



Different Factors and Techniques for Supplier Evaluation and Selection in Automotive Industry of Punjab

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Abstract—In an automobile industry, to operate effectively the supply chain management, it is very important to perform the purchasing function effectively. It is the responsibility of the purchasing department in a company to choose the correct suppliers to purchase the required products. Thus, from purchase manager's point of view, supplier evaluation technique is essential to choose the best supplier among the available suppliers. The literature addresses quality, delivery, technology, value and service are the five most common criteria used for supplier quality evaluation. In this article, approach of evaluation and selection of supplier has been presented as per the standards. Apart from these, the most important criteria to assess the quality of suppliers is based on a review of the literature and observation in practice. This in turn would help these organizations to review regularly and implement effective quality systems by following the set of standards. Also, nowadays most of the automobile companies have developed in-house pattern of procedures and software for the process of effective supplier selection. In the analysis, part per million equivalent technique is used to help the purchasing organization take a prompt and correct decision related to supplier selection process and evaluation in critical conditions.

Keywords: Supplier evaluation, Supplier selection, Criteria's for supplier evaluation and selection

I. INTRODUCTION

Supplier Selection Criteria

At present, in the overly quick world economy, the manufacturing organizations are confronting the market substances of always requesting clients, contracting lifecycles of a product and down value disintegration. Thus, in current situation would drive to bit by bit reduce expenses, center around capabilities, improve the store network execution and utilizing the supply base. This circumstance has turned out to be more basic than any other time in recent memory and it brings about conglomerating the factor of upper hand in the core of a maker. Hence, he meets this through a viable provider selection process.

Revised Manuscript Received on October 30, 2019.

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The raw material cost component is most important cost for all manufacturing industries.

The estimation of the obtained items and administrations would for the most part represent in excess of 60 percent of normal association's absolute expenses. As needs be, improvement in the acquirement procedure can assist an association with raising their benefits and the nature of association with their provider. This can be esteemed as a standout amongst the most significant criteria in surveying the association's monetary presentation.

The process of selection of suppliers is considered to be a vital as well as a critical process, cumbersome and a lengthy one when performed. In this competitive business environment it is impossible to produce high quality products at a low cost without a satisfactory supplier. In current trend the emergence of the supply chain management, more and more important as well as the practitioners have realized that supplier selection is a vehicle that can be used to increase the competitiveness of the entire supply chain.

The key choice of choosing the supplier can be made by an industry with short term and long term implications. These choices rely upon a wide scope of elements, for example, price, quality, reliability, service, track record, satisfactory money related assets and capacity to follow the conveyance necessities, and so on.

Supplier evaluation criteria

- ❖ Quality, Cost & Delivery
- ❖ Long-Term Relationship Potential
- ❖ Financial Stability
- ❖ Total Quality Performance and Philosophy

Quality, Cost and Delivery (QCD)

The most important considered criteria in a construction industry is the quality of the material, time of delivery and the cost. Also, the quality level of the procurement items should be taken into the account. The quality of product should always constantly meet the prescribed needs because it would directly show its effect in the quality of the finished products. Not only this to be considered but also the other things, prompt delivery should always be into the consideration.

Long-Term Relationship

Few companies will always try to establish a long-term relationship with a potential supplier.



This is applicable to the supplier who falls under the category of high volume of spending and play a critical role to the company's business. For this to happen, both the supplier and manufacturer must establish a relationship to go hand-in-hand by sharing their mutual goals, frame metrics to guide both the parties and by discussing on how some issues and conflicts could come to an end by finding a solution so that it would be beneficial for both of them. These relationships may also involve joint cost-savings projects and new product-development efforts.

Financial Stability

It is more important for a purchasing department to carefully assess the financial status of the supplier before getting into an agreement as it affects the ability to serve the customer. Analysis of Credit Reports plays an important role in financial evaluation because this serves them with supplier financial status.

Total Quality Performance and Philosophy

Few supplier certification programs would be helpful in the evaluation through the use of statistical process and control and several other factors such as process capability studies of a supplier's equipment, record keeping abilities and miscellaneous activities. The purchasing officer may give a "preferred" status once if a he meets most of the major criteria specified.

