KNITTED GARMENT UNITS PREFERENCE IN THE SELECTION OF SUPPLIERS IN TIRUPPUR DISTRICT

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Abstract:
    This paper aims to identify the knitted garment units preference in the selection of suppliers in Tiruppur District. To determine the preference in the selection of suppliers, a structured questionnaire is carried out to 384 units. Exploratory factor analysis was applied to the respondents data collected and identified the factor groups. The factor groups of supplier selection along with the goals of Supply chain implementation have studied using Analytical Hierarchical Process. Analytical Hierarchical Process (AHP) is an effective tool for decision makers and researchers and is one of the most widely used multi-criteria decision making tool. The goals of the knitted garment units in implementation of SCM (Supply chain management) are the alternatives which includes Service level, Cost minimization, Inventory management, Bottle neck management, Variance reduction, Lead time management. The factor groups of supplier selection are the criterions which include Cost & quality, Responsibility, Promptness and Flexibility. When the criterion and alternatives are studied using AHP, the knitted garment units which prefer any criterion has a goal of 'Variance reduction' in implementing supply chain management.
Key Words: Analytical Hierarchical Process (AHP), Multi-Criteria Decision Making, Supply Chain Management (SCM), Promptness, Lead Time & Flexibility

Introduction:
    Supplier selection is the process by which the buyer identifies, evaluates, and contracts with suppliers. Supplier selection, the process of finding the right suppliers who are able to provide the buyer with the right quality products and/or services at the right price, at the right time and in the right quantities, is one of the most critical activities for establishing an effective supply chain. On the other hand, it is a hard problem since supplier selection is typically a multi criteria group decision-making problem involving several conflicting criteria on which decision maker's knowledge is usually vague and imprecise. In this study, Analytical Hierarchical Process method is proposed to select appropriate supplier in group decision making environment. Knitted Garment Units selection of suppliers is based on the criterions such as Cost & Quality, Responsibility, Promptness and Flexibility.
    AHP is a decision making tool that decomposes a complex problem into a multi-level hierarchical structure of objectives, criteria, subcriteria and alternatives. Applications of AHP have been reported in numerous fields such as conflict resolution, project selection, budget allocation, transportation, health care and manufacturing (Wang, Huang & Dismukes, 2005).

Objective:
    To study the preference in the selection of suppliers based on the goals in implementing supply chain management by knitted garment units in Tiruppur District.

Methodology of the Study:
    Research methodology is an approach to receive the needed information by discovering the data from various sources which may be primary and secondary. The adopted methodology is primary data collection.

Area of Study:
    The area of study covers Tirupur district's knitted garment units.

Research Design:
    This is descriptive in nature and the researcher here made an attempt to study the preference in the selection of suppliers based on the goals in implementing supply chain management by knitted garment units in Tiruppur District

Nature and Source of Data:
    This study is based on questionnaire method; primary data has been collected from various proprietors doing business in Tirupur district. The questionnaire was drafted based on the research objectives of the study. Secondary data is collected from various reports, magazines and websites.

Method of Data Collection:
    The data has been collected through a structured questionnaire and through reports and internet. The researcher has used both primary and as well as secondary data. The research was conducted only in Tirupur district.

Sample Size:

Sample size is the number of items to be selected from the universe to constitute a sample. The sample size is 384 in number. Here the universal population is 919 and among that population 384 has been considered as sample size through sample determination formula.

Sample size (n) = $Z^2*p*q*N/ e^2*(N-1) +z^2*p*q$ (Source: www.raosoft.com/samplesize.html)

$$n = 400$$

Where, Z=Corresponding Z score for 95% of confidence level (1.96), p =Sample defective population (0.5), q =1-p (0.5), N =Number of samples (919), e=Margin of Error (5%) or (0.05). Though the sample size fixed is 400, only 384 questionnaires were considered for the research work as 16 questionnaires were rejected due to improper response.

