International Journal of Innovative Technology and Exploring Engineering (IJITEE)
ISSN: 2278-3075 (Online), Volume-9 Issue-3, January 2020

Relationship among Various Performance Measures and Outsourcing Services in the Third-Party Logistics Industry

R. Ashok, R. Rajesh

Abstract: ***In the recent years third-party logistics market is an emerging trend all over the world and most of the companies want to reduce the logistic costs, increase the market share, and focus on competency through the use of 3PLs. Due to the diversity of economic development, industrial segments and core competency between the markets, the third-party logistic market is growing very fast in the United Arab Emirates. The empirical study was carried out based on 102 responses received from 200 respondents for the third-party logistics market in Abu Dhabi, UAE. These data are analyzed by the SPSS software. Accordingly, the Friedman's test shows that the full truck load & transportation management and freight forwarding are the major outsourced activities from the 3PL firms having the "P" value which is lower than 0.01, with the null hypothesis being rejected at 1% level of significance. The detailed study explains the Pearson correlation coefficient, the regression analysis for the various business measures and factor analysis of the influencing the success factors in the 3PL market and necessity of outsourcing of 3PL services in Abu Dhabi, UAE.***

Keywords: 3PLs, Factor analysis, Regression analysis, Friedman's test, Business measures, UAE.

I. INTRODUCTION

The 3PL companies handle activities such as transportation, procurement etc; for the 3PL clients in contract. The improvement of 3PL services is followed by that of the original 3PLs which offered services such as transportation, brokerage and shipping (1970s to 1980),to asset or non-asset-based organizations with expanded service offered (1980s to 1990) and the web-based 3PLs with expanded supply chain integration (2000 onwards).The requirements of outsourcing activities are increasing day by day from 3PL clients in each country. As indicated by Armstrong and Associate (2017), a supply chain consultancy, 90% of local Fortune 500 organizations depend on 3PL suppliers to deal with logistic activities, compared with the 46% Armstrong announced in 2001.The development in online deals and expanding purchaser interest for quick delivery and lower costs have spiked interest in 3PL services. At present, most of the companies want to reduce the logistic costs, increase the market share, and focus on competency through the use of 3PLs.

Revised Manuscript Received on January 30, 2020.
***** Correspondence Author
R. Ashok*, Research Scholar, Department of Mechanical Engineering, Noorul Islam Higher Education, Kumaracoil, Tamilnadu, India, E mail: ashokamalan@gmail.com.
R. Rajesh, Principal, Rohini College of Engineering & Technology, Anjugrammam, Tamilnadu, India, Email: rajesh1576@yahoo.co.in.

As indicated by 2019 3PL investigation, among shipper respondents in comparison with the previous year, the outsourcing of domestic transportation service is 81% from 83%,which is slightly down from a year ago report, international transportation increased to 71% from 63%,warehousing increased to 69% from 66%,freight forwarding increased to 50% from 46%,customs brokerage slightly decreased to 40% from 46%. inventory expanded to 22% from 17%, transportation planning and management developed to 28% from 25%. Predictable with the outcomes of past investigations, the more tactical and customer-facing operations tend to be outsourced a little less than those that are more strategic and operational. According to M. S. Sohail (2006) report in the UAE, over two-thirds of the companies used 3PL operations for domestic and worldwide operations. Carrier selection (94.3%) was 3PL clients' largest outsourced operation, trailed by rate negotiation (88.6%), freight payment (84.8%) and shipment consolidation (82.9%).Over the 10 years up to 2017, the UAE's business part (which comprises of the extraction, manufacturing, utilities and construction segments) developed by 31% and is forecast to grow a further 34% in the following 10 years up to 2027, as indicated by the information from the Oxford Economics. Over the same 10-year time span to 2027, Abu Dhabi's industry area is estimated to become 56% and Dubai's by 51%, up from 13% and 6% throughout the decade to 2017 respectively. This diversity will hit the development of the third-party logistics industry in a positive way in the UAE. Various researchers have completed studies of the logistic outsourcing market everywhere throughout the world. Indeed, even now it is continuing and going great height due to the advancement of 3PL market. To the author's understanding not much studies have taken place about third party logistics market in the UAE. The empirical analysis has been studied for the different business measures for the third-party logistics industry in Abu Dhabi, UAE.

