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Functional Managers' Attitudes Towards Using Competitive Priorities' Criteria in Suppliers' Selection "An Applied Study on Public Shareholding Chemical Manufacturing Companies in Amman, Jordan"

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Abstract
The main objective of this study is to find out functional managers' attitudes in public shareholding chemical manufacturing companies in Jordan, towards using competitive priorities' criteria" quality, cost, delivery, and flexibility" in suppliers' evaluation and selection. In order to meet this goal, a survey was developed and conducted among a random sample of (50) functional managers from those companies, out of which, (33) questionnaires were retrieved, with a response rate of (66%). Two different techniques were followed, analytic hierarchy process (AHP) method for collecting data, and statistical analysis. Results of the study showed that functional managers prefer quality as the first supplier's selection criterion among all competitive priorities with a relative index value of (0.53). Followed by cost, delivery, flexibility, sequentially with relative index values of (0.22), (0.14), and (0.11), respectively. The results of the study also showed there are no statistically significant differences at level (α = 0.05) among functional managers' attitudes in public shareholding chemical manufacturing companies towards using competitive priorities' criteria for suppliers' evaluation and selection that can be attributed to the personal and occupational variables (job title and experience) combined. In light of the study's findings, the most important, as recommended by the researcher is to draw attention of managers in the Jordanian industrial companies to the importance of keeping an informative records for current and potential suppliers, and make them aware also of the importance of a delivery and flexibility criteria when evaluating and selecting suppliers.
Keywords: Suppliers' Selection, Competitive priorities, Analytic Hierarchy Process (AHP), Jordanian Chemical Manufacturing Companies Sector.

1. Introduction:

There is an agreement among researchers on increasing importance of suppliers and resources of supply in organizations. Purchasing goods and services is the most expensive of the organizations' activities; they are estimated at about 70% of the total costs incurred by organizations, which allows suppliers to play an important role in the organizations' success (Chuang, 2004). The strong relationships between organizations and their suppliers have a lot of benefits, not only getting the suitable price, the high quality at the right time and place, but also getting knowledge and skills necessary for production processes (Thomke, 2007). Suppliers' evaluation and selection criteria "quantitative or qualitative, tangible or intangible" consider the concern for several researchers and workers in purchasing field; they have been used in evaluating and selecting suppliers (Noorul & Kannan, 2006). Competitive priorities (quality, cost, delivery, flexibility) play a large role in the enhancement of competitive level for organizations, and achieve a unique advantage to differentiate the organization from the rest of competitors in the industry, they also support their attitudes in achieving their main goals, which are represented in organization' growth, survival, and continuousness (Krajewski, et al, 2009). Competitive priorities are used as part of many evaluating and selecting suppliers' criteria. Using these priorities ensures selecting the suitable organization' suppliers to build a long lasting integrated partnership. The supplier's superiority in one aspect of industry such as quality, achieve superiority for organizations that deal with him in the same aspect (Koufteros, 2012). The financial market of the Jordanian Chemical Manufacturing Companies Sector in Amman plays an important role in reducing the commercial balance deficit of the Jordanian government; they sell their different products in local and global markets. Those companies were able to export their products to more than (30) foreign and Arabian countries (Amman financial market report, 2013).

2. Significance of the Study:

The importance of this study arises from the main role that the functional mangers play in making decisions regarding suppliers' evaluation and selection; they are the people who define the suitable suppliers' descriptions through specifying the criteria which are required to select suppliers, and the relative importance of each criterion when evaluating the prospective suppliers. The importance of this study also comes from the importance of competitive priorities in the company's success, where the competitive priorities play a vital role in the enhancement of competitiveness level for organizations, and achieve an exceptional advantage that differentiate the organization from the rest of the competitors in the industry. This study adopts the competitive

priorities (quality, cost, delivery, and flexibility) as criteria for evaluating and selecting suppliers, so that the selection of suppliers will be based on the values of the organization and on its competitiveness strategies in the market.

3. Study objectives:
This study aimed to find out the functional managers' attitudes in the chemical manufacturing companies listed in Amman financial market towards using competitive priorities (quality, cost, delivery, flexibility) as criteria in evaluating and selecting suppliers. It also aims to determine if there are any statistically significant differences among those functional managers' attitudes towards using those competitive priorities' criteria in suppliers' evaluation and selection that can be attributed to the personal and occupational variables "job title and experience" combined.

4. Study problem:
The practical reality in the business environment refer to that many organizations are selecting suppliers based only on price criterion. The organizations also differ in the experience of their managers, some of them believe in young leaderships, and others believe in expert managers who spent numerous years in this field. Some organizations also authorize the decision of selecting suppliers to purchasing managers alone being the concerned about this topic, but the other kind of organizations depend on the functional managers concerned with the purchasing process in evaluating and selecting suppliers, taking into consideration their point of views which can be different from those managers (Aimer, 2005). For that purpose, this study came to know if there are any statistically significant differences in the attitudes of functional managers at the chemical industrial companies registered in Amman financial market in using the competitive priorities as criteria for evaluating and selecting due to the two demographic variables (job title and experience) combined.

