point. The distribution center is the bank where banknotes are centrally stored, the vehicle is the banknote transport tool, and the service point is the bank branch where banknote dispatch is required. In this process, the vehicle transports the banknotes from the distribution center to a service point, and transports the banknotes with more service points back to the distribution center.

At present, there are many problems in the transportation of cash in Chongqing. Since the address of the distribution center is fixed, the distance between the bank service outlets and

ISSN: 2688-8653

the center is different, so there are often delivery vehicles detouring and taking repeated routes, which will waste a lot of money. Time and cause economic losses, thus making the entire process inefficient and increasing transportation costs. In response to the above problems, this project uses genetic algorithms to design and develop an E-commerce path optimization system based on Baidu maps to help cash-carrying vehicles plan the optimal path to reduce transportation costs and improve distribution efficiency. For society, it can reduce vehicle idling. At the same time, it can also alleviate traffic tensions and reduce exhaust emissions, thereby helping to protect the environment.

This project involves web front-end, database interaction, and back-end design. The development workload is relatively large. The technologies that need to be used include HTML, CSS, JSP, MySql, Python, Baidu API scheduling, Java, PHP, Apache server construction, etc., but also Understand optimization algorithms including genetic algorithm [8], minimum spanning tree [9] and so on. In the process of the entire project, pre-planning should be carried out, including project scope confirmation, work breakdown, cost budget, risk estimation, etc.; site rental, hardware equipment purchase and employee recruitment, so as to form a project team and divide Person in charge of each department; web interface design, database construction, front-end and back-end development, front-end and back-end docking, system testing, system bug repair, system operation, system delivery. The final delivery of the project must be able to mark the geographical location of each branch in Chongqing on the map, and calculate the true distance between the two points according to the Baidu map, plan an optimal banknote transportation path for the banknote transportation vehicle, and pass it The browser displays it visually on the web page. The display interface of the system should be beautiful and generous, and there should be some necessary buttons for easy operation; the path calculated every time should be saved in the database; different paths are displayed in different colors; After one calculation is completed, the next calculation can be carried out; according to actual needs, data entry, such as the number of vehicles, the maximum capacity of vehicles, etc.; the system must be able to be completely transplanted and converted; the final delivery to the customer should also include our design documents, including Database design documents, requirements specifications, etc.

3. Supplier Selection in DEPBM Procurement

Research on the procurement problem of supplier selection, including two major issues, supplier evaluation and order allocation [10].

3.1. Composition of Purchase Cost

Purchasing activities are planned, purposeful, systematic, and process business activities according to the needs of the enterprise. In the process of enterprise procurement, the procurement plan must be proposed, reviewed, price negotiation, supplier selection, and delivery by both parties. Multiple steps [11]. Since supplier management determines the quality of the entire company's procurement activities, doing a good job in supplier management can ensure a smoother project.

This project carries out system development and belongs to an IT project, so the equipment required is mainly computers, servers, printers, projectors, software, and office desks and chairs. The computer is used to write codes, the server is used for system testing, etc., the printer and the projector are used to organize internal sharing and discussion, and the software is used to develop the system. Details are shown in Table 1

ISSN: 2688-8653

Table 1. Procurement Cost Composition of DEPBM Project

Product name	Product specifications	Product parameters	Quantity
computer	Dell Achievement 3670	i7-8700 8G 1T 128G	10
server	Dell R730 2U	495W*1 16G 3*1.2T 10K H330	2
printer	HP M1136	600 x 600 dpi	2
projector	Acer H6517ABD	1920X1080dp 10001-20000:1	1
Software system	IDEs such as Java, PHP, python, etc.	-	1
Integrated wiring	Power cord, network cable	-	1
Tables and chairs	Desk staff card slot set	Can be assembled	15
work place	-	40m^2	1
employee training	Convenient transportation and high quality	-	1
Project Member	Bachelor degree or above	Strong professional background	10

3.2. Problems in Supplier Selection

Strengthening supplier management can help reduce various costs and losses and improve efficiency [14]. At present, there are many merchants to choose from in the market. For electrical products, offline, online shopping malls, various self-operated stores, and specialty stores provide products of various brands and models. Therefore, in the process of supplier selection, there will be many human factors. Disagreements will arise due to the personal preferences of the internal personnel of the organization, which brand is good or bad; the procurement department lacks communication with suppliers, and many are choosing suppliers At the same time, they often judge the quality of the products provided by the supplier and their after-sales service based on their own subjective understanding. Among them, there may be some delays in the delivery speed, after-sales service, etc.; Targeted all-round evaluation and selection, so there is a lack of scientificity in supplier selection.

