Distribution Network of Indian Lighting Industry- A Comparative Sectoral Analysis.

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Abstract

Due to dynamic complexities of the business environment, the sustainable profitability of the enterprises greatly depends on timely delivery of goods and services to business partners and customers. Hence an attempt has been made to identify and analyze the age-old subdued problems of delivery distortion of light and light fittings industry in India.. To this end, an effort has been made to critically examine the current status of the supply chain network of organized and unorganized sectors in the light and light fittings industry. The study has been carried out collecting primary data through structured questionnaire among 106 respondents from 27 related business entities using random sampling design. Data was analyzed employing factor analysis. While analyzing the long standing problem of the electrical industry in India in terms of distribution distortion of electric light and light fittings, it was observed that there were some common variables affecting the factors in unorganized, organized, and also in the composite sector. Hence, it was recommended that the common variables as mentioned above need to be addressed properly to narrow down the delivery distortion gap for the benefit of all concerned. It was felt that the corrective measure would protect the uneven growth, reduce the disparity in the policy framework, and improve upon the bottom line for healthy sustenance of both the sectors.

However, for the sake of cost effectiveness and simplicity, the surrogate variables i.e., the variables that have highest correlation coefficient values on the impacting factors were identified.

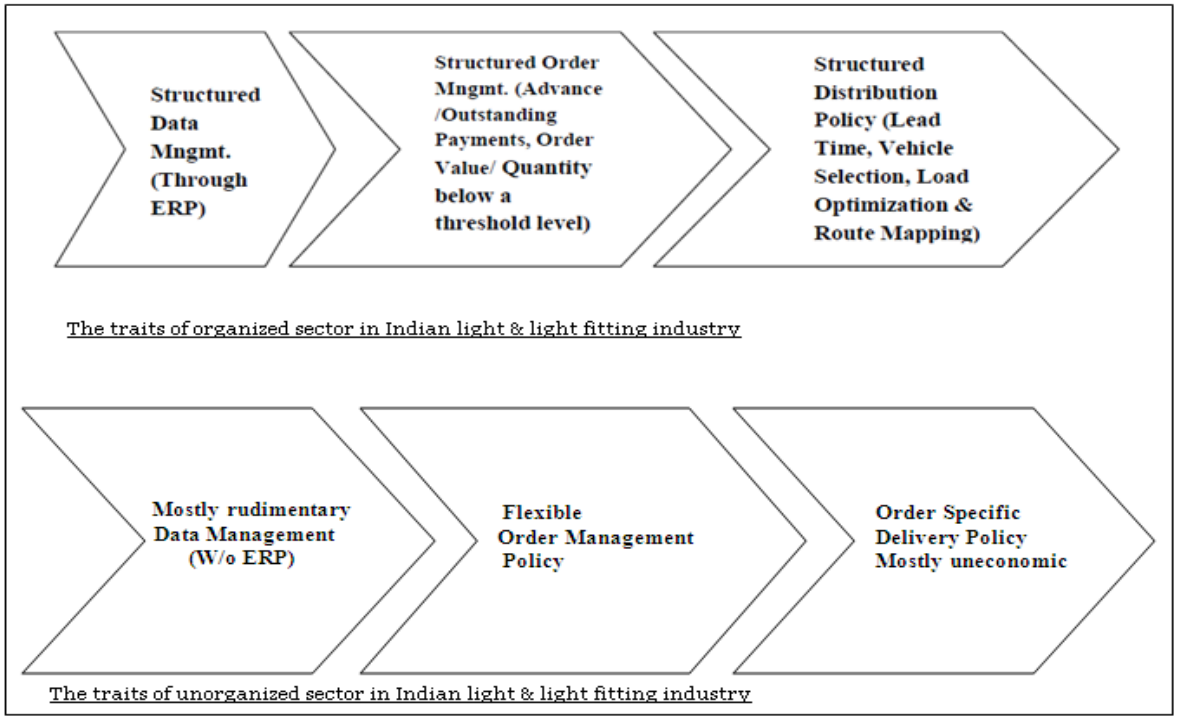
Key Words-*Distribution Network, ERP, Factor Analysis, Surrogate Variables, Supply Chain Management, SKU.*