5. Study hypotheses: This study contains four hypotheses and they are:
5.1 First hypothesis (H01) There are no differences found of statistical significance at level (α=0.05) between the attitudes of functional managers at the chemical industrial companies registered in Amman financial market in using the quality criteria for evaluating and selecting suppliers due to the two demographic variables (job title and experience) combined.

5.2 Second hypothesis (H02) There are no differences found of statistical significance at level (α=0.05) between the attitudes of functional managers at the chemical industrial companies registered in Amman financial market in using the cost criteria for evaluating and selecting suppliers due to the two demographic variables (job title and experience) combined.

5.3 Third hypothesis (H03) There are no differences found of statistical significance at level (α=0.05) between the attitudes of functional managers at the chemical industrial companies registered in Amman financial market in using the delivery criteria for evaluating and selecting suppliers due to the two demographic variables (job title and experience) combined.

5.4 Fourth hypothesis (H04) There are no differences found of statistical significance at level (α=0.05) between the attitudes of functional managers at the chemical industrial companies registered in Amman financial market in using the flexibility criteria for evaluating and selecting suppliers due to the two demographic variables (job title and experience) combined.

6. Previous studies:
6.1 (Hadeed, 2012) study: addressed: "Specify the criteria for selecting the best resource in the process of outsourcing: A case study in Asia cell of cellular communications company". This study aimed to display the ideas and opinions related to the concept of outsourcing, criteria for selecting suppliers, and the technique of arriving to the best suppliers through accommodating the (AHP) model. This study was implemented in a wireless communication company in Iraq, and the researchers utilized the data from questionnaire, personal interviews, and field visits. The most remarkable results were that the company did not look into the subject of relying on outsourcing by the scientific principles, and the concentration on the cost aspect largely when selecting the supplier they are willing to deal with.

6.2 (Shamoot, 2007) study: addressed: "The effect of organization relationship with suppliers in the performance of supply chain, suggested model for managing supply chain in intermediate Jordanian industrial companies". The researcher implemented this study as an applied research through a sample survey by questionnaire. A simple random sample was selected consisting of (170) managers for operations and purchasing

at the researchable companies. The study arrived to the existence of a positive approach for combined planning activities between the researchable companies and their suppliers related to the planning of activities to improve the quality of products and services. The suppliers of the studied companies committed to shipping and delivery in the specific time and in the emergency situations, and that the researchable companies and their suppliers do not care about the financial situation of both sides of the relationship. The researcher concluded that the development of positive relationship between suppliers and organization help to develop and achieve the goals of both sides.

6.3 (Nartey, 2008) study: addressed: "Supplier selection under uncertainty". This study aimed to search the process of selecting the supplier under the uncertainty conditions, especially in the presence of new suppliers from the suppliers' nominative for selection. The study also aimed to determine the relationship between the level of uncertainty and the experience of this supplier in the industrial field. The data were collected through personal and phone interviews with the concerned mangers involved in the process of selecting suppliers. This study arrived to the finding of positive relationship between the level of uncertainty and the new suppliers in the market, where the most important factors of uncertainty were the reduction of confidence level and suppliers' abidance, financial incompetence of suppliers, and the decrease of quality level. The researcher suggested techniques to reduce the level of uncertainty at the selection decision maker by doing an analysis for the financial situation for the possible suppliers, and build a long term unique relationship with them after selection.

6.4 (Gonzalez, et al., 2004) study: addressed: "Determining the important of the suppliers' selection process in manufacturing: a case study". This study searches the important of the management operations toward suppliers and its effect on the final quality of the product in supply chain. This study was implemented on the furniture industrial sector in the USA. The researchers in this study used nine variables in the process of managing suppliers; each variable had been evaluated through three primary factors which are quality, cost, and productivity. The questionnaire was used as a tool for collecting data and was distributed on the purchasing managers in the furniture industrial companies. The study concluded that the most important variable in the suppliers' management process was selecting suppliers for their effect on products quality which at the end achieve customers' satisfaction.

7. Theoretical Framework:

The process of selecting the suitable supplier is considered one of the strategically complex decisions which face organization' managers in general, and purchasing managers in particular. The complexity of this process increases in cases like, the purchasing materials are different, multi evaluation criteria, and also the increase in internal and external suppliers likely to select from, which requires identifying the most important criteria, Sifting through suppliers so their numbers become reasonable and acceptable to differentiate between them, and then to select objective tool for making this decision (Parthiban, et al., 2013).

The authority of selecting the suitable supplier may be in the hand of one person who is the general manager or purchasing manager, which will simplify and ease this process, or this matter may be under the control of a group of managers who are concerned about the purchasing process like production manager, sales managers, and organization financial manager, which is a positive thing but it will increase the difficulty of the selecting process. Suppliers differ in their fields and the nature of the activities they perform or practice. They are divided into four general and major categories and they are: 1- Manufacturers who produce materials and product parts and sell them to the interested organizations. 2- Distributors are retailers or wholesalers, who buy the materials in quantity from several manufacturers to store them in order to resell them to interested organizations. 3- Independent craftspeople: they are distributers restricted to unique materials and things which are not available in other places, where those materials are displayed frequently by those craftspeople who will sell them through agents or trade exhibitions. 4- Importers sources: they are individuals or organizations who buy materials and products from external sources in order to sell them to retail traders or to the organizations wishing to obtain those materials directly and in quantity (Lesonsky, 2004).