II. AUTOMOBILE INDUSTRY IN INDIA – AN OVERVIEW

In India, the automobile industry originated in the year 1940's, it started to reach a growth phase only in 1970's. After the economic reforms in India by the year 1991, these industries started to establish in a huge number. Thus, by the mid of 1990's, it is stated that international automobile manufacturers started entering through partnership in India. After the year 2000, further policy changes were introduced and hence, the department of exports were more focused. Following that, by the year 2003 the Core group on Automotive Research and development(CAR) was set up in order to identify priority areas for Research and Development (R & D) . After the year 2003, there were many more changes in the field of automobiles because

➤ The government has reduced its direct supervision and regulation on the industry which paved way for more foreign sectors who were waiting to make in an automobile industry in India.

➤ Banks and other financing organization began giving advance for car with the reasonable interest rate.

The automobile industry in our country contributes to the employment force for about 17 million persons directly and indirectly.

III. REVIEW OF LITERATURE

Hamed Fazlollahtabar, Marko Vasiljevic, Zeljko Stevic, and Slavko Veskovic (2017), the production network member's fundamental target is to guarantee the decrease of expenses, to expand the factor of intensity and to fulfill the end clients. To consider these angles, this paper proposes philosophy for characterizing the most significant criteria for the provider assessment. From under the four

heads, accounts, coordinations, quality and correspondence and business, there are a lot of twenty criteria that were set up , which containing its sub-criteria has been distributed as the most significant for provider choice. Diagnostic Hierarchy Process (DHP) depends on a harsh check that was introduced to decide the heaviness of every assessment rule. For this procedure, the specialists learning from the field was utilized. The viability of the proposed assessment procedure is shown through its application in the organization for the generation of metal washers for the car business. After that affectability, examination was done that shows security of model. For checking security, AHP strategy is utilized in customary structure.

S.K.Chaharsooghi and Mehdi Ashrafi (2014), As examined before, provider determination assumes a critical job in the inventory network the board and conventional criteria, for example, value, quality and adaptability are considered for provider execution assessment in inquires. As of late, maintainability is been increasingly engaged in the store network, the board writing with Triple primary concern (TBL) by portraying its manageability. This paper points an all-inclusive model of TBL approach in the chain of supply by setting up a fuzzy multi-criteria strategy to discover progressively about supportability in production network the executives and concentrate the issue of recognizing another model for provider choice. Semantic estimations of specialist's emotional inclinations are communicated with fuzzy numbers and Neo fuzzy TOPSIS is proposed for finding the best arrangement of provider choice issue. The proposed model says that, to coordinate supportability in provider determination issue, the numerical outcomes would be useful. The significance of utilizing complimentary parts of manageability and Neo fuzzy TOPSIS idea in reasonable provider determination procedure is appeared with affectability examination.

Significance of the study

1. In reality, the managers always try to take into the account the most important steps for the evaluation of their suppliers and considering the economic issues (for e.g., waste of time and human resources).

2. It is always good to segregate the act of performances in their specific aspects which in turn would help the manager to give different levels of prioritization (for e.g., giving a higher weightage to financial issues when compared to customer related concerns).

3. The decision maker uses the golden tool of mathematical models to sum up all the available and assess supplier evaluation results and then selects the best among the available options.

Statement of problem

The supplier selection process varies from one to the another depending on the nature of the products and services to be procured. It generally consists of a number of stages. At the end of each stage, the count of potential suppliers is been filtered with the most suitable ones who meets the specified requirements.

Every firm must first meet the order qualifiers. After that, the selection process goes on with evaluating the potential suppliers against order winners. When the manufacturer and the supplier would like to get into a long-term agreement to get supplies in a regular basis, then it's very much necessary for re-evaluation. The re-evaluation may be based on supplier performance, duration of supply, quantity, risk or changes in requirements and in addition to that, any product verification that may be carried out. This paper aims at building a hierarchical model for supplier selection in automotive industry.

IV. OBJECTIVES OF THE STUDY

1. To understand the selection and evaluation process of supplier in automobile industry in Punjab.
2. To analyze the different factors and techniques for supplier evaluation and selection in automotive industry of Punjab.

V. RESEARCH METHODOLOGY

The primary measurements are Expenses, Quality, Capacity, Service, Finance, Information and Communications Technology & Maintainability. Complete arrangement of criteria was separated into two layers (View Table 1). 1st layer of criteria for choosing the supplier comprised of 7 fundamental measurements (layer 1) and 33 criteria (layer 2). Second, the arrangement of supplier criteria selection likewise including of 7 primary measurements layer 1 & 2 carry's 33 criteria. There are 21 criteria showed up for both supplier selection & evaluation. 12 criteria were sorted into the supplier selection stage. Another 9 criteria were characterized into the supplier assessment stage.