Statistical Tools Used for the Study:

The following statistical tools have been applied for the purpose of the study:

✓ Exploratory Factor Analysis
✓ Analytical Hierarchical Process (AHP)

Review of Literature:

✓ Ramanjot Kaur, Dr. Kusum Gupta (2014) in their research work titled "A study of Quality management in the Textile Industry" portrays the quality management issuesin the textile industries with the adoption of modern techniques for production. Secondary data have used for analysis by the researchers to study the quality management of various kinds. The result of the study revealed that the quality improvements and modern techniques are applied more in the textile industry compared to apparel industry. The growth of apparel industry is more due to the improvements in the quality processes of production.

✓ (Koprulu, 2007) The aim of this study is to emphasize the importance the vendor selection problem and its relation to the supply chain strategy and goals. First, the current conditions of the textile or apparel industry are analyzed and the key factors for a successful supply chain considering the globalization of the industry are discussed. An analytical hierarchy process (AHP) model that an apparel company can use for the selection of suppliers is presented and a supplier relationship management (SRM) strategy is created based on the results of the model. In addition, strategic priorities for the supplier selection problem are identified and weights are developed to select the right supplier that fits the company's strategy.

✓ (Sauls, 2007) With U.S and global manufacturers, quality, on-time delivery and cost were the most frequently used when selecting a vendor. When looking beyond the top three criteria, the global manufacturers were found to be using more common criteria with the U.S retailers than the U.S manufacturers. The major metrics used by U.S retailers to measure the performance of their vendors was again on-time delivery, quality and costs. The cost measured may be first costs, distribution costs, or the margins that they receive from a certain vendor's product. The U.S and global manufacturers from both markets were also measuring their own on-time delivery and quality. However, only the global United States retailers were also using flexibility as a metric to measure the performance of their vendors.

Analysis and Interpretation:

Preference in the Selection of Suppliers / Vendor:

Reliability Statistics:

Cronbach's alpha test of reliability is performed, and only those items are selected which have a Cronbach's alpha of at least 0.839 or more (Table 4.27).

Table 1: Reliability Statistics (Cronbach's Alpha)

Construct	Items	Cronbach's Alpha	Overall Cronbach's Alpha
Cost and Quality	9	0.897	
Responsibility	5	0.875	
Promptness	4	0.875	0.894
Flexibility	4	0.839	

Factor Analysis on the Preference Towards Selection of Suppliers / Vendor:

To determine the underlying structure, the correlation matrix was initially examined to determine how appropriate it was for factor analysis. Factor analysis was performed with twenty two statements related to selection of suppliers. The Kaiser-Meyer-Olkin (KMO) value for the collected data was 0.890 which was higher than the recommended minimum of 0.6 (Kaiser, 1974), indicating that the sample size was adequate for applying factor analysis, and significant Bartlett's test of sphericity supported the use of factor analysis to extract independent variables associated with supplier selection. The degree of common variance among the 22 variables is mediocre which reflects that if a factor analysis is concluded, the factors extracted will account for fair amount of variance but not a substantial amount.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.890
Bartlett's Test of Sphericity	Approx. Chi-Square	4739.801
	df	231
	Sig.	0.000

Table 3: Communalities

Short Description of Variables		Initial	Extraction
Con1	First cost	1.000	0.519
Con2	Competitiveness of the landed cost	1.000	0.547
Con3	Fixed costs	1.000	0.551
Con4	Quality of the samples	1.000	0.604
Con5	passing rate of the shipment audits	1.000	0.566
Con6	Goods returned to the vendor	1.000	0.743
Con7	Product Integrity (PI) testing	1.000	0.748
Con8	On-time shipment rate	1.000	0.703
Con9	Sampling turn time	1.000	0.744
Con10	Average lead time	1.000	0.588
Con11	Timeliness of costing and its accuracy	1.000	0.596
Con12	Sourcing carried out globally	1.000	0.609
Con13	Accepts small orders	1.000	0.485
Con14	Accepts Changes	1.000	0.744
Con15	Quick Response	1.000	0.641
Con16	Apprehend market trends	1.000	0.767
Con17	In-House design team	1.000	0.568
Con18	Financial stability	1.000	0.656
Con19	Customer service	1.000	0.727
Con20	Owned capacity	1.000	0.660
Con21	Confidentiality	1.000	0.677
Con22	Social responsibility	1.000	0.637
Extraction Method: Principal Component Analysis.			