7. 1 Decision making process:

The decision making process is considered as one of the important principles for the art and science of management. Noorderhaven (1995) identified it as a process of selecting one alternative from two alternatives or more to be implemented. It is a sequential process of eight steps that start with identifying a problem, then identifying decision criteria, weight these criteria, develop the potential alternatives to solve the problem, analyze alternatives in order to select the appropriate one, implement this alternative practically, and then comes the final step in evaluating the effectiveness level of this alternative in solving the problem (Robbins et al., 2012).

7.2 Analytic hierarchy process (AHP):

Analytic hierarchy process (AHP) used largely for multi-criteria decision making (MCDM), is successfully implemented in practical situations at different fields; due to its capability of providing relatively easy, yet powerful multi-criteria methodology to evaluate the potential alternatives. It also enables decision makers to use simple hierarchical structure to deal with the complex problems, and evaluate both of the qualitative and quantitative data in a structured methodology for multiple variables and incompatible with each other (Lee & Kim, 2001). When using this model to solve the problem of selecting the appropriate supplier, we put the main goal wishing to achieve at the first level of the hierarchy, we put the core criteria that depend on in evaluating suppliers which are: "quality, cost, delivery, and flexibility" at the second level, and we put the sub-criteria which explain the main criteria at the third level of the hierarchy, where we perform the pair-wise comparisons between the core criteria to determine the relative importance of each criterion, and we perform the pair-wise comparisons between the sub-criteria to determine the relative important of each sub-criterion, and by that we would identify the relative weights for each of the core criteria and sub-criteria. At this stage we are able to calculate the total weight for each sub-criterion to achieve the general goal of this hierarchy by multiplying the relative weight for these criteria by the relative weight of the core criteria that depend on it, to measure the consistency of the judgments of decision makers, and in case coherent of judgments, we will set priorities to find the appropriate solution for the problem. We put the available alternatives at the fourth and last level for decision maker which is potential suppliers where they will be evaluated and ranked depending on the sub-criteria derived from the core criteria. The supplier who meets this criterion the most will be assigned the highest score. It is possible to use a computer program called expert choice to facilitate this process (Saaty, 2012).

7.3 Criteria for selecting suppliers:

The subject of analyzing the criteria for selecting suppliers, and measure their performance is considered one of the subjects that concerns researchers and workers in purchasing and production field in specific and supply chain in general.

It all started back in the middle of the sixth decade from the last century, where a group of researchers developed a list of criteria for suppliers' performance that will be used to evaluate and select suppliers. Dickson was one of the first researchers who in 1966 performed an extensive study to identify, define, and analyze the criteria used in evaluating and selecting suppliers to be certified by the organization (Tahriri et al., 2008). In 1991, Weber and others went to classify 74 scientific studies published between 1966 and 1991, based on the selection criteria, and the order of criteria importance was: price, delivery, quality, productivity capability, and location, respectively. As shown, most of the previous studies discussed seven criteria which are the most important in Dickson study, but in this study the criteria of previous performance, and the guarantees provided by suppliers were excluded. The study of Weber also showed the purchasing process to be affected by some of the changes that happen in the business environment, where the importance of the criteria change from time to time. For example, there are some criteria that have not received the great attention at certain times, such as the guarantees, and the labor relations records. There were other criteria which got great interest in those times like price, delivery, and quality (Weber, et al., 1991).

7.4 Competitive Priorities:

The competitive priorities with their different dimensions play a large role in strengthening the competitive position of an organization, where they achieve the competitive advantage that differentiates it from the rest of the competitors in the industry, and support their guidelines to achieve their main goals represented in growth, survival and continuity. The opinions of researchers differ on giving a specific concept about competitive priorities of the organization, due to axis or dimension differences among researchers when studying these priorities. Some researchers see them as dimensions which require the production system to own them for the purpose of enabling the company to respond to market demands that it is competing through. But Altalib and Alghali (2011) see them as the factors that support the organization's strategic option, which seeks to meet the needs of the market by equipping customers with the best quality products, high dependency and flexibility. Russell and Taylor (2000) defined them as the dimensions that create for organization a permanent competitive advantage which relies on the experience, and knowledge, which represented in introducing a wide service, high quality, fast delivery and low cost and thus help the organization to be the first in the market.

7.5 Importance of Competitive Priorities:

The competitive priorities are considered a critical factor in the development of the organization's operations strategy, where an organization that aims to achieve an appropriate market position focused on some competitive priorities which are ignored or overlooked by contenders. The importance of these competitive priorities appears as a main factor in formulating business strategy that links between organization strategy and operation strategy. It also appears through achieving the two criteria of efficiency and effectiveness where researchers stress on

efficiency to represent the first criterion for success by achieving the low cost and the high productivity, but effectiveness to deal with organization's ability to meet specific criteria, such as delivery tables, and technical capability, add to that the importance of quality and flexibility as a distinct performance target which organization seek to achieve.

