



USE DECISION SUPPORT SYSTEM TO EFFICIENTLY SELECT SUPPLIERS

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Abstract

In a very competitive and fast emerging IT and wireless technology need a company to move fast and it demands the company to have the correct decision support system in choosing suppliers. The right system helps company to gain useful and meaningful data in making the right decision of selecting the right suppliers which helps them to improve their performance and sustainable in the industry that they are involve in. In making the right decision of selecting suppliers the factors of efficiency and effectiveness of the decision support system used have to be concerned. In this paper, different selection methods considering their effectiveness and efficiency systems used in choosing suppliers is discussed.

Keywords: Decision Support System (DSS), System Enterprise, Information Systems, Supplier selection, Business Sustainable.

I. Introduction

A person's existence passes through many variables, states, and circumstances that drive their motives toward something on the rate of other things, or make it limited by choosing an arrangement from a combination of factors or

variables; For the process of voluntary or forced selection or selection, this takes place at the level of individuals, institutions and even societies, as all sectors abound with daily and continuous situations that actually require the selection of an alternative or option from among all available and possible alternatives. It is not known administratively for decision-making.

Supply chain management or so-called supply chain management It is a constant of organizational and strategic coordination methods for the capabilities of the regular commercial organization and planning for these capabilities within organizations or factories and across a commercial organization within the supply chain that improves the overall long-term performance of agencies from my point of view and the supply chain as a whole, and therefore the presentation chain is a technology dealing with going With the flow of goods and offers includes management of the transportation and storage of uncooked materials, semi-synthetic goods, ready-made items, and storage from the start line to the point of consumption.

Selecting suppliers or vendors for a business is one of major factors that make a business or organization sustainable. In dealing with the correct suppliers a system used that helps organization or business is concerned. Choosing the most effective sustainable resource is essential for sustainable control of the delivery chain, which is a challenging multidimensional problem. These days, the groups must embellish the effectiveness of their ongoing activities in the delivery chain control field in order to continue to exist within the global market (Agnieska Konys, 2019). In doing so, effectiveness and efficiency of a decision support system must be considered by the companies. Mirchandani, D., & Pakath, R. (1999) explained that there is a set of difficult and fast fashions for the advanced DSS devices (symbiotic, expert, comprehensive and adaptive) with their conceptual differences using a non-technical metaphor for information management and a dynamic dynamic class diagram. Together, metaphor and schema together provide a framework for showing underlying differences in their information management capabilities that lead to a subtle behaviour to tackle problems.

II. Back Ground of this Study

Definition of decision-making Linguistically define decision-making Dictionaries of the Arabic language refer to the decision making related to administrative systems, as the dictionaries define them as the work of the manager and his work, and decision-making in the language is to choose an approach, way, or mechanism of behavior from a number of alternatives and options available or available, or it is the opinion of those who possess Select it and export it.

Idiomatic definitions of decision-making vary in proposing it by referring to the direction of the process and classifying it from the original Thus, the method of decision-making in line with those who classify it as a system of thinking or an overly gifted talent is known as one of the complex methods of interrogation that aims to choose a satisfactory opportunity, or a high-quality and appropriate approach that maximizes the characteristics of the objective of the situation, and the diversity of alternatives, as described in this pattern as a planned and structured mental process,

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the comparison between all alternatives and solutions proposed to solve a situation, problem, or state of imbalance depends to choose the most appropriate solution And its most successful in reaching the goal based on the studied initial information, and in pursuit of diagnostic skills, and exploring all possible alternatives and evaluating them, then implementing them in a pre-planned process, then evaluating and evaluating the results of the selected decision (El-Ebiary, Y. A. B., Al-Sammarraie, N. A. & Saany, S. I. A., 2019).

Define administrative decision-making management science professionals have documented their definition of a decision that is best known for its modern characteristics, in terms of materials that express content, expressive form, theoretical content content or materials with high content in the case of matters or content materials associated with the choice, for those features that they used to define The decision, as a planned selection method for one of the available alternatives, is implemented in line with a high evaluation of all factors of the decision-making or trouble scenario. As a result, the decision-making system is distinguished from management's consideration factor by means of an expanded analytical selection technique, which aims to choose one alternative from a set of available and authorized options. To gain a goal or group of dreams that are appropriate to the factors and elements of the situation. (YAB El-Ebiary, 2016). Several converging definitions fall under this section, the most important of which are what the researchers went to interpret and make the decision, according to the following: Negro: Define it as a conscious selection process for an alternative among possible alternatives in a particular situation. The final decision and the clear and explicit will of the decision-maker about what he must do or leave, to reach a specific and final goal about a specific matter.