Based on the output of above table, all the variables have the communalities of more than 0.5. This means that all the variables have significant portion of the variance that contributes to the common factors. As the communality is the sum of squares of the loadings of the variables and all the variables are contributing significantly, all are included for the analysis of the final data.

To support the result, an exploratory principal component analysis was done using SPSS. Varimax rotation was used to identify the underlying factors for selection of suppliers features. Items with Eigen values greater than one were extracted and all the factor loadings greater than 0.5 were retained. 22 items yielded four factors explaining 64.006% of variance were shown in the below table.

Table 4: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	**6.971**	31.684	31.684	**6.971**	31.684	31.684	**5.021**	22.821	22.821
2	**4.567**	20.759	52.443	**4.567**	20.759	52.443	**3.548**	16.128	38.950
3	**1.489**	6.766	59.209	**1.489**	6.766	59.209	**2.913**	13.239	52.189
4	**1.055**	4.796	64.006	**1.055**	4.796	64.006	**2.600**	11.817	64.006
5	**.872**	3.965	67.971						
6	**.792**	3.600	71.571						
7	**.718**	3.263	74.834						
8	**.631**	2.867	77.701						
9	**.573**	2.606	80.307						
10	**.557**	2.532	82.839						
11	**.470**	2.135	84.973						
12	**.431**	1.959	86.932						
13	**.370**	1.683	88.616						
14	**.364**	1.654	90.269						

International Journal of Interdisciplinary Research in Arts and Humanities (IJIRAH)
Impact Factor: 4.675, ISSN (Online): 2456 - 3145
(www.dvpublication.com) Volume I, Issue I, 2016

15	**.338**	1.535	91.804				
16	**.307**	1.396	93.200				
17	**.300**	1.366	94.565				
18	**.270**	1.225	95.791				
19	**.260**	1.184	96.974				
20	**.235**	1.070	98.044				
21	**.233**	1.057	99.101				
22	**.198**	.899	100.000				
Extraction Method: Principal Component Analysis							

Table 5: Rotated Component Matrix

Short Description of Variables		Component				Labeled as
		1	2	3	4	
Con12	Sourcing carried out globally	0.778				Cost and Quality
Con4	Quality of the samples	0.764				
Con10	Average lead time	0.758				
Con11	Timeliness of costing and accuracy	0.756				
Con2	Competitiveness of the landed cost	0.734				
Con3	Fixed costs	0.732				
Con5	Passing rate of the shipment audits	0.724				
Con13	Accepts small orders	0.686				
Con1	First cost	0.683				
Con19	Customer service		0.791			Responsibility
Con21	Confidentiality		0.770			
Con22	Social responsibility		0.765			
Con18	Financial stability		0.756			
Con20	Owned capacity		0.750			
Con8	On time shipment rate			0.790		Promptness
Con7	Product Integrity (PI) testing			0.778		
Con6	Goods returned to the vendor			0.775		
Con9	Sampling turn time			0.772		
Con14	Accepts changes				0.792	Flexibility
Con16	Apprehend market trends				0.773	
Con17	In-house design team				0.664	
Con15	Quick response				0.648	
Eigen Values		6.971	4.567	1.489	1.055	Rotation Sums of squared Loadings
% of Variance		22.821	16.128	13.239	11.817	
Cumulative %		22.821	38.950	52.189	64.006	
Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 5 iterations.						

All the variables extracted under group 1 are related to price and quality accompanying the preference in selection of supplier. Therefore, factor 1 is named as 'Cost and Quality'. The variables extracted under factor 2 are related to responsibility, hence it is named as 'Responsibility'. The third factor is named as 'Promptness' and fourth factor as 'Flexibility'. The factors thus extracted were tested for reliability. The factor cost and quality scored 0.897, Responsibility scored 0.875, Promptness 0.875 and Flexibility scored 0.839. All the factors were found to be reliable.