Table No. 1

Supplier Selection process	Supplier Evaluation process
Expenses	
Item cost	Item cost
Requesting cost	Requesting cost
Coordination cost	Coordination cost
Quality dimension	
Interest in Quality improvement	
Accreditation and Quality confirmation	
Quality	
ISO 9001 usage	Obligation regarding item quality
Assembling capacity	Responsiveness of item quality
Innovative capacity	Requests imperfection rate
Adaptability underway	Assembling ability
Stock turnover	Mechanical ability
	Adaptability underway
	Stock turnover
Capacity	
Worker turnover	Representative accessibility
Ability improvement	Time to Recovery(TTR)
Dependability to conveyance administration	Deficiencies of crude materials
Sharing of data	Unwavering quality to conveyance administration
	Sharing of data
Services	
Speed and practicality of correspondence guarantee	Speed and practicality of correspondence guarantee
Fixed Assets	Returns
Near monetary record	Exactness of item and quality conveyed
	Fixed Assets
	Near asset report
Finance	
Obligation or FICO assessment	Obligation or FICO assessment
Monetary capacity	Money related capacity
Monetary steadiness	Money related security
Buy request and installment framework	Buy request and installment framework
Generation and booking framework	Generation and booking framework
ICT	
Stock administration framework	Stock administration framework
Standardized identification and RFID framework	Standardized identification and RFID framework
Venture Resource Planning	Venture Resource Planning
Work security and work well-being	Work security and work well-being
Work rehearses	Business rehearses
Item structure for condition (eco-plan)	
Maintainability	



Ecological Management System	-
Interest in R&D	-
ISO 14001 usage legal binding	-

The consequences of the relevance weightage are displayed in Table 2 there were two stages, to be specific, the supplier determination stage and the evaluation stage.

Table No. 2 Weightage relevance of supplier selection and supplier evaluation

Stage 0	Stage 1	Stage 2	International (%)	Stage 0	Stage 1	Stage 2	International (%)
	Expenses	Item cost (0.5860)	13		Expenses	Item cost(0.4560)	7
		Requesting cost(0.1855)	4			Requesting cost(0.1846)	3
	0.5299	Coordination cost (0.3)	5		0.1463	Coordination cost (0.4)	5
		Quality level (0.4)	11			Quality level (0.3)	10
	Quality	Interest in quality improvement(0.1620)	4		Quality	Duty regarding item quality(0.2464)	8
	0.2998	Confirmation and quality assurance(0.3204)	9		0.3107	Responsiveness for item quality(0.2418)	8
		ISO 9001 implementation(0.1437)	4			Requests deformity rate(0.1973)	6
		Assembling capability (0.3)	3			Assembling capability(0.1623)	1
	Capacity	Mechanical capability (0.1)	2		Capacity	Mechanical capability (0.1)	2
	0.1613	Adaptability in production (0.3)	4		0.2188	Adaptability in production (0.2)	4
		Stock turnover (0.1)	1.			Worker availability (0.08)	2
		Worker turnover (0.1)	1			Time to Recovery (0.1)	3
		Ability enhancement (0.2)	2			Stock turnover (0.1)	2
		Unwavering quality of conveyance service(0.3245)	4			Deficiencies of crude material(0.2568)	6
		Sharing of information(0.1325)	1			Dependability of conveyance service(0.2579)	3
Supplier selection	Service	Speed and practicality of correspondence	4	Supplier evaluation	Service	Sharing of information(0.1016)	2
	0.1401	Guarantee	4		0.1540	Speed and practicality of communication(0.2048)	3
						Precision of item and amount delivered(0.3336)	5
						Returns(0.1021)	2
		Fixed Assets (0.1545)	1			Fixed Assets(0.1345)	1
		Comparative parity sheet(0.1367)	1			Comparative parity sheet(0.1406)	1
	Finance	Obligation or Credit rating(0.1671)	1		Finance	Obligation or Credit rating(0.1636)	1
	0.0629	Money related capability(0.2230)	1		0.0599	Monetary related capability(0.2386)	1
		Money related stability(0.3186)	2			Monetary related stability(0.3226)	2
		PO and Payment system(0.1891)	1			PO and Payment system (0.2)	1
		Generation and planning system(0.3098)	1			Generation and booking system(0.5055)	3
	ICT	Stock administration framework (0.1398)	1		ICT	Stock administration framework (0.2696)	2
	0.0590	Scanner tag and RFID system(0.0991)	1		0.0580		
		Undertaking Resource Planning (ERP) (0.2622)	2				