Introduction

The distribution network of light and light fittings is an important part of Supply Chain Management (SCM) which ensures efficacy and effectiveness. Since technological changes are taking place almost heels-to-heels, the organizations need to restructure their businesses processes and distribution network to reinforce the bottom-line. Indian light and light fittings industry is in a transitional trajectory from the traditional lighting technology to LIGHT Emitting Diode (LED) (McKinsey, 2012, Frost & Sullivan, 2013). The light and light fittings market is presently dominated by Compact Fluorescent Lamps (CFL), Metal Halide and Halogen Lamps, and T5 Fluorescent Lights (TFL), T5 Fluorescent LED lights. The Incandescent Bulbs are on the phase out mode while in the indoor segment, CFL and TFL have gained huge acceptance (Frost & Sullivan, 2013). The domestic light and light fittings industry including LED was valued at USD 2193.55 million in 2013 and according to Frost & Sullivan analysis the industry is likely to reach USD 4011.29 million by 2017, at a Compound Annual Growth Rate (CAGR) of about 16.2 percent over 2013-2017 (ELCOMA, 2014). The LED lighting segment is expected to be the fastest growing

segment at a CAGR of 42.4 percent between 2013 and 2017. The luminaires segment is expected to grow at the rate of 12.4 percent between 2013 and 2017. The lighting controls segment also grew at a CAGR of 12 percent between 2010 and 2012, but is expected to grow at a CAGR of 10.2 percent between 2013 and 2017.

The maximum growth at a CAGR of 42.4 percent between 2013 and 2017 was reported in LED lighting segment, whereas the same was reported to be 12.4 and 10.2 percent, for luminaires and lighting control system, respectively. In India, the units of light and light fittings industry are found to be in organized and unorganized sectors. The terms unorganized and informal sectors are often used interchangeably. The informal sector may be broadly characterized as consisting of units engaged in the production of goods or services with the primary objective of generating employment and incomes to the persons concerned. These units typically operate on a small scale with little or no division between labour and capital as factors of production (NSC, 2012). The traits of organized and unorganized sectors in Indian light and light fittings industry are depicted in Figure 1:



[Figure 1: Comparative Process Mapping]

Although there exists a relatively structured supply chain network on uniform platform for both organized and unorganized sectors, however, there exists problem of several issues in the supply chain management including non-delivery of ordered materials on time. In view of the above, the objectives of this research project are (i) to critically examine the current status of supply chain network of organized and unorganized sectors in lighting industry (ii) to identify major factors affecting the delivery distortions in the supply chain network.

Review of Literature & Research Methodology

Indian light and light fittings industry wraps a market value of USD 806.45 million covering GLS lamps, Fluorescent Tube Lights, Compact Fluorescent Lamps, Domestic Luminaires, Ballasts, Starters, LED Torches and Luminaires pose a market of USD 403.22 million covering products, such as, Industrial, Commercial, Decorative, Streetlight, Floodlight, LED, Lighting Electronics, Lighting Control, High Intensity Discharge (HID) lamps, Mercury and Sodium Vapour lamps, Halogen lamps, Metal Halide and Fluorescent lamps. Both the markets are controlled by 65% organized and 35% unorganized sectors (Oswal, 2014).

This article envisages a comparative study and analysis of the distribution network prevailing in organized and unorganized sectors of Indian light and light fittings industry and intends to ferret out the factors affecting delivery distortions impacting customer satisfaction. A number of studies were carried out on light and light fittings industry. Some of the earlier studies on analysis and design of distribution network were based on the regression analysis (Lord and Lynds, 1981), game theory and decision models (Davis, 2006; Ghosh and Craig, 1983, 1986). An econometric model incorporating the geographical locations of retailers and the price competition among them so as to evaluate the policy implication of the distribution network on consumers were studied (Chan *et al*, 2007). The models were developed to ascertain the variability of consumers' tastes in the context of store locations (Donthu and Rust, 1989; Mittal, Kamakura, and Govind, 2004; Rust and Donthu, 1995). The location and allocation decisions in supply chain network design, including the choice of the number, site, and capacity of facilities, as well as assigning customers to these facilities, have significant long-term impacts on the efficiency of the network (Brandeau and Chiu, 1989; Daskin, 1995).