A process related to accessing and processing information to achieve the goals of a particular situation. Harris: He defined the decision- making process as the study of analyzing and distinguishing alternatives available and based on the values and indications of a single alternative test that is appropriate to the decision maker's confidence and attitude factors. The definition of decision-making appears in the practice of other definitions of decision-making by focusing on the realistic aspect that precedes selection. Selection from a reasonable point of view is defined as the option that satisfies the approval and desire of the supervisor or the maker of choice, after subjecting the situation to analysis and analysis, and knowing the behaviors that are beneficial to the state of affairs, and what should be left (El-Ebiary, Y.; Najam, I.; Abu-Ulbeh, W., 2018).

Decision making classification The researchers followed a description of the selection process, which is one of a kind of approach in its type, depending on the talent required and the overcoming of the surrounding environment, and the selection procedure turned into categories classified according to the researchers' consideration of it, so a few people went to explain this as one of the ways of thinking, where they justify This is because it is linked to the ability to solve problems and procedures for forming principles, while maintaining the independence of each of these strategies in research, and taking a look at the method and method, due to the various and distinct

steps and processes involved in each of them (Sivakumar, R., Kannan, D., & Murugesan, P., 2015). At the same time that another component of the researchers provides their directions to explain the selection procedure because the problem-solving technique is actually a set of incentives and incentives that need options related to their treatment and design, and because of the congruence and similarities in all strategies, the decision-making method is determined from the point of view. These humans looked for the same trouble-solving system. It may be appropriate to classify the selection process as a measure that others have gone as a gift of higher or complex thinking, besides: basic questions, problem identification, and creative thinking.

The importance of the decision-making process is characterized by relying on its primary position in management strategies, where there must be alternative selection processes and procedures that lead to selection in all sports and administrative capabilities, and the importance of decision-making from an administrative point of view in developing plans, setting desires, rules and strategies that the institution or Adopted to reflect its identity and components of its competence, spatial and temporal boundaries, as the importance of decision-making appears in identifying companies because they have inputs and assets, drawing strategies and mechanisms that govern their work and work structures, and building an accurate structural and organizational ladder for his sport and competencies, the side of decision-making within the supervisory and supervisory departments concerned with measuring and evaluating the overall performance is working, and the resulting corrective paths and the alternative (Agnieszka Konys, 2019).

The importance of controlling the delivery chain is known to the supply chain or supply chain management as an essential part of the rest of the various organizations and is essential to achieving the institutions and enhancing customer support through: improving customer service. Customers expect that a selection of the right products and the right quantities can be brought (Ebiary, Y. A. B., Al-Sammarraie, N. A., & Saany, S. I. A., 2019). Customers expect that the goods will be available in the correct location on the appropriate and appropriate transportation - customers expect products to be delivered on time, which means that the pride of the beneficiaries will decrease if the edge is later than the schedule within hours or more of the direct after-income service - The goods are maintained quickly. Maintaining organization stability in the end by building strong relationships with the supply chain and working toward gentle distribution practices, your employer can aim for long-term stability. Collaborative planning, coordination and distribution activities spread risk options for companies across a range of groups. Consider your agency and those you work with looking for potential for promotion, and the familiar result is the stability of your discipline. It is also the common endeavours to meet customer needs that are the reason for having conversations with various companies about your delivery chain on improving distribution structures (Shi, P., Yan, B., Shi, S., & Ke, C., 2015).

Some blessings of serial delivery reduce fees: reduce purchase costs - outlets rely on supply chains to quickly supply expensive products to avoid expensive stocks in stocks for longer than necessary. Reducing manufacturing cost - Owners of

manufacturing facilities rely on delivery chains to deliver materials to collection flowers reliably to keep material shortages on the way to prevent manufacturing. Supply Chain Fee Reduction - Store and shop owners rely on supply chain managers to design networks that acquire customer support desires at the lowest total price. Effective delivery chains allow the employer to be more aggressive on the market. Improved economic scenario. Leverage boom - supply chain manager's control and reduce supply chain fees. This can lead to a good volume that will increase the agency's earnings (El-Ebiary, Y. A. B., Al-Sammarraie, N. A. & Saany, S. I. A., 2019). Fixed asset reduction - Supply chain managers reduce the use of mega fixed properties consisting of factories, warehouses, and transport vehicles within the delivery chain.