7.6 Types of competitive priorities:

The literature in the field of competitive priorities started in 1969, when the researcher Skinner wrote about four types of competitive priorities. After that, research has increased in this field, where Altaleb and Alghali (2011) demonstrated that there is some sort of agreement among researchers about some of the competitive priorities most known which included quality, delivery, cost, and flexibility. The researchers stress on cost as an important competitive priority that organizations seek to achieve, and got a percentage of 100% from researchers concern, but 93% of them refer to the quality as a main priority through which organizations can achieve the competitive superiority, where 86% of them stress on the importance of flexibility as a main factor in seeking organization objectives, and finally the delivery priority got a percentage of 50% of researchers concerns, and table(1) illustrate these results.

Table (1) the competitive priorities in previous studies

Competitive priorities	Percentage	# of studies
Customer Satisfaction	8	2
Partnerships	4	1
Service	18	5
Growth	4	1
Performance	8	2
Delivery	50	14
Technology	11	3
Dependency	22	6
Uniqueness	11	3
Speed	15	4
Flexibility	86	24
Innovation	32	9
Quality	93	26
Time	15	4
Cost	100	28

Source: Altaleb and Alghali (2011) study

The researchers concern about the competitive priorities previously specified in table (1) did not come randomly, but it was due to the large capabilities of those priorities in supporting the strategic role of operations management, supporting the organization's ability to face competition, and strengthening the competitive advantage. Based on the previous information, and due to the importance of those four priorities, we consider them as competitive priorities as follows:

7.6.1 Quality: It is considered one of the essential competitive priorities in managing operations, where it represents the primary goal for each manager, and the organization's strength through which its competitive advantage is enforced, and will work continuously on improving the relationships between organization from one side and their employees, customers, and suppliers from the other side. Al-Ali indicated the organizations that wish to stay in competition inside the global markets have to manufacture products at high quality (Al-Ali, 2010). Hill and Jones (2010), believe that quality benefits organizations in two aspects: first: achieving a high level of product quality will increase the added-value for that product from the customer point view, which in turn leads to increase the organization profitability, and secondly: improving quality will leads to increase the efficiency level, which reduces the costs associated with the production process (Hill & Jones, 2001). Quality links to the technical specifications of the product significantly, and that is why quality, according to the purchasing organization, means product conformity to the stated specifications, or to the requirements which the product was purchased for.

7.6.2 Cost: It is called less cost, reduced cost, or reduced price, and so on. Cost is considered one of the requisites or necessities for the production and service process where it is defined as: "the amount of sacrifice in resources to achieve a particular goal". The cost priority is defined as: "provide products at a price less than competitors which leads to increase in organization market share". Cost is one of the critical factors in determining the competitive position of most companies, where through studies they found that increase in profits by reducing cost is easier than achieving same increase in profits through increasing sales (Mohsin and Alnajar, 2012). Cost is also considered one of the indicators for evaluation of the production function, and according to the opinion of some researchers, the cost is considered the threshold or the fine line for the

organization's ability to continue its work and survive in the market. The competition on a cost basis requires the focus on reducing all cost elements: Costs of labor, materials, damage, and industrial costs, and it also requires tracking the sources of waste and loss and fixing them or getting rid of them in order to reduce the unit cost of a product or service.

7.6.3 Delivery: This priority refers to the ability of organization to provide product and deliver it in the specific time and according to certain scheduling period. there are three competitive dimensions for the delivery priority, and these are: Delivery speed which means the speed of response to customer order, and it is measured by the amount of time between the customer order and the response to this order, and this time is called waiting period, time order processing, or lead time, and organizations try to reduce this period by maintaining inventory and excess capacity to use it whenever is needed. The second dimension for the delivery priority is on time delivery or delivery dependability which means the range of compliance with the delivery of the product by the specific time agreed on, measured by repeating the response to the order in the specific time and it will be in the form of a percentage, and dependability has a direct impact on the possible return of the customer to purchase the product again, where customer often has a certain impression of the reliability level for the products of one of the trade or brand names. But the third dimension for the delivery priority is development speed and it means the speed of organization to develop, design, and produce new products, where it prefers from organization to be able to develop its own products faster than competitors. This time is measured from the moment product idea is born to the time of finishing producing it (Krajewski et al., 2009).

7.6.4 Flexibility: It means: "the organization ability to response and adopt quickly to prepare market orders and have it ready in the quantity and the quality is needed, and according to customers orders". Organizations use flexibility as a competitive weapon to express the capacity of the production system and its ability to adapt successfully toward the changing environmental conditions and operational requirements. The flexibility priority contains three competitive dimensions as follow: The first dimension is called customization which means the ability of organization to change the type and product's specifications according to customers' needs following the change in market orders or demands. The second dimension is variety flexibility which means the ability of organization to produce, introduce, and deliver a variety of products that meet the needs and desires of different customers. The third dimension is volume flexibility; it means the ability of organization to speed up or slow down the production rate to handle the large fluctuations in demand, and in the same time to keep the organization running economically and profitably (Mohsin and Alnajar, 2012).

8. Methodology of the study:

The method that has been followed in the present study is descriptive analytic methodology, which cares about the collection, analysis, and interpretation of data. Two different techniques were followed; analytic hierarchy process AHP method using Expert Choice (EC.11) software, which was used to collect and analyze data, and statistical analysis using (SPSS) software to test the hypothesis and arrive to logical and objective results. The descriptive statistical methodology has been used for the demographic characteristics of the study sample.