II. LITERATURE REVIEW

According to Ashok (2019), the "p" value of all market performance measures is less than 0.01, i.e. the null hypothesis is rejected at 1 percent. The Pearson correlation method shows that all the business performance measures such as area of shortfall from 3PL operations, performance of 3PL operations, markets availing of 3PL providers, and success of 3PL operations and use of 3PL services are all correlated with satisfaction of 3PL providers. All the business performance measures are highly correlated with each other.

From the regression analysis, all the independent variables such as area of shortfall from 3PL operations, performance of 3PL operations, and markets availing of 3PL users are significantly affecting the use of 3PL services and the success of 3PL operations does not seriously affect the use of 3PL services [1].

The lead time, warehouse management, cost reduction and transportation management (P<0.05) evaluated by V.K. Munanira (2018) significantly improve the supply chain quality in Braliwa [2].

According to Buket (2017), logistics performance such as cost, operational and relationship of 3PLs are highly significant with customer loyalty [3].

According to Tu Van Binh (2016), regression analysis shows that the cost of service, reputation of the 3PL, operation performance and long-term relationship are highly supported with overall assessment to logistic suppliers. But the financial performance is not supported with overall assessment to logistic suppliers [4].

To define the logistics capabilities in India, the confirmatory

factor analysis revealed that the freight forwarding service capabilities, value added logistics capabilities and technology enabled services to encourage company performance in India (A.D. Shalini Prieya ,2017) [5].

According to Maina (2016), the inventory control, distribution management and transportation management services provided by 3PL suppliers significantly improve the performance of the supply chain yet statistically insignificantly improve the relationship between warehouse management and supply chain efficiency in EABL [6].

According to Hazwani (2014), the factors found influencing halal logistics implementation among logistics providers in Peninsular Malaysia are management support, enforcement of Halal assurance system (HAS), environment controls, employee acceptance, and company vision to improve [7].

According to Djoko Roespinoedji (2019), after-sales services, deliveries and responsiveness have been positively and significantly associated with the customer retention and also customer relationship positively influenced customer retention in Indonesian Pharmaceutical Industry [8].

According to Balakrishnan.VN(2018),Correlation analysis shows that a competitive strategy (p= 0.693) does not have a significant relationship with competitive advantage progression, but the network structure (p=0.026) and information technology (p=0.045) have a significant relationship with progression of competitive advantage and the regression analysis reveals that advancement of competitive advantage in SME Third-Party Logistics in Selangor Malaysia was strongly linked to the competitive strategy, network structure and information technology [9].

According to Ashok (2019), the various factors influencing the success of 3PL industry, IT system application and IT impacts over the 3PL operations/3PL firms, normal issue and difficulties faced by 3PL firms, opportunities and growth of the 3PL industry in UAE have been ranked by Friedman test. He found that the “p” value of all the variables is less than 0.01. Hence the null hypothesis is rejected at 1 percent level of significance and only IT impacts on operations in 3PL provider firms have the "p" value higher than 0.05. The null hypothesis is accepted at 5 percent level with no significance. [10]. According to Mary (2016), relationship between the operating cost is significant (p value=0.000 <0.05) with organization performance [11].