Work to ensure efficiency: Monitoring inventory, transportation and logistics offers can be complex and costly in your company if you do not have an effective supply management device, while factory owners, wholesalers and stores cooperate in a chain delivery machine that is easy to use for your business project and your companions to ensure efficiency. It must be understood that operating in order to promote satisfactory is that transfer of the only value in nice terms may be one of the most important matters in the supply chain control, and satisfactory progress is made by the following: Locating all service providers: If there are troubles in the country chosen for any Motivation, it is important to know his location simultaneously. It requires a document of any alternative in the merchant at any stage in the supply chain. Increased audit capacity at every level, including production, to ensure that it meets all quality standards.

Supply chain control extras: purchasing, manufacturing, distribution, logistics and income. Procurement is the hyperlink responsible for locating the unusual raw materials needed for production at the lowest cost, and this link is in constant contact with suppliers of uncooked materials, so it strives to establish relationships between the two links to be strategic for a long time. Strategic relationships with suppliers are used to coordinate the provision of raw materials to the factory when needed rather than storing them in warehouses that raise supply chain costs. The manufacturing cycle in which raw materials are converted into a final, consumable product (El-Ebiary, Y. A. B., Al-Sammarraie, N. A. & Saany, S. I. A., 2019). The factory's responsibilities lie in finding a continuous production line that is free of worthless processes and producing high quality products. After manufacture, the product distribution cycle begins in the areas where consumers are located. Goods are transported from factories to distribution centers where the finished product is stored and shipped to sales outlets. Responsible for transporting raw materials from suppliers to the factory and the final product from the factory to the distribution centers and from there to the sales outlets is the transportation or logistical support team. The last link of the sales loop, which is the main interface of the consumer. The outlets are located in the right place where the final product is expected to be

III. Methods of Selecting Suppliers

Choosing suppliers that meet the requirement and getting the best procurement in return of a business or companies becomes critical. The methods chosen are very important to the organization as it has consequences to the business. Given the fact that systematic procedures for providing group choice support for provider selection are not widely available, there is a need to improve the literature for group selection assistance in provider selection. The utility of a hybrid technique that includes the Analytic Hierarchy Process (AHP) process for making group selection and neural networks (NN) has been emphasized, to provide group selection support for the proxy selection problem, where suppliers are assigned to be fantastically appropriate and less suited to providers using discretionary theories of style category (Kar, A. K. 2015).

To get the satisfactory providers, a couple of suppliers should be decided on, multiple stakeholders need to be contented and the choice ought to consist of subject of multiple first-rate standards. The questions that should be addressed are (1) how can stakeholder requirements be integrated into the supplier selection (2) what technique may be used to optimize multi-provider selection under unsure constraint multi-criteria? The mixing of methods answering those questions and builds them into a selection assist machine. Particularly, the AHP-QFD method is included with multi-standards threat restrained optimization algorithm (Scott, J., Ho, W., Dey, P. K., & Talluri, S., 2015).

For inexperienced procurement a way is delivered by to scientifically examine and determine providers. It far the basic selection system of green providers and develops a systematic statistics envelopment evaluation technique that is objective and quantitative to assess and pick out green suppliers the use of the C2R version of the envelopment evaluation technique method and the wonderful-efficiency envelopment evaluation technique version that's primarily based on the C2R version. Then a complicated index device of inexperienced supplier's evaluation and this systematic envelopment evaluation technique method are implemented to a commercial case (Shi, P., Yan, B., Shi, S., & Ke, C. , 2015).

Another method used to select suppliers is by considering on systematically collecting and handling knowledge about existing selection methods. It's far a try to ontology-based totally method to coping with expertise about sustainable provider choice methods. The various provider selection strategies are supplied. (Agnieska Konys, 2019).

IV. The Effectiveness and Efficiency of the Methods

The dealer choice function is managed with the aid of quantitative techniques and mathematical modelling. Generally, that consciousness on enhancements to the accuracy of supplier evaluation and performance or at the method used to rank and pick out suppliers (Scott, J., Ho, W., Dey, P. K., & Talluri, S., 2015). As mentioned by Agnieszka Konys (2019), the other several methods of selecting suppliers either single or combine approaches like Neural Networks (NN), Analytic Hierarchy Process (AHP), Data Envelopment Analysis, Fuzzy Set as mentioned earlier are range

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from mathematical procedures and artificial intelligence solutions to greater state-of-the-art semantic-matching-based totally ones the use of ontologies. There is a loss of complex technique which offers with the general problem of provider selection. To overcome this problem, sustainable supplier selection method using an ontology-based approach is proposed.