8.1 Population of the study:

The population of the study consists of all chemical industrial companies listed in Amman financial market in the Hashemite Kingdom of Jordan, and their number amounts to (10) companies, as represented in table (2):

Table (2) companies in the study's population:

No	Company Name
1	Jordanian chemical industrial company
2	National chlorine industries company
3	Arabic manufacturing company for pesticides and veterinary drugs
4	The agricultural industrial trade company for production
5	International company for chemical industries
6	Intermediate petrochemicals industries company
7	Integrated company for multi-projects HOPPECKE
8	Premier business and projects company (other investment businesses)
9	Jordan industries and sulfur company (other investment businesses)
10	Jordan industrial resources Inc. (other investment businesses)

Source: Researcher preparation, yearly report for Amman financial market, 2013.

The chemical industrial companies in general, and the chemical industrial sector in Amman financial market in specific participate in reducing the trade balance deficit for the Jordanian government, where these companies depend on both local and global markets in selling their different products. Those companies were able to export the chemical materials they produce to more than 30 Arabian and foreign countries. The importance of this sector comes from the fact that it introduces different and multi-use products, and enters in

several fields like, construction and manufacturing processes, metal processing and sterilization products, and the different kinds of cleansing and cosmetics. This essential sector provides also several inputs for production for other industries in the form of raw and processed materials. The chemical industrial sector is considered one of the important industrial sectors in Jordan, where it consists of secondary sectors, and they are: Petrochemicals, fertilizers, pesticides and agricultural chemical materials, dyes and paints, soaps and detergents, perfumes and cosmetics, shampoo, Hairspray and shaving products, matchmaking, gum and glue, refined industrial salt, edible preparations used in the complete processing of tissues and their melanin (Annual report of Amman chamber of industry, 2013).

8.2 Study sample:
The study sample consists of the functional managers working at the chemical industrial companies listed at Amman financial market, where the questionnaires were distributed on a random sample which consists of (50) functional managers, (33) questionnaires were retrieved, with a response rate of (66%).

8.3 Analysis unit:
Analysis unit was represented by functional managers who are involved in the purchasing process in the companies and consists of; purchasing manager, warehouse manager, production manager, financial manager, and sales manager.

8.4 Data collection methods:
A tool for collecting the initial data had been established "Suppliers evaluation model" depending on (AHP), where this tool consists from two main sections, First section: the demographical data for the company and the managers as the study subject (Social gender, age, qualification, job title, and experience). Second section: A pair comparisons matrix which consists of five questions, the first of which is an assessment of the relative importance of the major criteria, namely the four competitive priorities (quality, cost, delivery, flexibility) and the rest cover the secondary criteria.

8.5 Reliability and consistency test:
This test was used to check the amount of internal consistency for the scale or measurement tool as one of the indicators of its stability, since the (AHP) is based on the principle of verification for the degree of coherence or consistency of judgments before classifying them for fitting the priorities into the criteria and alternatives. The (AHP) had been used to verify the reliability and the internal consistency, and was within the acceptable range.

8.6 Tool validation test:
The study tool "tool for data collection and assessment of suppliers" was presented to a group of arbitrators of academic competence in Jordanian universities to get their opinions on the data used in this tool regarding the competitive priorities as key criteria, and the subsidiary criteria issued from it. The arbitrator's reviews and their suggestions had been studied and the necessary adjustments to this tool were made to make it more suitable for this purpose.

8.7 Statistical methods used:
The descriptive statistics had been used to describe the personal characteristics for the individuals in the study sample, and the company's characteristics. The inferential statistics had been used through two-way ANOVA test, which is used to compare three or more independent samples, to study the effect of two variables that divide the sample study individuals to two levels or more on one quantitative variable. This test had been used to identify if there are any differences in the directions or attitudes of the concerned functional managers. The test of homogeneity of variances had been used to test the coherence, Schiff and Dennett test for dimensional comparison to identify the direction of statistical differences, and Kolmogorov-Smirnov test to show if the data is normally distributed.

8.8. Data analysis and hypothesis test:
This part of the study describes the personal demographic and the functional characteristics for members in the sample study (gender, age, qualification, job title, and experience), as follows:
Gender: Table (3) shows that (29) of the study sample members are males, that is 87.9% of the total members; whereas the percentage of females in the sample members was only 12.1%. This can be explained by the nature of work performed in the chemical industrial companies and the locations of the plants which may not be favorable for many females.

Table (3): The sample member's distribution based on gender:

Variable	Category	Frequency	Percentage
Gender	Male	29	87.90 %
	Female	4	12.10%
	Total	33	100%

Age: this variable was divided into four categories, as shown in table (4), and it is clear that the third category (40 years – less than 50 years) has the highest frequency (12) which amounts to (36.4%) of the total, but the least category was the first category (less than 30 years) at a frequency of (2) and a percentage of (6.0%).These results give a strong indication that the Jordanian chemical industrial sector depends relatively on older managers with long experience in these companies to reach these positions.