Table-1: Identification of business measures from different study

Identified business measures	Reference(s)
Use of 3PL Services	Rajesh (2013), Ashok (2019)
Success of 3PL Operations	Sahay & Mohan (2006), Banomyong & Supatn (2005), Aktas & Ulengin(2005), Selviaridis & Spring(2007),Hwang et al(2016),Habibullah Khan(2017), Rajesh(2013)
Performance of 3PL Operations	Rajesh (2013), Ashok (2019)
Markets Availing of 3PL Providers	Rajesh (2013), Ashok (2019)
Area of Shortfall from 3PL Operations	Rajesh (2013), Ashok (2019)

III. OBJECTIVES OF THIS STUDY

The purpose of the investigation are as follows:

- Identifying and analyzing the various services outsourced by 3PL users
- Linear relationship between different business performance measures and outsourced services for the 3PL market in the UAE.
- To analyze at what degree independent variables (Area of shortfall from 3PL operations, Performance of 3PL operations, Markets availing from 3PL users, Success of 3PL operations and Use of 3PL services) influence dependent variables (Customer satisfaction).
- Factor analysis of the factors influencing the success and necessity of outsourcing of 3PL services

IV. RESEARCH METHODOLOGY

This research methodology shows in the figure-1, how the investigation was carried out to our work.

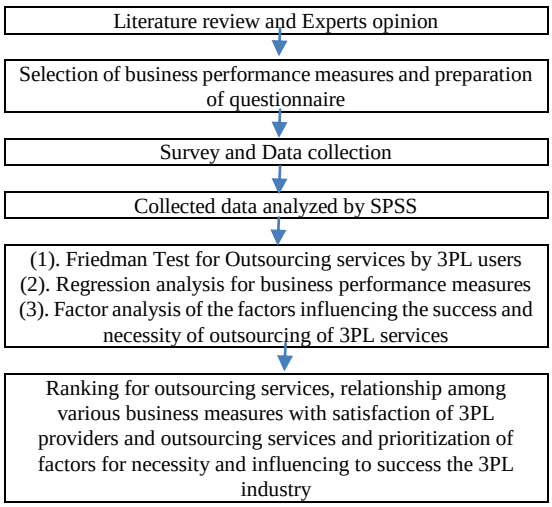

Figure-1: Frame work for the research methodology

(a). First the author studied through the literature review for the third-party logistics industry and how the various business measures interfered in the third-party logistics service selection and operations.

Identification of business measures, experts' opinion and the related study by the other investigators were mentioned in the literature review.

(b). Data's were collected from 102 3PL user organizations who have good experience and knowledge in the third-party logistic industry. According to the data collection, 86% of the 3PL user organizations have less than 100 employees, 7% of the companies have 100 to 250 and above 250 employee in each of them.58% of the user organizations started their 3PL operation from 2006 to 2010 period followed by 27% started during 2001-2005 and 8% of companies started their 3PL operation before 2000 and after 2010.59% of the companies started their business during 2006-2010,27% of the companies started their business from 2001 to 2005,10% of the companies started their business before 2000 and 5% of the companies started their business after 2010. 3PL user organizations came to know the 3PL operation from information sources such as Direct mail-advertising (9%), Sales call by third party representatives (24%), Discussion with other logistical professionals (35%), Sales contract at a logistical conference (9%), Advertising in professional publications (21%) and others (1. Recommendations from friends 2. Market contacts 3. Appointed by customers)-60%.

V. DATA ANALYSIS AND HYPOTHESIS TESTING

For the data examination and evaluation of the various business performance measures of the 3PL industry in Abu Dhabi, UAE, various statistical techniques such as Friedman Test, Correlation Test, Regression Analysis and Factor Analysis are used by SPSS and Moment Structure Analysis (AMOS) version 20.0.

A. Hypotheses Development

This study focuses on the following five hypotheses: Area of shortfall from 3PL operations (H1), Performance of 3PL operations (H2), Markets availing from 3PL users (H3), Success of 3PL operations (H4), Use of 3PL services (H5) have significant relation with the Customer satisfaction.