3.3. Supplier Quality Evaluation Index System

Due to the different business scopes of different companies, the product structure and services of different suppliers are different. Now the commonly used supplier quality evaluation system is QCDS. QCDS was originally proposed by Toyota as one of the indicators to measure the supply level of its suppliers. One [12]. QCDS means: quality, cost, delivery, and service. This index system is more suitable for most products. It simply and directly describes all customer requirements and expectations for a product.

Quality refers to the quality of the product provided by the supplier, Cost refers to the cost of the product, Delivery is the timeliness and flexibility of the supply, and Service is the service criterion of the merchant.

Quality: The quality of the products provided by the supplier is the most basic and the most critical for choosing the supplier. In our project, the product quality requirements are high, such as computers, servers, printers and other equipment, if the quality is not good , The consequences are very serious. For example, if the computer CPU is broken during operation,

ISSN: 2688-8653

it may cause all the work processes to be lost, and the preliminary work of the project needs to be redone. If the server fails while debugging the system, the entire system will be Unable to proceed, the work of all departments will be stagnant.

Cost: Cost is a key factor that we need to consider when we purchase. Under limited capital constraints, how to rationally use capital to maximize utility is a problem that every economist will consider. Cost can be determined by the product. The price directly reflects.

Timeliness of supply: As the name implies, it means to supply in time within the agreed time. For our project, if a time period is set, in general, various unexpected situations will occur during the development of the system. As a result, it is more difficult to control the time of the project, so the timeliness of delivery has a great impact on our project. If we can't deliver the goods to us in time, the entire project cycle will be delayed, such as during the process of the project. During this time, we will replenish goods as needed, and the timeliness of supply becomes particularly important at this time.

Service: Service is a series of pre-sales and after-sales services provided by suppliers, including consulting, after-sales maintenance, etc. After computers, servers and other equipment are purchased, equipment installation and commissioning must be carried out. These tasks need to be carried out by dedicated staff. During the project, whether the equipment malfunctions and after-sales service can be handled in a timely manner has a great impact.

The development and application of network technology has promoted the arrival of the big data era. Through network big data, we can eliminate the asymmetry of heartache information between network suppliers and customers. Network big data has diversified data sources, decentralization, and data information. Features such as large quantity. Therefore, we can collect a large amount of data on the supplier's data in these indicators through the Internet to make a reasonable choice.

In the process of supplier performance appraisal, the performance should be quantified as much as possible, so that the supplier's realization can be evaluated more intuitively [13]. Specifically, for quality, the product batch qualification rate, product sampling defective rate and other indicators can measure the quality of the product; for cost, it can be measured by price level, timeliness of quotation, and payment terms; timely delivery The performance can be measured by the on-time delivery rate and the acceptance rate of order changes (the flexibility of the supplier's response to the order changes); the service can be measured by the attitude of customer service, after-sales service, and introduction of pre-sale products.

3.4. Supplier Selection Strategy

For enterprises, suppliers can be divided into three categories: strategic suppliers, core suppliers, and general suppliers [15]. Strategic suppliers provide enterprises with the necessary materials to ensure the safe operation of the enterprise. The purchase amount is large and the supply risk is also high. Core suppliers can provide the bulk materials needed by the enterprise, while the general supplier means that the purchase amount is not large and the supply risk is high. Those suppliers who are also lower. The prices of the equipment required for our project, computers, servers and other equipment are quite different, and different suppliers can be selected for specific commodities. Therefore, supplier selection can be divided into single-supplier strategy, dual-supplier strategy, and multi-supplier strategy [16]. The single-supplier strategy means that all supplies of a certain commodity are provided by a certain supplier; the dual-supplier strategy means that when ordering is allocated, a certain manufacturer is used as the main supplier to supply most of a certain commodity. Use another manufacturer as an auxiliary supplier to supply a small part of the goods; a multi-supplier strategy, that is, multiple suppliers supply the products required by a certain manufacturer at the same time.

ISSN: 2688-8653

In the Internet+ era, the importance of supplier selection to the purchase decision of enterprises is more reflected [17]. Through the network platform, collect users' comments on suppliers, combine the characteristics of the products they need to buy, and choose the corresponding supplier strategy. For computers and servers, choose suppliers with better quality and timely after-sales. Computers, employee training, Office desks and chairs can choose a dual-supplier strategy, office production areas, servers, printers, and projectors can choose a single-supplier strategy, and integrated wiring and software systems can choose a multi-supplier strategy.