Table (4): Sample factors according to the variable of respondent's age:

Variable	Category	Frequency	Percentage
Age	Less than 30 years	2	6.1%
	30 years - less than 40 years	9	27.3%
	40 years – less than 50 years	12	36.4%
	50 years and more	10	30.3%
	Total	33	100%

Qualification: This variable is divided into three levels, and as shown in table (5) bachelor's degree has the highest frequency (24) which amounts to (72.7%) of the total, followed by graduate (Higher education) level with a frequency of (7) which makes a percentage (21.2%) and the lowest frequency was the level of diploma at (2) or a percentage of (6.1%). These percentages indicate that academic qualifications are important criteria in recruitment by chemical industrial companies; since the nature of jobs in such businesses requires special competencies which can be gained by a minimum of bachelor's degree.

Table (5): The sample members according to the qualification variable

Percentage	Category	Frequency	Percentage
Qualification	Diploma	2	6.1%
	Bachelor	24	72.7%
	Higher Education	7	21.2%
	Total	33	100%

Job title: Table (6) illustrates that the highest frequency for the sample individuals are from production managers with a frequency of (8) at a percentage of (24.2%) from the total, and that the least frequency for the same sample are from warehouse managers at a frequency of (4) and percentage of (12.2%). The frequencies of the other categories (purchasing, finance, and sales) were distributed equally with (7) each and the percentage of each category was (21.2%) of the total, and this is because there are some companies from the study sample have more than one factory and therefore need more than production manager for each plant or factory.

Table (6): The sample members according to the variable of job title:

Variable	Category	Frequency	Percentage
Job Title	Purchasing Manager	7	21.2%
	Warehouse Manager	4	12.2%
	Production Manager	8	24.2%
	Financial Manager	7	21.2%
	Sales Manager	7	21.2%
	TOTAL	33	100%

Experience: Table (7) shows that most of members in the study sample have relatively high practical experience, which corresponds to the nature of the study population, where managerial levels require long years of experience. This is compatible with the previous findings in the sample distribution based on the job title and age variables as explained earlier. and that the fourth category (15 years and over) got the highest frequency (12) or (36.4%) of the total, followed by the third category (10 years - less than 15 years) with frequency of (11) and a percentage of (33.3%), but the least frequency was at the first category (less than 5 years) at only (2) and a percentage of (6.1%).

Table (7): The of sample members according to the variable of experience:

Variable	Category	Frequency	Percentage
Years of experience	Less than 5 years	2	6.1%
	5 years – less than 10 years	8	24.2%
	10 years – less than 15 years	11	33.3%
	15 years and over	12	36.4%
	TOTAL	33	100%

8.8.1 The results of the analytic hierarchy process (AHP) analysis:

In this part of the study the results of the (AHP) were used to determine the relative importance of the evaluation and selection criteria "competitive priorities", where these competitive priorities were used as criteria for evaluating suppliers by identifying the relative importance of each criterion based on answers and evaluation of the functional managers in the study tool. It is clear through looking at table (8) which addressed the relative importance of criteria for selecting and evaluating suppliers, that the quality criteria was the most significant, with a relative importance value of (0.53) followed by cost, delivery, and flexibility with relative importance values of (0.22), (0.14), and (0.11), respectively.

Table (8): The relative importance of criteria for selecting and evaluating suppliers

Criteria	Relative importance	Sequence
Quality	0.53025	First
Cost	0.21593	Second
Delivery	0.13991	Third
Flexibility	0.11389	Fourth
TOTAL	1.000	

8.8.2 Study hypothesis test:

In this part of the study we browse the results of hypothesis test, where we had put the four hypotheses to the test of (two-way ANOVA) analysis and the results were as follows:

First hypothesis H01 There are no differences found of statistical significance at level (α=0.05) between the attitudes of functional managers at the chemical industrial companies registered in Amman financial market in using the quality criteria for evaluating and selecting suppliers due to the two demographic variables (job title and experience) combined.

Table (9): Levine's test of homogeneity of variances of "quality criteria":

F	DF1	DF2	Sig.
1.225	16	16	0.345

Table (9), which addressed Levine's test of homogeneity of variances of quality criteria, indicates that the value of significance degree is (Sig. = 0.345) and it is more than the significance level (α = 0.05), also the value of the calculated (F) is equal to (1.225) and it is less than the tabulated (F) value (3.315) which refers to the equality of variance for the groups that were tested previously.

Table (10): Tests between subjects effects (two-way ANOVA) "Quality criteria":

Source	Sum of square	DF	Mean square	F	Sig.
Corrected model	0.313	16	0.020	2.547	0.035
Intercept	5.199	1	5.199	677.389	0.000
Job title	0.130	4	0.032	4.222	0.016
Experience	0.079	3	0.026	3.426	0.043
Job title * Experience	0.096	9	0.011	1.391	0.271
Errors	0.123	16	0.008		
Total	8.529	33			
Corrected total	0.436	32			

On the other hand, it was found that there were significant differences between the attitudes of managers in using quality criteria as evaluation and selection criteria of suppliers due to the variable job title alone as shown in Table (10), where the significance degree (Sig. = 0.016) was less than the significance level (α = 0.05) in the tests between subject effects (two-way ANOVA).The table also shows the finding of differences between the attitudes of managers due to the experience variable alone, and this is indicated by the value of the significance degree (Sig. = 0.043) which is less than the significance level (α = 0.05), and the value of the calculated (F) was (3.426) which is higher than the tabular (F) at a value of (3.315). But the table shows the lack of differences between the attitudes of managers in using the quality criteria due to the variable job title and experience combined, as shown in the value of significance (Sig. = 0.271) which is greater than (0.05) and the calculate value of (F) was (1.391) which less than the tabular value of (3.315).