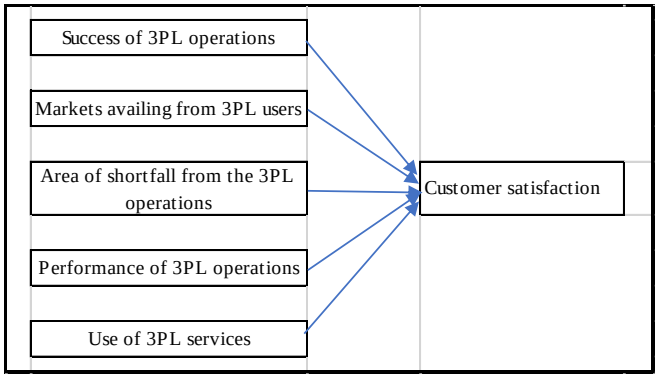

Figure-2: Proposed model with five business measures

Area of shortfall from the 3PL operations indicates the drawbacks or shortfalls from the 3PL suppliers which is identified by the 3PL users. This area has informed us how to develop the 3PL client satisfaction by overcoming various shortfalls such as lack of realization of cost reduction, lack of consultative/knowledge-based skills, lack of implementation of updating and advanced technology, lack of continuous improvements, less flexibility in the operations & delivery and the lack of strategic management skills.

Success of 3PL operations indicates the main success factors influencing the 3PL operations. The selection of success factors might be varied from one firm to another firm. This study focusses on the success factors such as cost, delivery time, strategic commitment to customers, quality of services, attitude towards customer/relationship, ability to meet customer needs, documents accuracy, flexibility, reputation, storage facilities, technical competence, financial stability, good communication and reliability of the 3PL provider.

Performance of 3PL Operations indicates the logistics performance measures while using 3PL operations in the client organizations and the impact created such as customer satisfaction, internal logistics system performance, logistics cost reduction, average order cycle length and employee morale in 3PL client firms.

Use of 3PL Services indicate that the customers are looking for 3PL services because of getting several advantages from 3PL firms rather than obtaining worst solution. Some of the studies mentioned in these research are logistics cost reduction ,improved customer service, better process responsiveness, improved process capability & cycle time, productivity improvements, improving conformance quality, developing supply chain flexibility, focus on core competencies, corporate restructuring , improvement process lead time, access/expansion to unfamiliar markets , increase in inventory turn , access to emerging technologies, improvement return assets , operation of IT systems , diverting capital investment and e-commerce application .

Markets availing of 3PL users such as construction & building materials, manufacturing, electronics, oil & gas, chemicals, automotive, consumer packaged goods, renewable energy, food & beverage, apparel & textiles, furniture, healthcare, agriculture, aerospace, grocery, pharmaceuticals and trade show.

VI. RESULTS AND DISCUSSION

Various business performance measures of areas of shortfall from 3PL providers, impact created in logistics performance in 3PL user organizations, markets availing of 3PL users, factors of effectiveness for success of 3PL industry and factors for the major reasons to use 3PL services by the third-party logistics industry.

A. ***Friedman's ranking method*** *was used to analyze the services outsourced by 3PL users for the third-party logistics industry in Abu Dhabi.*

From table 2, it is understood that the P value is under 0.01, and so the null hypothesis is rejected at 1 percent level of significance with regard to full truck load and transportation management(25.08) ranked first, followed by freight forwarding(24.94),customs clearances (24.64), port operations(23.47),carrier selection (20.23), product assembly/installation(19.79), import/export mgt.(17), order processing (15.97), warehouse management / operations and cargo insurance(15.67), distribution(15.52), rate negotiation (15.23),

freight consolidation and material management (15.08), packaging & labeling and reverse logistics (repair/defective/return) (14.94),freight brokerage and order fulfillment (14.79), inventory management, break bulk operations and after sales support payment collection (12.14), vendor management and customer spare parts (12), fleet management(11.85),multimodal, cross-docking, NVOCC and trade finance (11.7), consulting services and operation of IT systems (11.55) are the least outsourced activities by the 3PL users.