		Work wellbeing and work wellbeing (0.3616)	2				3
		Business practices(0.0996)	1				1
	Maintain ability	Item plan for environment(Eco-structure) (0.1339)	1		Maintain ability	Work security and work wellbeing (0.5707)	1
	0.0509	Natural administration system(0.1153)	1		0.0515	Work practices(0.2014)	
		Interest in R&D (0.1)	1			Legally binding partners influence(0.2279)	
		ISO 14001 execution (0.1549)	1				
			1.0				1.0

Table No. 3
Essential Weightage and Rank of Important Division for Supplier Selection

Dimension	Comparing pair wise							Significant	
	Expenses	Quality	Capacity	Service	Finance	ICT	Maintainability	Weight	Ranking
Expenses	1.5	0.8711	2.3619	2.7939	4.8857	7.2999	6.2981	0.3389	2 nd
Quality	2.583	1.5	3.5529	3.5447	5.1290	7.5431	6.9816	0.4497	1 st
Capacity	0.9527	0.6333	1.5	2.0861	3.8720	4.5723	5.5575	0.2420	3 rd
Service	0.8057	0.6348	1.0785	1.5	2.5028	5.3195	5.5011	0.2102	4 th
Finance	0.4605	0.4388	0.5811	0.8990	1.5	1.1081	1.2209	0.0944	5 th
ICT	0.3087	0.2984	0.4929	0.423	2.0307	1.5	2.3819	0.0885	6 th
Maintainability	0.3573	0.3222	0.4049	0.4091	1.8429	0.9447	1.5	0.0764	7 th

Table No. 4
Supplier Selection – Grade and Weightage

Divisions	Comparison	Weightage	Grade	International Weight	International Grade
Expenses	Item cost	.879	First	.1986	First
	Requesting cost	.2783	Third	.0629	Ninth
	Coordination cost	.3428	Second	.0774	Fourth
Quality	Quality dimension	.5609	First	.1682	Second
	Interest in quality improvement	.243	Third	.0729	Fifth
	Accreditation and quality affirmation	.4806	Second	.1442	Third
	ISO 9001 usage	.2156	Fourth	.0647	Eighth
Capacity	Assembling capacity	.3584	Second	.0578	Eleventh
	Innovative ability	.2057	Fourth	.0332	Fourteenth
	Adaptability underway	.4292	First	.0692	Sixth
	Stock turnover	.1455	Fifth	.0234	Nineteenth
	Representative turnover	.1008	Sixth	.0162	Twenty third
	Capacity improvement	.2604	Third	.042	Thirteenth
Service	Unwavering quality of conveyance administration	.4868	First	.0683	Seventh
	Sharing of data	.1988	Fourth	.0279	Sixteenth
	Speed and practicality of correspondence	.4268	Second	.0599	Tenth
	Guarantee	.3879	Third	.0543	Twelfth

Finance	Fixed resources	.2318	Fifth	.0146	Twenty fifth
	Comparative asset report	.2051	Fourth	.0129	Twenty sixth
	Obligation or Credit Rating	.2507	Third	.0158	Twenty fourth
	Budgetary ability	.3345	Second	.021	Twenty first
	Budgetary dependability	.4779	First	.0302	Fifteenth
ICT	PO and Payment framework	.2837	Third	.0168	Twenty second
	Creation and planning framework	.4647	First	.0275	Eighteenth
	Stock administration framework	.2097	Fourth	.0125	Twenty seventh
	Standardized tag and RFID framework	.1487	Fifth	.0089	Thirty second
	Endeavor Resource Planning (ERP)	.3933	Second	.0233	Twentieth
Maintainability	Work security and work well-being	.5424	First	.0276	Seventeenth
	Work rehearses	.1494	Sixth	.0077	Thirty third
	Product design for environment(Eco-structure)	.2009	Fourth	.0102	Thirty
	Ecological administration frameworks	.1730	Fifth	.0089	Thirty one
	Interest in R and D	.2021	Third	.0104	Twenty ninth
	ISO 14001 usage	.2324	Second	.0119	Twenty eighth

The result of table 4 says that, the ‘Expenses’ dimension, ordering cost (0.2783) took 3rd position and logistic cost (0.3428) takes 2nd position because the cost of distribution plays a vital role in all the organization and followed by product cost (0.879) took 1st position in ranking.