As a direct supplier of materials [18], before selecting a supplier, a supplier must have a more thorough understanding of the market environment and competition forms, and have an in-depth understanding of the development of the market; before establishing a relationship with the supplier, it is necessary to communicate with the supplier. Establish detailed evaluation procedures, as well as the implementation methods and cooperation processes of the procedures, and establish deterministic target content based on actual conditions; analyze the actual customs clearance and cooperation relationship of suppliers to determine strategic partners, general partners, etc.; QC. Purchasing price control, confirming that the materials provided by the supplier are qualified, and because equipment purchases account for a very large proportion of project capital expenditures, it is necessary to control the purchase price to avoid funding gaps and cause the project to fail to proceed normally.

In general, establish an indicator system for suppliers as the basis for selecting suppliers; then classify and manage different suppliers and divide them into multiple suppliers, some as strategic suppliers, some as general suppliers, etc. ; When purchasing equipment, choose different supplier strategies according to the type of equipment and its nature, such as single supplier strategy, dual supplier strategy, etc.; when cooperating with suppliers, actively provide projects to suppliers On-going technical and management experience information, and actively discuss cost control and quality control issues with suppliers to ensure that suppliers can guarantee quality while also ensuring sufficient project funds.

4. Concluding Remarks

In this paper, a research on supplier selection in procurement management is carried out for the project of E-commerce path optimization system development based on Baidu map. Evaluate the performance of suppliers through quality, cost, timeliness of supply, and service, as the criterion for selecting suppliers, and combined with the characteristics of the products required by the project, the methods of supplier selection include single-supplier strategy and dual-supply Business strategy, multi-supplier strategy, through data analysis, and finally make a decision.

References

[1] Ma Lingling. Analysis of procurement cost control in engineering projects[J]. Guangdong Chemical Industry, 2018,17(45):90-92.

[2] Wu Yuchun. Research on S Company Procurement Management [D]. 2016.

[3] Zhai Bin, Zhou Zhili. Research on Supplier Selection in Purchasing Management[J]. Logistics Technology, 2004, 27(9):47-51.

[4] Narasimhan R, Mahapatra S, Arlbj?Rn J S. Impact of relational norms, supplier development and trust on supplier performance[J]. Operations Management Research, 2008, 1(1):24-30.

[5] Pan, X.-C. (2013). The intermediate course of econometrics (pp. 4–6, 138). Beijing: Tsinghua University Press.

[6] Fu Y G, Zhu J M. The credit game on network supplier and customer based on big data[J]. Electronic Commerce Research, 2018, 18(3):605-627.

ISSN: 2688-8653

[7] Hou Jianping. Route planning of bank cash transport vehicles [D]. Xidian University, 2013.

[8] Deb K, Pratap A, Agarwal S, et al. A fast and elitist multiobjective genetic algorithm: NSGA-II[J]. IEEE Transactions on Evolutionary Computation, 2002, 6(2):182-197.

[9] Singh A. An artificial bee colony algorithm for the leaf-constrained minimum spanning tree problem [J]. Applied Soft Computing, 2009, 9(2):625-631.

[10] Dickson, G.W. An analysis of vender selection system and decisions[J]. Journal of Purchasing, 2016, 2(1) :5-17.

[11] Yu Yingying. Research on Supplier Management in the Purchasing Process[J]. Economic Management Review, 2018.

[12] Li Zhubing. Innovation and Practice of Case Teaching Method in Microeconomics [J]. Journal of Baotou Vocational and Technical College, 2009(9).

[13] Li Zhengyang. Supplier Performance Appraisal—QCDS[J]. China Securities Futures, 2012(9):294-294.

[14] Xu Guangyou. On the problems and countermeasures of supplier management[J]. Chinese Market, 2018(23):155-156.

[15] Deng Yu. Discussion on supplier management based on network platform[J]. Science and Technology Communication, 2018(7): 103-104.

[16] Huang Hui, Ji Yujiao, Yang Donghui. Research on Multi-source Supplier Selection and Order Allocation under Capacity Constraints[J]. Industrial Engineering Management, 2018, 23(4):120-128.

[17] Huang Chengchen. A two-stage supplier selection model based on a hybrid certificate planning method in the Internet + era[J]. Information and Digitalization, 2018: 131-132.

[18] Zhao Jianfeng. The problems and countermeasures of supplier management in material procurement [J]. Petrochemical Technology, 2018(10):294.