Efficient distribution network design hones up marketing competitiveness (Jennifer Shang *et al*, 2009). The distribution network bottleneck in terms of weak logistics infrastructure and inefficient and high transportation cost has been studied (ELCOMA, 2014). As such, the existing gaps between organized and unorganized sectors were identified. In a detailed study, ELCOMA (2014) charted the future path of light and light fittings industry of India.

Motivated by the above methodologies, the researchers identified a gap suitable for the remedial measure in terms of disparity in the distribution network followed by the organized and unorganized sectors in India. To the best of our understanding, no work has been done so far to identify the factors affecting the distribution network of light and light fittings industry in India.

In this study, data was collected using a structured questionnaire. The total population from the electric light and light fittings was initially selected from the Buyers' Guide published by Indian Institute of Materials Management (IIMM, 1989). To carry out the survey, a simple random sample of 27 companies was selected. Data was collected using 21 questions designed in 7-point Likert-like scale. To identify the factors responsible for delivery distortion of supply chain network, the collected data was analyzed using Factor analysis. Factor Analysis is primarily used for data reduction and identification of unobserved factors using observed variables. In this study, orthogonal factor model has been used. Twenty one observed variables [V1, V2, …… ,V21] as given in the questionnaire (Appendix 1) were analyzed to obtain the unobserved factors.

The current status of the supply chain

The present supply chain network followed mostly in the organized Indian light and light fittings industry was based on four broad supply chain matrices such as (a) cycle time metrics (b) cost metrics (c) service quality metrics and (d) asset metrics. For the first metric *i.e.,* the cycle-time which is measured by the number of days elapsed from the time a customer places an order to the time of receipt of payment. The cycle time lies reported to be between 10 - 18 days for 37% of the companies and above 45 days for remaining companies.

In service quality metrics (% of on-time deliveries, supplies made as per the quantity ordered and supply on desired quality) around 64% of companies have an on time delivery of 95- 100% and around 12% of the companies contacted have an on time delivery of less than 80%. Asset metrics include raw materials inventory holding (number of days), work in progress inventory holding (number of days), finished goods inventory holding (no. of days) and inventory turnover (inventory rotation times). Result through interview showed that around 26% of the companies have raw material inventory holding of less than 9 days and about 8% of companies have this holding above 28 days. However, three common factors as followed in the organized sector were customer service, demand management, and push-based stock management.

The unorganized sector in the Indian light and light fittings industry mostly followed a contingent management system of the above three parameters. In a low margin and high volume business like light and light fittings industry, it requires a very close attention on the planning and operational part of the entire value chain because these minute details will change the fate of any organization. While branding differential image of the product, the distribution system will determine the future of the organization up to a very large extent in this industry. The diversity of India and existence of vast untapped markets of rural areas will open up bundle of opportunities to companies. The best price or quality product offerings combined with heavy promotional and advertising budgets will not help the product succeed if one of the major ingredients of the marketing mix such as distribution is not properly focused.

The traditional basic structure of supply chain has not changed much over the years. The basic supply chain related to distribution side of light and light fittings industry follows the same path as it is used to follow during the last decade. The competitive scenario has changed the importance of each element of the chain operation i.e. a detailed planning and analysis of every activity of the chain so that to make the same efficient and effective.

Sectoral Growth Metrices

Depth Interview was carried out among the 27 companies to understand the sectoral growth metrics to enable the sector to have balanced sustainable growth. The major emerging results/findings of the Depth Interview based on the questions covering multifaceted dimensions like factors affecting the speed of delivery (cycle time metrics), on time and correct supply (service quality metrics), per unit delivery cost (cost metrics), and policy of stock management basically inventory turnover ratio as the yardstick and push-pull strategy (asset metrics). The outcome of the Depth Interview as the causes of the supply chain metrics were:

(a) Enterprise Resource Planning (ERP).
(b) Structured order management policy in terms of Advance and Outstanding Payments, Order value/quantity below a threshold level.
(c) Distribution policy in terms of lead time of delivery, vehicle selection, load optimization, and route mapping under the premise of delivery urgency, distribution costs, and customer profile.