The ‘Quality’ dimension, ISO 9001 implementation takes a 4th position and quality level takes 1st position. It shows good to the organization because quality of the product is very important for the supplier as well as manufacturer. Its always good to go for a preliminary and test the nature of the part before selecting the supplier. The ‘Affirmation and Quality confirmation’ came next in the positioning request, trailed by ‘Interest in quality improvement’.

The ‘Capacity’ dimension ‘Flexibility in production’ was ranked first. There is dependably a desire from the purchaser's perspective to fulfill the maker's necessity and for that the supplier need to give the capacity to help the assembling office. The criteria of ‘Assembling capability’ and ‘capacity improvement’ came next according to the positioning rundown. And at last, stood the ‘employee turnover’ criterion

The ‘Service’ dimension (0.4868) got 1st rank so that to make sure that the provider can supply the part through the creation procedure. Next on line was, ‘Speed and timeliness of communication’, in the order and this is followed by ‘Warranty’. In the listing, ‘Sharing of Information’ stood last.

The ‘Finance’ dimension held the fifth spot. Before getting into the agreement it is basic to confirm the monetary state of the supplier and for the equivalent, the ‘Financial Stability’ criteria positioned top. Next came the ‘Financial Capability’ with respect to need.

The ICT dimension under this, the ‘Production and Scheduling System’ secure the most elevated position. The following element in the positioning rundown comes ‘Enterprise Resource Planning’ (ERP) , pursued by ‘PO and installment framework’ and ‘Inventory turnover’. The data sharing framework between the purchasers and providers is basic in this industry. It incorporates all providers and makers for sharing the data and information, for example, arrangement, request amount, conveyance amount, area of conveyance, and conveyance date and time. At long last, the positioning request was finished by the ‘Standardized tag and RFID framework’.

The paradigm to hold the most minimal position is the ‘Maintainability’ measurement. In spite of the fact that it is said that the makers gives less consideration to maintainability despite everything they think about the method and activity of their suppliers to stay with their on a more secure side. The ‘Work safety and work health’ was considered as the most significant paradigm and this is trailed by ‘ISO 14001 usage’. Next on line is ‘Employment practices’ was positioned toward the end in the rundown.

VI. RESULTS OF SUPPLIER EVALUATION PHASE

Table No. 5
Essential Weights and Ranking of Main Dimensions for Supplier Evaluation

Divisions	Comparison							Weightages	Rank
	Expenses	Quality	Capacity	Service	Finance	ICT	Maintainability		
Expenses	1.5	0.7019	0.7829	1.3199	3.9012	4.5987	4.5012	0.2195	4 th
Quality	3.2058	1.5	2.4818	3.9467	60160	7.8800	7.191	0.4661	1 st
Capacity	2.8743	0.9066	1.5	2.2188	4.9971	5.6418	6.0635	0.3282	2 nd
Service	1.7048	0.5702	1.0142	1.5	4.3424	3.6267	5.3784	0.231	3 rd
Finance	0.5768	0.3653	0.4503	0.5181	1.5	1.3868	1.6779	0.0899	5 th
ICT	0.4893	0.2856	0.3989	0.6204	1.6224	1.5	1.8494	0.0884	6 th
Maintainability	0.4998	0.3129	0.3711	0.4184	1.341	1.2167	1.5	0.0773	7 th