Supplier Selection (Consideration) Criteria - Analytical Hierarchical Approach:

The questionnaire developed to enable pairwise comparisons between all the selection criteria at each level in the hierarchy. The pairwise comparison process elicits qualitative judgments that indicate the strength of a group of decision makers' preference in a specific comparison according to Saaty's 1-9 scale. A group of respondents was requested to respond to several pairwise comparisons where two categories at a time were compared with respect to the goal. Result of the survey questionnaire technique was then used as input for the AHP. It took a total of 18 judgments (i.e., 9(9-1)/2) to complete the pairwise comparisons for selection criteria. The other entries are 1's along the diagonal as well as the reciprocals of the 18 judgments. The data shown in the matrix can be deployed to derive estimate of the criteria priorities. The priorities provide a measure of the relative importance of each criterion.

Essentially, the following three steps can be utilized to synthesize the pairwise comparison matrix. 1) Total the elements or values in each column, 2) Divide each element of the matrix by its column sum and 3) Determine the priority vector by finding the row averages.

The criterions included in the study are Cost and Quality, Responsibility, Promptness and Flexibility and the alternatives included in the study are G1 = Service level, G2 = Cost minimization, G3 = Inventory management, G4 = Bottle neck management, G5 = Variance reduction, G6 = Lead time management. Hence the study is about the selection of suppliers based on the criterions.

Cost and Quality Criterion:

If the supplier market is affordable and efficient, the manufacturing firms outsource. While outsourcing, the buyers considers various cost and quality criteria which includes Sourcing carried out globally, Quality of the samples, Average lead time, Timeliness of costing and accuracy, Competitiveness of the landed cost, Fixed costs, Passing rate of the shipment audits, Accepts small orders and First cost. In this study, the 'Cost and quality' is considered as the criterions in using Analytical Hierarchical Process.

Table 6: Cost & Quality Criterions

CQ1	Sourcing carried out globally
CQ2	Quality of the samples
CQ3	Average lead time
CQ4	Timeliness of costing and accuracy
CQ5	Competitiveness of the landed cost
CQ6	Fixed costs
CQ7	Passing rate of the shipment audits
CQ8	Accepts small orders
CQ9	First cost

The pairwise comparison matrix has been computed for the nine 'cost and quality' criterions and is presented in Table 4.45 to 4.55, further the priority matrix was presented from Table 4.56 to 4.62.

Table 7: Pairwise comparison of Cost and Quality Criterions

Cost & Quality	CQ1	CQ2	CQ3	CQ4	CQ5	CQ6	CQ7	CQ8	CQ9
CQ1	1	1/7	3	5	7	5	5	7	5
CQ2	7	1	3	5	7	7	3	1/5	1/7
CQ3	3	1/3	1	1/5	1/5	1/3	1/7	5	1/3
CQ4	1/5	1/5	5	1	1/5	1/3	7	5	7
CQ5	1/7	1/7	5	5	1	7	7	5	9
CQ6	5	1/7	3	3	1/7	1	5	5	1/3
CQ7	1/5	1/3	7	1/7	1/7	1/5	1	5	1/3
CQ8	1/7	5	5	5	1/5	1/5	1/5	1	3
CQ9	1/5	7	3	1/7	1/9	3	3	1/3	1

Table 8: Synthesized or Normalized matrix for the nine cost and Quality criterions (CR = -0.6629 < 0.1)

Cost & Quality	CQ1	CQ2	CQ3	CQ4	CQ5	CQ6	CQ7	CQ8	CQ9	Priority vector
CQ1	35/591	15/1501	3/35	175/857	2205/5039	75/361	175/197	105/503	105/549	0.1947
CQ2	245/591	105/1501	3/35	175/857	2205/5039	105/361	105/197	3/503	3/549	0.21
CQ3	105/591	35/1501	1/35	7/857	63/5039	5/361	5/197	75/503	7/549	0.0501
CQ4	7/591	21/1501	5/35	35/857	63/5039	5/361	245/197	75/503	147/549	0.0801
CQ5	5/591	15/1501	5/35	175/857	315/5039	105/361	245/197	75/503	189/549	0.1028
CQ6	175/591	15/1501	3/35	105/857	45/5039	15/361	175/197	75/503	7/549	0.0904
CQ7	7/591	35/1501	7/35	5/857	45/5039	3/361	35/197	75/503	7/549	0.0264
CQ8	5/591	525/1501	5/35	175/857	63/5039	3/361	7/197	15/503	63/549	0.1005
CQ9	7/591	735/1501	3/35	5/857	35/5039	45/361	105/197	5/503	21/549	0.145