(d) Efficient stock management policy by way of effective communication, maintaining collaborative relationship with the channel partners, and focused customer relationship management.

Disparity in the Policy Framework

It was revealed through the Depth Interview that although there exists a relatively structured supply chain network for both organized and unorganized sectors, however, one problem was common to both the sectors *i.e.* not delivering the ordered materials on time. This was primarily due to disparity of policy framework prevailing in both the sectors. Especially, the advance payment and the credit policies coupled with threshold level of order quantity/ value, preferential treatment to dealers, and commission structure followed by the organized sectors posed to be the distribution bottlenecks. The delayed and wrong entry of materials movement, rudimentary communication system, slow operational network without the use of ERP, and finally firefighting due to contingent management system were the root-causes of delivery distortion in the unorganized sector.

Observations and Analysis

To identify the factors responsible for delivery distortion of distribution network of light and light fittings industry, analysis was carried out for organized, unorganized, and combined sectors. Many variables are known to be responsible for delivery distortion. A total of 21 variables were identified which were reported to be causing delivery distortion. A questionnaire was prepared to understand the extent of delivery distortion of these variables. Data was collected in a 7-point Likert like scale (Annexure A1). Data was analyzed using factor analysis in SPSS software.

Observation for organized sector: The value of KMO, the measure of sample adequacy, was found to be 0.785. Hence, Factor Analysis was meaningful for these data sets. Also, the Bartlett's Test of Sphericity was found to be significant (P < 0.00). Therefore, some variables were correlated among themselves:

TABLE 1:

KMO and Bartlett's Test on organized sector's data:

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.785
Bartlett's Test of Sphericity	Approx. Chi-Square	1023.789
	df	210
	Sig.	.000

To identify the underlying reasons of correlation, the results obtained can be interpreted from Tables A9, A10, and A11. As per Table A9, six factors were found to be adequate to describe the present data sets. Again, Eigen Value of more than 1 as found to be in 6 components. 81.081% of variance of these data sets was explained by these 6 components as per Table A10.

Factor 1 represents variables like "Price escalation", "No clarity in order statement" ,"Amendment in ordering", "Vehicle breakdown", "Increased frequency of order', "Outstanding payment of earlier supplies", "Non-realization of advance payment", "Commission structure of dealers", "Making payment

as per agreed order vis-à-vis credit purchase", and "Wrong placement of order", and "wrong placement of order". Out of these ten different variables, "Outstanding payment of earlier supplies" was found to be highly correlated (0.897) with Factor 1. However, from the present analysis, it appears difficult to find an underlying reason to describe Factor 2. Hence, "Political unrest", "Vehicle breakdown", "Labour problem", and "Bad road condition", appeared to play an important role in determining a factor which may have influence on delivery distortion. Again, for Factor 3, variables "Order value below a threshold level", and "Weather condition" were found to be influencing the delivery. For Factor 4, variables "Festive seasons" and "Project works" were found to have influenced it. Similarly, for Factor 5, variable "Mismatching in SKUs while ordering", "Bad road condition", and "Wrong and delayed data entry of product movement" seemed to be the influencing factors to delivery distortion. Again, for Factor 6, "Differential preference to dealers" was found to be the only variable that has influenced the said Factor.

In view of the above observations, it was noticed that rational diagnosis of the delivery distortion may pose to be difficult on the premise that many unrelated variables were clustered in against individual factor. As such, it was decided as a matter of prudent decision in the light of simplicity and cost effectiveness to consider the surrogate variables that have highest correlation over the Factors as guiding parameters which have been shown in Table A12.

Observation for unorganized sector: The value of KMO, the measure of sample adequacy, was found to be 0.681. Hence, Factor Analysis was meaningful for these data sets. Also, the Bartlett's Test of Sphericity was found to be significant (P < 0.00). Therefore, some variables were correlated among themselves:

TABLE 2.1:

KMO and Bartlett's Test on unorganized sector's data:

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.681
Bartlett's Test of Sphericity	Approx. Chi-Square	696.818
	df	210
	Sig.	.000

Extraction Method: Principal Component Analysis.