Table No. 6 Weightage & Rank for Supplier Evaluation

Division	Comparison	Weight	Rank	Global Weight	Global Ranking
Expense	Item cost	.684	First	.1001	Fourth
	Requesting cost	.2769	Third	.0405	Fifteenth
	Coordination cost	.5391	Second	.0789	Seventh
Quality	Quality dimension	.4718	First	.1466	First
	Duty regarding item quality	.3696	Second	.1149	Second
	Responsiveness for item quality	.3627	Third	.1127	Third
	Requests deformity rate	.2960	Fourth	.0920	Fifth
Capacity	Assembling capacity	.2435	Third	.0533	Eleventh
	Innovative capacity	.1421	Sixth	.0311	Eighteenth
	Adaptability underway	.2847	Second	.0623	Ninth
	Representative accessibility	.1214	Seventh	.0266	Twentieths
	Time to recovery(TTR)	.1736	Fourth	.0380	Sixteenth
	Stock turnover	.1499	Fifth	.0327	Seventeenth
	Deficiencies of crude materials	.3852	First	.0843	Sixth
Service	Unwavering quality of conveyance administration	.3869	Second	.0596	Tenth
	Sharing of data	.1524	Fifth	.0234	Twenty third
	Speed and practicality of correspondence	.3072	Third	.0473	Twelfth
	Exactness of item and amount conveyed	.5004	First	.0771	Eighth
	Returns	.1532	Fourth	.0236	Twenty second
Finance	Fixed resources	.2018	Fifth	.0122	Thirty
	Near asset report	.2109	Fourth	.0126	Twenty ninth
	Obligation or FICO score	.2454	Third	.0147	Twenty eighth
	Budgetary capacity	.3579	Second	.0215	Twenty fourth
	Budgetary strength	.4839	First	.0290	Nineteenth
ICT	PO and installment framework	.3374	Third	.0200	Twenty fifth
	Creation and booking framework	.7583	First	.0447	Thirteenth
	Stock administration framework	.4044	Second	.0239	Twenty first
Maintainability	Work security and work wellbeing	.8561	First	.0441	Fourteenth
	Work rehearses	.3021	Third	.0156	Twenty seventh
	Authoritative partners impact	.3419	Second	.0176	Twenty sixth

The result of table 6 says that, the 'Expenses' dimension, ordering cost (0.2769) took 3rd position and logistic cost (0.5391) takes 2nd position because the cost of distribution plays a vital role in all the organization and followed by product cost (0.684) took 1st position in ranking.

The most significant measurement to screen the suppliers is the 'Quality' measurement. To maintain a strategic distance from compelling parts, 'Quality level' was observed to be the most significant standard so as to accomplish a reasonable.

The 'Capacity' measurement guarantee a predictable supply, the 'Shortage of raw materials' measure was observed to be the most noteworthy one. The limit of the providers is followed by the manufacturing section to avoid the generation disturbance. The 'Flexibility in production' showed up next according to the positioning rundown,

trailed by 'Manufacturing capability', 'Time to recovery', 'Employee availability' was positioned keep going on the rundown. Next all together was 'Inventory turnover'.

The need positioning of the 'Service' measurement of suppliers is critical to assess during the creation procedure by the manufacturing section. The most huge factor was 'Accuracy of product and quantity delivered'.

In the need list, the 'Reliability of delivery service' remained straightaway. Toward the end, 'Sharing of Information' came last.

'Financial stability' get the most elevated position. The following model was 'Financial Capability'. At long last, the standard of 'Fixed Assets' held fifth spot in the positioning rundown.

In the 'ICT' dimension is utilized for following the nonstop activity of providers. The outcomes demonstrate that 'Production and scheduling system' ended up being the most significant standard. Next in the positioning framework, is the 'Inventory management system'.

Primary measurements, the 'Maintainability' measurement has the most minimal need. The working environment of suppliers must be looks at to meet out the 'Work safety and labour health' criteria. The 'contractual stakeholder's influence' showed up next according to the positioning rundown. The 'Employment Practice' foundation makes the positioning rundown complete.

VII. CONCLUSION

The greatest test presented to the greater part of the vehicle enterprises in Punjab is change of outlook of the obtaining and customary business approach. The determination of supplier starts with the defining up of vital objective or selection in regards to the parts of single or various sourcing. Once, the objective is set the organization needs to experience the different selection criteria.

The supplier selection and evaluation factor are the two specialized viewpoints that must be engaged for future research. For supplier selection criteria, consolidating store network execution estimation and supplier selection by all accounts a significant zone. Although a few articles has given little consideration on the effects all in all store network if a specific supplier is chosen. Some other new models must be created to mirror the entire inventory network execution during the time spent supplier determination. The methods mentioned in the study have still some shortcomings in the selection of the same. Some other new techniques and methodologies should be developed to accelerate the process of human decision making such as neural network and some computer programming for the same.

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