The alternatives are compared with Cost and Quality criterions and have been presented below,

Table 9: Pair wise comparison with respect to CQ1- CQ9

Cost & Quality	Goals	G1	G2	G3	G4	G5	G6	Priority
CQ1	G1	1	1/3	3	5	1/7	1/3	0.1034
	G2	3	1	9	1/5	1/5	9	0.2036
	G3	3	1/9	1	1/5	3	3	0.1199
	G4	1/5	5	5	1	1/7	7	0.19
	G5	7	5	1/3	7	1	1/5	0.2417
	G6	3	1/9	1/3	1/7	5	1	0.1414
CQ2	G1	1	1/5	3	5	5	1/5	0.154117
	G2	5	1	1/9	7	7	1/7	0.231955
	G3	1/3	9	1	1/5	1/3	1/5	0.109008
	G4	1/5	1/7	5	1	1/5	3	0.107651
	G5	1/5	1/7	3	5	1	7	0.191647
	G6	5	7	5	1/3	1/7	1	0.205623
CQ3	G1	1	1/5	3	3	1/9	9	0.166428
	G2	5	1	1/7	9	5	1/7	0.204151
	G3	1/3	7	1	1/5	5	1/5	0.166674
	G4	1/3	1/9	5	1	1/7	1/3	0.075623
	G5	9	1/5	1/5	7	1	5	0.217541
	G6	1/9	7	5	3	1/5	1	0.169583
CQ4	G1	1	1	1/3	1/7	1/7	3	0.062966
	G2	1	1	1/3	1/5	1/9	3	0.060464
	G3	3	3	1	5	1/9	1/5	0.136715
	G4	7	5	1/5	1	1/7	5	0.175682
	G5	7	9	9	7	1	7	0.480341
	G6	1/3	1/9	5	1/5	1/7	1	0.083833
CQ5	G1	1	1	1/5	1/5	1/9	1/5	0.03
	G2	1	1	1/5	1/5	1/7	1/3	0.0413
	G3	5	5	1	1/5	1/7	5	0.15
	G4	5	5	5	1	1/7	5	0.21
	G5	9	7	7	7	1	7	0.4767
	G6	5	3	1/5	1/5	1/7	1	0.092
CQ6	G1	1	3	5	1/3	1/5	5	0.21
	G2	1/3	1	5	1/5	3	3	0.116
	G3	1/5	1/5	1	1/5	3	3	0.16
	G4	3	5	5	1	1/5	1/3	0.218
	G5	5	1/3	1/3	5	1	1/5	0.149
	G6	1/5	1/3	1/3	3	5	1	0.147
CQ7	G1	1	1	3	3	1/5	1/5	0.131397
	G2	1	1	1/3	9	1/5	1/3	0.14973
	G3	1/3	3	1	1/3	3	3	0.17191
	G4	1/3	1/9	3	1	3	5	0.211462
	G5	5	5	1/3	1/3	1	3	0.201745
	G6	5	3	1/3	1/5	1/3	1	0.133755
CQ8	G1	1	1/9	9	1/3	1/7	3	0.122249
	G2	9	1	7	1/3	1/7	9	0.224808
	G3	1/9	1/7	1	5	5	3	0.201701
	G4	3	3	1/5	1	1/9	1/5	0.082664
	G5	7	7	1/5	9	1	7	0.309952
	G6	1/3	1/9	1/3	5	1/7	1	0.058627
CQ9	G1	1	9	1/5	1/3	1/7	1	0.131936
	G2	1/9	1	5	3	1/5	3	0.155511
	G3	5	1/5	1	1/5	1/5	3	0.126179
	G4	3	1/3	5	1	1/7	1/5	0.099445
	G5	7	5	5	7	1	1/9	0.259496

International Journal of Interdisciplinary Research in Arts and Humanities (IJIRAH)
Impact Factor: 4.675, ISSN (Online): 2456 - 3145
(www.dvpublication.com) Volume I, Issue I, 2016

	G6	1	1/3	1/3	5	9	1	0.227433

Determination of Overall Priority for Cost and Quality Criterion:

The final phase of the AHP analysis is summarized in the following table. To determine the overall priority, a simple weighted technique is used. Overall priority of G1= 0.19476(0.1034) + 0.21 (0.1541) + 0.0501(0.1664) + 0.0801(0.0629) + 0.1028 (0.03) + 0.0904 (0.21) + 0.0264(0.1313) + 0.1005 (0.1222) + 0.145(0.1319) = 0.1228

Table 10: Priority matrix of supplier selection Alternatives

Cost &Quality	CQ1	CQ2	CQ3	CQ4	CQ5	CQ6	CQ7	CQ8	CQ9	Overall Priority Vector
	0.1947	0.21	0.0501	0.0801	0.1028	0.0904	0.0264	0.1005	0.145	
G1	0.1034	0.1541	0.1664	0.0629	0.03	0.21	0.1313	0.1222	0.1319	0.1228
G2	0.2036	0.2319	0.2041	0.0604	0.0413	0.116	0.1497	0.2248	0.1555	0.1672
G3	0.1199	0.1090	0.1666	0.1367	0.15	0.16	0.1719	0.2017	0.1261	0.1385
G4	0.19	0.1076	0.0756	0.1756	0.21	0.218	0.2114	0.0826	0.0994	0.1471
G5	0.2417	0.1916	0.2175	0.4803	0.4767	0.149	0.2017	0.3099	0.2594	0.2733
G6	0.1414	0.2056	0.1695	0.0838	0.092	0.147	0.1337	0.0586	0.2274	0.1511

With respect to the overall priority scores of goals of implementing supply chain management in various firms, G5-Variance reduction (0.2733) is most preferred followed by G2- Cost minimization (0.1672), G6 – Lead time management (0.1511), G4 – Bottle neck management (0.1471), G3 – Inventory management (0.1385), and G1 – Service level (0.1228) respectively. That is, the units whose goal towards variance reduction considers the 'Cost and Quality' criterion in selecting the suppliers.

Responsibility Criteria:

RES 1 = Customer service, RES 2 = Confidentiality, RES 3 = Social Responsibility, RES 4 = Financial stability, RES 5 = Owned capacity

Table 11: Pairwise Comparison Matrix for the four Responsibility criteria

Responsibility	RES1	RES2	RES3	RES4	RES5
RES1	1	1/7	7	7	7
RES2	7	1	7	7	7
RES3	1/7	1/7	1	3	3
RES4	1/7	1/7	1/3	1	1
RES5	1/7	1/7	1/3	1	1
Column Totals	59/7	11/7	47/3	19	19

Determination of Overall Priority:

The final phase of the AHP analysis is summarized in the following table. To determine the overall priority, a simple weighted technique is used. Overall priority of G1 = 0.2786(0.1034) + 0.5301 (0.1541) + 0.0975(0.1664) + 0.0469(0.0629) + 0.0469 (0.03) = 0.1311

Table 12: Priority Matrix of supplier Selection Alternatives

Priority	RES1 (0.2786)	RES2 (0.5301)	RES3 (0.0975)	RES4 (0.0469)	RES5 (0.0469)	Overall Priority Vector
G1	0.1034	0.1541	0.1664	0.0629	0.03	0.1311
G2	0.2036	0.2319	0.2041	0.0604	0.0413	0.2044
G3	0.1199	0.1090	0.1666	0.1367	0.15	0.1209
G4	0.19	0.1076	0.0756	0.1756	0.21	0.1355
G5	0.2417	0.1916	0.2175	0.4803	0.4767	0.235
G6	0.1414	0.2056	0.1695	0.0838	0.092	0.1732

With respect to the overall priority scores of goals of implementing supply chain management in various firms, G5-Variance reduction (0.2350) is most preferred followed by G2- Cost minimization (0.2044), G6 – Lead time management (0.1732), G4 – Bottle neck management (0.1355), G1 – Service level (0.1311) and G3 – Inventory management (0.1209) respectively. That is, the units whose goal towards variance reduction considers the 'Responsibility' criterion in selecting the suppliers.

Promptness Criteria:

P1 = On-time shipment rate, P2 = Product Integrity (PI) testing, P3 = Goods returned to the vendor, P4 = Sampling turn time.