To identify the underlying reasons of correlation, the results obtained can be interpreted from Tables A5, A6, and A7. As per Table A5, five factors were found to be adequate to describe the present data sets. Again, Eigen Value of more than 1 as found to be in 5 components. 74.728% of variance of these data sets was explained by these 5 components as per Table A6.

Factor 1 represents variables like "Price escalation", "No clarity in order statement", Amendment in ordering", "Increased frequency of order', "Outstanding payment of earlier supplies", Non-realization of advance payment", "Order value below a threshold level", "Wrong placement of orders", "Wrong and delayed data entry of product movement", and "Weather condition". Out of these ten different variables, "No clarity in order statement" was found to be highly correlated (0.801) with Factor 1.

However, from the present analysis, it appears difficult to find an underlying reason to describe Factor 2. Hence, "Vehicle Break-down", "Receiving of ordered materials within due date", "Festive seasons", "Mismatching in SKUs while ordering", "Labour problem", and "Bad Road Condition" appeared to play an important role in determining a factor which may have influence on delivery distortion. Again, for Factor 3, variables "Differential preference to dealers", "Commission Structure of dealers", and "Making payment as per agreed order vis-à-vis credit purchase" were found to be influencing the delivery. For Factor 4, variables "Price escalation", "Festive seasons" and "Project works" were found to have influenced it. Similarly, for Factor 5, variable "Receiving ordered materials within due date" seemed to be the only influencing factor to influence delivery.

In view of the above observations, it was noticed that rational diagnosis of the delivery distortion may become difficult on the premise that many unrelated variables were clustered in against individual factor. As such, it was decided as a matter of prudent decision in the light of simplicity and cost effectiveness to consider the surrogate variables that have highest correlation over the Factors as guiding parameters which have been shown in Table A8.

Observation for the combined Sectors: The value of the KMO, the measure of sample adequacy, was found to be 0.775. Hence, Factor Analysis was meaningful for these data sets. Also, the Bartlett's Test of Sphericity was found to be significant (P < 0.00). Therefore, some variables were correlated among themselves:

TABLE 1.1:

KMO and Bartlett's Test on combined data:

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.775
Bartlett's Test of Sphericity	Approx. Chi-Square	1505.562
	df	210
	Sig.	.000

To identify the underlying reasons of correlation, the results obtained can be interpreted from Tables A1, A2 and A3. As per Table A1, six factors were found to be adequate to describe the present data sets. Again, Eigen Value of more than 1 as found to be in 6 components. 76.472% of variance of these data sets was explained by these 6 components as shown in the Table A2.

Factor 1 represents variables like previous outstanding and current order related issues. Out of eight different variables, "Outstanding payment of earlier supplies" was found to be highly correlated (0.888) with Factor 1. However, from the present analysis, it appears difficult to find an underlying reason to describe Factor 2. Hence, "Vehicle Break-down", "Labour Problem", and "Bad Road Condition" appeared to play an important role in determining a factor which may have influence on delivery distortion. Again, for Factor 3, variables "Order value below a threshold level" and "Weather condition" w ere found to be influencing the delivery. For Factor 4, variables "Differential preference to dealers" and "Commission structure of dealers" were found to have influenced it. Similarly, for Factor 5, variables "Festive seasons" and "Project work" seemed to be two influencing factors and for Factor 6, the variables "Receiving ordered materials within due date" and "Mismatching in SKUs while ordering" have found to be influencing factors on delivery.

In view of the above observations, it was noticed that rational diagnosis of the delivery distortion may pose to be difficult on the premise that many unrelated variables were clustered in against individual factor. As such, it was found to be a prudent decision in the light of simplicity and cost effectiveness to consider the surrogate variables that have highest correlation over the Factors as guiding parameters which have been shown in Table A4.