Services Outsourced by 3PL users	Mean value	Rank	Chi-Square value	P value
Carrier selection	20.23	5	1363.703	.000**
Rate negotiation	15.23	11		
Multimodal	11.7	18		
Full truck load & transportation management	25.08	1		
Warehouse management/operations	15.67	9		
Freight forwarding	24.94	2		
Customs clearances	24.64	3		
Cross-docking	11.7	18		
Import/export mgt.	17	7		
Fleet management	11.85	17		
Freight brokerage	14.79	14		
Freight consolidation	15.08	12		
Inventory management	12.14	15		
NVOCC	11.7	18		
Port operations	23.47	4		
Break bulk operations	12.14	15		
Order processing	15.97	8		
Order fulfillment	14.79	14		
Vendor management	12	16		
Packaging and labeling	14.94	13		
Distribution	15.52	10		
After sales support payment collection	12.14	15		
Customer spare parts	12	16		
Product assembly/installation	19.79	6		
Trade finance	11.7	18		
Cargo insurance	15.67	9		
Reverse logistics (Repair/defective/return)	14.94	13		
Consulting services	11.55	19		
Operation of IT systems	11.55	19		
Material management	15.08	12		

Table 2: - Friedman test for significant difference among mean positions towards the service outsourced by 3PL users

Note: 1. ** Indicates significant at 1% level

B. *CORRELATION ANALYSIS*

Table-3 shows that the Pearson correlation coefficient between business performance measures and outsource services for the third-party logistics industry in UAE.

		Area of Shortfall from the 3PL providers	Performance of 3PL Operations	Markets Availing from 3PL Users	Success of 3PL Operations	Use of 3PL Services	Customer satisfaction
Outsourceing Services	Pearson Correlation	.425**	.906**	.612**	.452**	.560**	.477**
	Sig. (2-tailed)	0	0	0	0	0	0
	N	102	102	102	102	102	102

Table-3

** Correlation is significant at the 0.01 level (2-tailed)

Area of Shortfall from the 3PL providers (r=.425, p<0.01), Performance of 3PL Operations (r=.906, p<0.01), Markets Availing from 3PL users (r=.612, p<0.01), Success of 3PL operations (r=.452, p<0.01), Use of 3PL services (r=.560, p<0.01) and customer satisfaction (r=.477, p<0.01) are all correlated with outsourcing services.

C. *REGRESSION ANALYSIS*

Study of linear regression analysis was conducted to analyze the degree to which the independent variables (success of 3PL operations, markets availing of 3PL users, area of shortfall from 3PL operations, performance of 3PL operations and use of 3PL services) influence customer satisfaction(dependent variables).Considering the linear correlation between the independent variables and dependent variables, all the five independent performance measures were accepted for the testing model. Continuously, regression model is employed with enter method to consider the weight of antecedent contributing to the customer satisfaction. The coefficient of determination, R squared (R2 = 0.407) indicates how well data fit a statistical model. It presents the various business performance measures for the third-party logistic industry which are explained by 40.7% of variations in success of 3PL operations, markets availing from 3PL users, area of shortfall from 3PL providers, performance of 3PL operations, use of 3PL services and satisfaction of 3PL customers.

R=.638[a], R Square=0.407, Adjusted R Square=0.376, F=13.184, P value=<0.001**.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.638[a]	0.407	0.376	0.647

Table-4

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.608	5	5.522	13.18	.000[b]
	Residual	40.206	96	0.419		
	Total	67.814	101			

Table-5

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.807	0.65		1.24	0.2
	Area of shortfall from 3PL operations	0.079	0.03	0.46	2.54	0.00
	Performance of 3PL operations	0.052	0.04	0.196	1.34	0.2
	Markets availing of 3PL users	0.012	0.06	0.03	0.19	0.9
	Success of 3PL operations	0.044	0.01	0.423	4.37	0.00
	Use 3PL services	-0.036	0.03	-0.35	-1.4	0.2