International Journal of Interdisciplinary Research in Arts and Humanities (IJIRAH)
Impact Factor: 4.675, ISSN (Online): 2456 - 3145
(www.dvpublication.com) Volume I, Issue I, 2016

Table 13: Pair wise Comparison Matrix for the four Promptness criteria

Promptness	P1	P2	P3	P4
P1	1	7	5	5
P2	1/7	1	7	7
P3	1/5	1/7	1	3
P4	1/5	1/7	1/3	1
Column Totals	54/35	58/7	40/3	16

Determination of Overall Priority:

The final phase of the AHP analysis is summarized in the following table. To determine the overall priority, a simple weighted technique is used. Overall priority of G1 = 0.5451(0.1034) + 0.2939(0.1541) + 0.1023(0.1664) + 0.0586(0.0629) = 0.1224.

Table 14: Priority Matrix of supplier Selection Alternatives

Priority	P1 (0.5451)	P2 (0.2939)	P3 (0.1023)	P4 (0.0586)	Overall Priority Vector
G1	0.1034	0.1541	0.1664	0.0629	0.1224
G2	0.2036	0.2319	0.2041	0.0604	0.2036
G3	0.1199	0.1090	0.1666	0.1367	0.1225
G4	0.19	0.1076	0.0756	0.1756	0.1532
G5	0.2417	0.1916	0.2175	0.4803	0.2384
G6	0.1414	0.2056	0.1695	0.0838	0.1598

With respect to the overall priority scores of goals of implementing supply chain management in various firms, G5-Variance reduction (0.2384) is most preferred followed by G2- Cost minimization (0.2036), G6 – Lead time management (0.1598), G4 – Bottle neck management (0.1532), G3 – Inventory management (0.1225), and G1 – Service level (0.1224) respectively. That is, the units whose goal towards variance reduction considers the 'Promptness' criterion in selecting the suppliers.

Flexibility Criteria:

F1 = Accepts changes, F2 = Apprehend market trends, F3 = In-house design team, F4 = Quick Response

Table 15: Pair wise Comparison Matrix for the four Flexibility criteria

Flexibility	F1	F2	F3	F4
F1	1	7	1/9	7
F2	1/7	1	1/7	7
F3	9	7	1	1/5
F4	1/7	1/7	5	1
Column Totals	72/7	106/7	394/63	76/5

Determination of Overall Priority:

The final phase of the AHP analysis is summarized in the following table. To determine the overall priority, a simple weighted technique is used. Overall priority of G1 = 0.2594(0.1034) + 0.1408 (0.1541) + 0.3776(0.1664) + 0.2222(0.0629) = 0.1253

Table 16: Priority Matrix of supplier Selection Alternatives

Priority	F1 (0.2594)	F2 (0.1408)	F3 (0.3776)	F4 (0.2221)	Overall Priority Vector
G1	0.1034	0.1541	0.1664	0.0629	0.1253
G2	0.2036	0.2319	0.2041	0.0604	0.176
G3	0.1199	0.1090	0.1666	0.1367	0.1398
G4	0.19	0.1076	0.0756	0.1756	0.132
G5	0.2417	0.1916	0.2175	0.4803	0.2785
G6	0.1414	0.2056	0.1695	0.0838	0.1482

With respect to the overall priority scores of goals of implementing supply chain management in various firms, G5-Variance reduction (0.2785) is most preferred followed by G2- Cost minimization (0.1760), G6 – Lead time management (0.1482), G3 – Inventory management (0.1398), G4 – Bottle neck management (0.1320), and G1 – Service level (0.1253) respectively. That is, the units whose goal towards variance reduction considers the 'Flexibility' criterion in selecting the suppliers. From the AHP analysis, it can be concluded that the units whose goal is 'variance reduction' plays an important role in selection of suppliers through various criterion such cost and quality, Responsibility, Promptness and Flexibility.

Conclusion:

It is concluded that the supplier selection criterions and the various goals of knitted garment units in implementing supply chain management which were analysed using AHP reveals that the knitted garment units which prefer any criterion has a goal of 'Variance reduction' in implementing supply chain management.

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