While the AHP-QFD method is included with multi-standards risk limited optimization algorithm become proven and carried out into the emerging biomass to power enterprise (Scott, J., Ho, W., Dey, P. K., & Talluri, S. (2015). The AHP is a principle of size used to increase ratio scales from discrete and constant paired comparisons in hierarchic troubles taken from a scale reflecting the relative energy of alternatives. The AHP decomposes the troubles, each of which can be examined independently via pairwise prioritization (Kar, A. K., 2015).

Shi, P., Yan, B., Shi, S., & Ke, C. (2015) Explain that the DEA methods effectively deal with the trouble of provider choice given that enterprises ought to keep in mind all elements of the overall performance of the candidate suppliers, therefore, many DEA approaches have considering been proposed for dealer selection. DEA considers index weight a variable and comprehensively evaluates all elements of supplier overall performance via mathematical programming. To evaluate the suppliers, index system is developed the value of the index then inputted into the DEA model and all suppliers evaluated relatively to determine the efficiencies of the suppliers.

It is mentioned by Agnieszka Konys (2019) that a Variety of research papers have investigated the selection of suppliers and unique strategies used, but having present get right of entry to the applicable know-how and its integration and encapsulation into one machine can increase the whole get admission to between suppliers and collaborators. Consequently, through using ontology-based version for provider type strategies, the simple get right of entry to domain know-how might be more advantageous by way of presenting more entire set of expertise captured from the method and their packages. Furthermore, the capacity to make a contribution beneficial know-how to enhance current implemented projects and techniques may be incorporated as extra element for developing the proposed ontology-based model. The ontology-based technique synthetizing the analysed methods and related papers. The ontology-based version is verified with the aid of an empirical instance of using competency questions to verify its correctness and effectiveness (Agnieszka Konys, 2019).

V. Advantages and Disadvantages of the Methods

Polat, G., & Eray, E. (2015) Cited that AHP technique is used to calculate the weights of the evaluation criteria and the ER technique is used to rank the supplier alternatives primarily based at the weights of the assessment criteria and the evaluation effects of the alternatives. Based totally at the look at that the author had achieved, they may remedy the hassle in making the first-class choice. Nonetheless, they proposed using fuzzy AHP method to be used as opposed to AHP approach with the intention to comprise the uncertainties inherent within the assessment procedure.

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As mentioned by Galankashi, M. R., Helmi, S. A., & Hashemzahi, P. (2016), The dimensions organized for decisions in ahp permits the selection maker to comprise the expertise and enjoy instinctively and specify how normally an element controls another with appreciate to the criterion. One of the vital steps of AHP approach is to location the assessment matrices. When the amount of attributes (or options) inside the hierarchy increases, more judgements between functions (or options) require to be made. This will without doubt purpose confusion, because of the overload of questions and therefore the inefficiency of the version.

Scott, J., Ho, W., Dey, P. K., & Talluri, S. (2015) Defined that via the usage of the AHP-QFD approach a hard and fast of assessing criteria ratings are produced towards which providers may be judged. This has numerous fantastic results for the selection maker and the deliver chain as an entire. First of all, the decision maker has a clean duty for a way to vicinity orders in step with stakeholder needs. The decision makers own person judgement is removed from the equation and changed via an empirical representation of the tacit necessities of the stakeholder institution. Secondly, if the evaluating standards weightings are communicated to potential providers those providers can reply for that reason. Suppliers can increase their presenting in complete information of the performance standards they will be competing on. Thirdly the stakeholder organization is appropriately consulted earlier than the order allocations are made; this avoids the supply chain supervisor second predicting their stakeholder requirements and brings the requirements of stakeholders to the fore.

The DEA methods correctly cope with the problem of provider selection for the reason that businesses have to study all components of the performance of the candidate suppliers. Consequently, several DEA methods have considering the fact that been proposed for provider selection. DEA considers index weight a variable and systematically evaluates all components of supplier overall performance thru mathematical programming. Primarily based at the comparative assessment of all suppliers, the DEA version can pick out the relative efficiencies of various providers (Shi, P., Yan, B., Shi, S., & Ke, C., 2015).

VI. Conclusion

The process of selecting suppliers becomes main focus for all organizations. Various aspects have to be considered thoroughly before making the decision to choose the best. In doing so, a system which offers applicable and systematic approach is focused on. There are many methods introduced and proposed to solve the problem of making decision in choosing suppliers. The methods comprise the quantitative and qualitative. Based on the papers reviewed each method has its capabilities to be used in a supplier selection.

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