Salient Findings and Conclusions

While analyzing the long standing problem of the electrical industry in India in terms of distribution distortion of electric light and light fittings, it was observed that there were some common variables affecting the factors in unorganized, organized, and also in the composite sector. The variables such as "Differential Preference to Dealers", "Project Works", and "Receipt of materials within due date" were common to unorganized and organized sectors as well as to composite sectors (both unorganized and organized). Again, some variables were in contrast to common variables for the above sectors *i.e.*, unorganized, organized, and composite sectors. The contrast variable for unorganized sector was "No Clarity in Order", and the variables for the organized sector were "Wrong Placement of Orders", "Labour Problems", and "Weather Condition, Mismatch of SKUs". The contrast variables for the composite sector were Outstanding of Payment", "Bad Road Conditions", and "Order value below a threshold level". These contrast variables appeared to be unrelated and may be ignored while taking corrective measures for the unorganized and organized sectors in view of the time and cost constraints which were presumably material to the industry. Hence, it was recommended that the common variables as mentioned above need to be addressed properly to narrow down the delivery distortion gap for the benefit of all concerned. It was felt that the corrective measure would protect the uneven growth, reduce the disparity in the policy framework, and improve upon the bottom line for healthy sustenance of both the sectors.

ANNEXURE

A1: Questionnaire

Questionnaire for Academic Study

1. **Name of the Respondent:**
2. **Name of the Distributor / Dealer:**
3. **Address:**
4. **Brands Dealing with:**

Distortion in Delivery has been reported to be a common phenomenon in the distribution network of Light & Light fittings. Please express your views on the following reasons of delivery distortions in a 7 point scale where 7 indicates Strongly Agree and 1 indicates Strongly Disagree and all other points are in between these two numbers

Sl. No.	Questions	7	6	5	4	3	2	1
1	Price escalation is a cause of delivery distortion							
2	Political unrest is a cause of delivery distortion							

3	No clarity in order Statement							
4	Amendment in ordering due to wrong forecasting							
5	Experienced delivery delay due to vehicle breakdown							
6	Increased frequency of order as a cause of delivery delay							
7	Receiving of ordered materials within due date							
8	Experienced festive seasons as a cause of delivery delay							
9	Experienced project works as a cause of delivery delay							
10	Outstanding payment of earlier supplies is a cause of delivery distortion							
11	Mismatching in SKUs while ordering is a cause of delivery distortion							
12	Differential preference to dealers is a cause of delivery distortion							
13	Non-realization of advance payment is a cause of delivery Distortion							
14	Order value below a threshold level is a cause of delivery distortion							
15	Labour problem is a cause of delivery distortion							
16	Commission structure of dealers is a cause of delivery distortion							
17	Experienced delivery delay due to bad road condition							
18	Making payment as per agreed order vis-à-vis credit purchase is a cause of delivery distortion							
19	Placement of order of a particular type of material to a manufacturer who does not manufacture it							
20	Wrong and or delayed data entry of product movement is a cause of delivery distortion							
21	Experienced weather condition as a cause of delivery distortion							

TABLE A1

Total Variance Explained on combined data

Component	Initial Eigen values			Extraction Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance
1	7.144	34.019	34.019	7.144	34.019
2	2.684	12.781	46.800	2.684	12.781
3	2.238	10.658	57.458	2.238	10.658
4	1.664	7.922	65.379	1.664	7.922
5	1.321	6.290	71.669	1.321	6.290
6	1.009	4.803	76.472	1.009	4.803
7	.827	3.940	80.412		
8	.666	3.170	83.582		
9	.566	2.697	86.279		
10	.497	2.367	88.646		
11	.380	1.809	90.456		
12	.354	1.685	92.141		
13	.328	1.561	93.702		
14	.283	1.349	95.050		
15	.251	1.195	96.245		
16	.186	.887	97.133		
17	.166	.792	97.924		
18	.130	.617	98.542		
19	. 123	.584	99.126		
20	.107	.509	99.635		
21	077	.365	100.000		

TABLE A2

Total Variance Explained on combined data

Component	Extraction Sums of Squared Loadings	Rotation Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative
1	34.019	4.532	21.581	21.581
2	46.800	3.198	15.230	36.811
3	57.458	2.317	11.032	47.843
4	65.379	2.210	10.526	58.369
5	71.669	1.987	9.462	67.831
6	76.472	1.815	8.641	76.472

Extraction Method: Principal Component Analysis.