Schiff and Dennett's test for dimensional comparisons (Post Hoc) showed after checking the results of testing the homogeneity of variance between groups of "quality criteria" shown in table (11), a statistical significant on the differences between the attitudes and directions of warehouse, and purchasing managers only, marked by the asterisk in the table, and the results show that the amount of the difference between the warehouse managers and the purchasing managers came to (0.19464) for the benefit of the purchasing managers, and this difference is statistically significant at level of significance (0.05).

Table (11): Schiff and Dennett's testing the homogeneity of variance between groups of "quality criteria"

The variable of job title	Difference mean	Error of deviation	(Sig.)
Purchasing managers & warehouse	0.19464*	0.054909	0.044
Purchasing managers & production	0.05227	0.045339	0.852
Purchasing managers & finance	0.14057	0.046826	0.109
Purchasing managers & sales	0.03214	0.046826	0.974

Second hypothesis H02 There are no differences found of statistical significance at level (α=0.05) between the attitudes of functional managers at the chemical industrial companies registered in Amman financial market in using the cost criteria for evaluating and selecting suppliers due to the two demographic variables (job title and experience) combined.

Table (12) tests between subjects effects (two-way ANOVA) "Cost criteria":

Source	Sum of square	DF	Mean square	F	Sig.
Corrected model	0.265a	16	0.017	1.024	0.481
Intercept	1.044	1	1.044	64.505	0.000
Job title	0.034	4	0.009	0.526	0.718
Experience	0.090	3	0.030	1.847	0.179
Job title * Experience	0.123	9	0.014	0.846	0.587
Errors	0.259	16	0.016		
Total	2.355	33			
Corrected total	0.524	32			

Based on Table (12), which addressed the tests between subjects effects (two-way ANOVA), cost criteria, it is clear that there are no differences between the attitudes of managers in using the cost criteria as evaluation and selection criteria of suppliers due to the variable job title alone, and this is indicated by the value of significance (Sig. = 0.718) The table also shows the finding of differences between the attitudes of managers due to the experience variable alone, and this is indicated by the value of significance (Sig. = 0.179). But the table shows the lack of differences between the attitudes of managers in using the cost criteria due to the variable job title and experience combined, and this is indicated by the value of significance (Sig. = 0.587).

Third hypothesis H03 There are no differences found of statistical significance at level (α=0.05) between the attitudes of functional managers at the chemical industrial companies registered in Amman financial market in using the delivery criteria for evaluating and selecting suppliers due to the two demographic variables (job title and experience) combined.

Table (13) Tests between subjects effects (two-way ANOVA) "Delivery criteria":

Source	Sum of square	DF	Mean square	F	Sig.
Corrected model	0.171a	16	0.011	0.983	0.513
Intercept	0.470	1	0.470	43.384	0.000
Job Title	0.030	4	0.008	0.693	0.608
Experience	0.061	3	0.020	1.891	0.172
Job title * Experience	0.109	9	0.012	1.115	0.406
Errors	0.173	16	0.011		
Total	1.127	33			
Corrected total	0.344	32			

Table (13), which addressed the tests between subjects (two-way ANOVA) analysis for delivery criteria, illustrates that there are no differences between the attitudes of managers in using the delivery criteria as evaluation and selection criteria of suppliers due to the variable job title alone, with a significance value of (Sig. = 0.608). The table also shows no existence of differences between the attitudes of managers due to the experience variable alone, and this is indicated by the value of significance value of (Sig. = 0.172). The table also shows no existence of differences between the attitudes of managers in using the delivery criteria due to the variables job title and experience combined, with a significance value of (Sig. = 0.406).

Fourth hypothesis H04 There are no differences found of statistical significance at level (α=0.05) between the attitudes of functional managers at the chemical industrial companies registered in Amman financial market in using the flexibility criteria for evaluating and selecting suppliers due to the two demographic variables (job title and experience) combined.

Table (14) Tests between subjects effects (two-way ANOVA)"Flexibility criteria":

Source	Sum of square	DF	Mean square	F	Sig.
Corrected model	0.171	16	0.011	0.983	0.513
Intercept	0.470	1	0.470	43.384	0.000
Job title	0.030	4	0.008	0.693	0.608
Experience	0.061	3	0.020	1.891	0.172
Job title * Experience	0.109	9	0.012	1.115	0.406
Errors	0.173	16	0.011		
Total	1.127	33			
Corrected total	0.344	32			

From Table (14), which addressed the test between subjects effects (two-way ANOVA) for flexibility criteria, it was found that there were no significance differences between the attitudes of managers in using the flexibility criteria as evaluation and selection criteria of suppliers due to the variable job title alone, with a significance value of (Sig. = 0.608). The table also shows no existence of differences between the attitudes of managers due to the experience variable alone, and this is indicated by the value of significance at (Sig. = 0.172). The table also shows no existence of differences between the attitudes of managers in using the flexibility criteria due to the variables job title and experience combined, with significance value of (Sig. = 0.406).