TABLE A 3

Combined data set Rotated Component Matrix

	Component					
	1	2	3	4	5	6
V1	.621	081	-.070	.328	.419	.107
V2	.242	.531	.435	-.334	-.121	-.077
V3	.740	.191	.446	.120	-.053	.175
V4	.662	.142	.341	.246	-.017	.294
V5	.324	.732	.047	.201	.169	.364
V6	.532	.159	.343	.050	.272	.269
V7	.071	.043	-.042	-.208	-.004	.800
V8	0.37	.176	.048	.284	.848	.154
V9	.056	.037	.068	-.022	.929	-.105
V10	.888	.082	-.010	.075	.053	-.060
V11	.151	.469	-.108	148	.096	.646
V12	.190	-.075	.111	.816	.124	-.095
V13	.655	.130	.497	.182	-.022	-.231
V14	.298	-.127	.839	-.034	.107	-.215
V15	.013	.879	.044	-.201	.033	.080
V16	.338	.138	.143	.740	.119	-.086
V17	.078	.859	.033	.128	.107	.133
V18	.442	.616	.130	.343	.181	-.255
V19	.815	.175	.005	.330	.082	.036
V20	.598	.044	.215	-.261	-.134	.395
V21	.024	.227	.786	.350	.064	.131

[a]Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

TABLE A 4

Surrogate variables for different factors (from combined sectors' data)

FACTOR 1 (F1)		FACTOR 2 (F2)		FACTOR 3 (F3)		FACTOR 4 (F4)		FACTOR 5 (F5)		FACTOR 6 (F6)	
Variables	Values	Variables	Values	Variables	Values	Variables	Values	Variables	Values	Variables	Values
Outstanding payment of earlier supplies (V10)	0.888	Labour problem (V15)	0.879	Order value below a threshold level (V14)	0.839	Differential preference to dealers (V12)	0.816	Experienced project works (V9)	0.929	Receiving of ordered materials Within due date (V7)	0.800

TABLE A 5

Total Variance Explained on unorganized sector

Component	Initial Eigen values			Extraction Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance
1	5.298	25.227	25.227	5.298	25.227
2	4.408	20.991	46.218	4.408	20.991
3	2.873	13.683	59.900	2.873	13.683
4	1.739	8.279	68.179	1.739	8.279
5	1.375	6.549	74.728	1.375	6.549
6	.986	4.693	79.421		
7	.926	4.410	83.831		
8	.760	3.618	87.449		
9	.498	2.371	89.820		
10	.385	1.835	91.655		
11	.359	1.707	93.362		
12	.290	1.380	94.742		
13	.253	1.205	95.947		
14	.191	.908	96.855		
15	.135	.641	97.497		
16	.132	.631	98.127		
17	.116	.553	98.680		
18	.108	.514	99.193		
19	.059	.279	99.472		
20	.058	.274	99.746		
21	.053	.254	100.000		

TABLE A 6,

Total Variance Explained for unorganized

Component	Extraction Sums of Squared Loadings	Rotation Sums of Squared Loadings		
	Cumulative %	Total	% of Variance	Cumulative %
1	25.227	4.730	22.522	22.522
2	46.218	4.260	20.287	42.809
3	59.900	2.887	13.747	56.556
4	68.179	2.153	10.252	66.808
5	74.728	1.663	7.920	74.728
6				

Extraction Method: Principal Component Analysis.

TABLE A 7, Unorganized Sector Rotated Component Matrix

	Component				
	1	2	3	4	5
V1	.565	.177	.305	.520	.017
V2	.413	.253	-.254	-.594	-.228
V3	.801	.016	.157	-.404	.125
V4	.593	.139	.449	-.358	.302
V5	.114	.892	.170	.036	.140
V6	.660	.241	.094	-.057	.414
V7	.159	.509	-.057	.100	.693
V8	-.035	.502	.366	.597	.060
V9	-.033	.077	-.060	.849	-.234
V10	.675	-.084	.361	.037	-.132
V11	.215	.838	.144	-.049	.112
V12	.192	.011	.889	.199	-.020
V13	.687	-.483	-038	-.052	-.138
V14	.660	-.554	-.243	-.001	-.115
V15	-.051	.844	-.235	-.011	-.141
V16	-.217	-.134	.840	.048	-.043
V17	-.062	.782	-.265	.203	-.273
V18	-.094	.365	.050	.230	-.696
V19	.552	.151	.674	-.055	-.122
V20	.799	-.008	-.105	.032	.338
V21	.566	.180	-.046	.011	.049

[a]Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 7 iterations

TABLE A 8,

Surrogate variables for different factors (from unorganised sectors' data)

FACTOR 1 (F1)		FACTOR 2 (F2)		FACTOR 3 (F3)		FACTOR 4 (F4)		FACTOR 5 (F5)	
Variables	Values	Variables	Values	Variables	Values	Variables	Values	Variables	Values
No clarity in order statement (V3)	0.801	Experienced delivery delay due to vehicle breakdown (V5)	0.892	Differential preference to dealers (V12)	0.889	Experienced project works (V9)	0.849	Receiving of ordered materials Within due date (V7)	0.693

TABLE A 9, Total Variance Explained on organized sector

Component	Initial Eigen values			Extraction Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance
1	8.634	41.115	41.115	8.634	41.115
2	2.667	12.699	53.814	2.667	12.699
3	1.965	9.359	63.173	1.965	9.359
4	1.592	7.579	70.752	1.592	7.579
5	1.125	5.357	76.109	1.125	5.357
6	1.044	4.971	81.081	1.044	4.971
7	.712	3.390	84.470		
8	.609	2.902	87.372		
9	.497	2.366	89.738		
10	.346	1.646	91384		
11	.392	1.565	92.949		
12	.241	1.146	94.095		
13	.224	1.065	95.161		
14	.215	1.024	96.184		
15	.191	.911	97.095		
16	.158	.754	97.849		
17	.146	.694	98.543		
18	.102	.485	99.028		
19	.086	.411	99.439		
20	.075	.356	99.795		
21	.043	.205	100.00		

TABLE A 10

Total Variance Explained on Organized Sector

Component	Extraction sums of squared loadings	Rotation sums of squared loadings		
	Cumulative %	Total	% of variance	Cumulative %
1	41.115	6.157	29.319	29.319
2	53.814	2.705	12.880	42.200
3	63.173	2.474	11.781	53.980
4	70.752	2.213	10.538	64.518
5	76.109	1.880	8.952	73.470
6	81.081	1.598	7.611	81.081

Extraction Method : Principal Component Analysis

TABLE 3.3:

Organized Sector Rotated Component Matrix[a]

	Component					
	1	2	3	4	5	6
V1	.721	-.193	-.034	.318	.216	.192
V2	.175	.830	.209	.090	-.100	-.137
V3	.769	.254	.288	.136	.273	.009
V4	.673	.208	.301	.220	.297	-.012
V5	.654	.517	.223	.141	.211	-.076
V6	.613	.230	.116	.449	-.156	-.004
V7	.049	-.048	.050	-.080	.163	-.880
V8	.180	-.016	.194	.897	.012	.113
V9	.147	.005	.087	.916	.084	.003
V10	.897	.114	-.065	.017	.045	-.175
V11	.095	-.077	-.021	.163	.854	-.206
V12	.313	-.221	.472	.043	-.096	.673
V13	.765	.233	.390	-.021	.015	.146
V14	.285	.269	.777	.228	.025	.142
V15	.059	.899	.031	-.069	.172	.055
V16	.686	-.110	.397	.117	.100	.154
V17	.347	.519	.196	-.025	.591	.241
V18	.771	.320	.331	.050	.096	.219
V19	.886	.031	.027	.098	.103	-.008
V20	.358	.383	-.038	-.194	.638	-.220
V21	.150	.121	.923	.123	.005	-.038

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 6 iterations.

TABLE A 12

Surrogate variables for different factors (from organized sectors'data)

FACTOR 1 (F1)		FACTOR 2 (F2)		FACTOR 3 (F3)		FACTOR 4 (F4)		FACTOR 5 (F5)		FACTOR 6 (F6)	
Variables	Values	Variables	Values	Variables	Values	Variables	Values	Variables	Values	Variables	Values
Outstanding payment of earlier supplies (V10)	0.897	Labour problem (V15)	0.899	Experienced Weather condition (V21)	0.923	Outstanding payment of earlier supplies (V10)	0.916	Labour problem (V15)	0.854	Experienced Weather condition (V21)	0.637

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