8.9 Test the normal distribution of data

Table (15): (Kolmogorov-Smirnov) test as normal distribution of data:

Normal parameters	Job title	Experience	Quality	Cost	Delivery	Flexibility
N	33	33	33	33	33	33
Mean	3.09	3.00	.49524	.2355	.15400	.11533
Std. deviation	1.444	.935	.11666	.1279	.103680	.067352
Absolute	.160	.221	.092	.113	.233	.224
Positive	.138	.161	.074	.089	.233	.224
Negative	-.160	-.221	-.092	-1.13	-.136	-.166
Kolmogorov-Smirnov	.918	1.270	.527	.651	1.339	1.287
Sig.(2-tailed)	.369	.079	.944	.791	.055	.073

Based on Table (15), which addressed the (Kolmogorov-Smirnov) test, we can accept the initial hypothesis that the data follow the normal distribution; since the significance degree (Sig.) was greater than 0.05 for all variables.

9. Conclusions and recommendations

9.1 The personal and functional characteristics for the study sample

The study found that the age of managers in the study sample have been concentrated in the age group (40-50) which indicate that the leadership positions in these companies monopolized on the owners of the long experience and the good knowledge in this sector. For the qualification it was found that the portion of Bachelor's degree holders was (72.7%), and this proves how concerned these chemical industrial companies about recruiting academically qualified to work in the various administrative areas, where the nature of these businesses require specialized scientific competencies with at least a Bachelor's degree. Regarding the job title, the percentage of functional managers were calculated, and the production managers got the highest portion (24.2%), and it is also shown that most of the study respondents have a relatively long practical experience, where the fourth category (15 and over) got the highest frequency (12) or (36.4%) from the total percentage.

9.2 Results for the analytic hierarchy process (AHP)

The results of the of data analysis collected by the survey tool "tool for evaluating and selecting suppliers" which relied on the model of (AHP), and targeted the functional managers in the chemical industrial companies, are as follows:

1- The functional managers in the researchable companies prefer the criteria of quality on the others as criteria for evaluating and testing, where this criterion got a percentage of (0.53) from the total evaluations for the criteria.

2- The functional managers in the researchable companies look into the cost, delivery, and flexibility as a secondary criteria to evaluate and select suppliers, where these criteria got the following percentages orderly, and they are: Cost criteria at a percentage of (0.22%), delivery criteria at (0.14%), and flexibility criteria at a percentage of (0.11%).

9.3 Results for hypothesis test

The results for analyzing and testing of the study hypothesis indicate the non-existence of differences with statistical significance at level (α=0.05) between the attitudes of functional managers at the chemical industrial companies registered in Amman financial market in using the criteria of quality, cost, delivery, and flexibility for evaluating and selecting suppliers due to the two demographic variables (job title and experience) combined. There are no differences between the attitudes of these managers in using each of the following criteria cost, delivery, and flexibility as criteria to evaluate suppliers due to the variable job title and the variable experience separately. But there are differences with statistical significance at level (α=0.05) between the attitudes of these managers in using only the criteria of quality for evaluating and selecting suppliers due to the two demographic variables (job title and experience) separately, and that the differences were only between the attitudes of purchasing managers and warehouse manager, and for the sake of purchasing managers.

9.4 Conclusions

The study arrived to the following major conclusions:

1- The companies in the study sample recommend quality as a first and key criterion when evaluating, selecting, and committing to suppliers, which is considered a positive thing for this sector, unlike some other sectors that recommend cost as a first criterion.

2- The finding of statistically significant differences at the significance level (α = 0.05) between the attitudes of the functional managers in the chemical industrial companies in using only quality criteria for evaluating and selecting suppliers due to the two demographic variables job title and experience separately. But there are no statistically significant differences between the attitudes of these managers in using the competitive priorities "quality, cost, delivery, flexibility" as criteria for evaluation and selection due to each of the demographical variables job title and experience combined.

3- There are many criteria used by the functional managers to select suppliers in the Jordan chemical industrial companies including quality, cost, delivery, flexibility, associated services, financial status of the suppliers, technological capabilities, geographic location, and others.

4- The variables of experience and academic qualifications play an important role in management positions in the chemical industrial companies in Jordan; it has been shown that most of the functional managers are university graduates, and having high experience in the industrial field.

5- Employee's age still plays an important role in determining the administrative post or position in the chemical industrial companies in Jordan. It has been shown that most of the functional managers in the studied companies were in the age category of (40 years – less than 50 years).

9.5 Recommendations

In the light of the results of the study, the researcher recommends the following:

1. Advise managers in Jordanian industrial companies on the importance of maintaining special records of current and potential suppliers, where the success of using the process of evaluating and selecting suppliers depend on the accuracy and volume of available data and information about potential suppliers, so presumably industrial companies should maintain such records and constantly updating them.

2. Advise managers in Jordanian industrial companies on the importance of both delivery and flexibility criteria when selecting suppliers, where these criteria play an important role in achieving a high level of effectiveness and efficiency for the production system in these companies.

3. Apply further research about the process of evaluating and selecting suppliers, and the criteria used in this process and focus on using quantitative and qualitative criteria, to improve the strategic decision making in these sectors.

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