Table-6

Dependent Variable: Customer satisfaction, b. Predictors: (Constant), Success of 3PL operations, Markets availing from 3PL users, Area of shortfall from 3PL providers, Performance of 3PL operations and Use of 3PL service. It is clearly seen from the above values (Table-5) that the significance value is less than 0.01. Hence, it is found that the third-party logistic industry is regularly updating. The study of the regression analysis shown in Table-6 points out that area of shortfall from 3PL operations (β=.460, p<0.01) and success of 3PL operations (β=0.423, p<0.01) significantly affect the customer satisfaction. The results show that performance of 3PL operations (β=0.196, p>0.05), markets availing of 3PL users (β=.03, p>0.05) and use of 3PL services (β=-0.35, p>0.05) do not seriously affect the customer satisfaction. This result corresponds with the view of Akram Jalal, 2011[14].

- Area of shortfall from 3PL operations and success of 3PL operations: Hypothesis is accepted and the null hypothesis is rejected.
- Performance of 3PL operations, markets availing of 3PL users and use of 3PL services: Hypothesis is not accepted and the null hypothesis is accepted.

D. *FACTOR ANALYSIS*

This research also examines the factor analysis to assess the structural validity of factors influencing the success and necessity of outsourcing in the third-party logistics industry in Abu Dhabi, UAE.KMO test and Bartlett sphere were performed to determine whether factor analysis is sufficient or not. Table 7 contains the analysis.

		For factors influencing	For reasons
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.707	0.748
Bartlett's Test of Sphericity	Approx. Chi-Square	1084.35	1828.39
	df	91	136
	Sig.	.000	.000

Table -7 KMO and Bartlett's Test

Sampling Adequacy's Kaiser-Meyer-Olkin Measure is a statistical method that indicates the proportion of variation in variables that could be caused by underlying factors. The Kaiser-Meyer-Olkin value of 0.707(For success factor influencing) and 0.748 (For reasons for outsourcing) which is more than 0.50, indicating that a factor analysis is valuable to our information. Bartlett's test of Sphericity tests the hypothesis that matrix of association is an identity matrix, suggesting that variables are unrelated and therefore, unsuitable for structure detection. Since the value of P is less than 0.01, the hypothesis is rejected and suggests that variables are correlated with an analysis of factor and are useful to our results.

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	5.008	35.774	35.774	5.008	35.774	35.774	4.5	32.174	32.174
2	4.118	29.411	65.185	4.118	29.411	65.185	3.07	21.92	54.093
3	1.063	7.596	72.781	1.063	7.596	72.781	2.62	18.688	72.781
4	0.699	4.991	77.772						
5	0.668	4.771	82.543						
6	0.506	3.617	86.16						
7	0.482	3.442	89.602						
8	0.377	2.695	92.297						
9	0.35	2.498	94.796						
10	0.257	1.837	96.633						
11	0.186	1.327	97.96						
12	0.123	0.882	98.842						
13	0.104	0.746	99.588						
14	0.058	0.412	100						

Table-8: Total Variance Explained-For success factors

We conducted factor analysis and analysis of rotated components. The results are provided in Table 8 and 10. Results show that the eigen values of the first three factors is greater than 1; explained variance accounted for 72.78% (for success factors) and 75.727% (for necessity) of a total variance (> 50%). The first three factors are, then, extracted as the common factors. The corresponding load on the common factor of each element in the questionnaire is greater than 0.4, which implies a strong structural validity on the scale, and we are not going to exclude a parameter. The loading of technical competence, storage facilities and flexibility in factor 1 are more net worthy, whereas the stacking of strategic commitment to customers, delivery time and cost in factor 2 are greater, the loading of good communication, quality of services and reliability of the 3PL provider in factor 3 show that the above factors are the vital influencing success factors that affect third party logistics operations in Abu Dhabi and for necessity of outsourcing. loading of e-commerce application, increase inventory turn and operation of IT systems in factor 1 are greater, while the

loading of corporate restructuring, productivity improvements and access / expansion to unfamiliar markets in factor 2 are also greater, the loading of improve process capability and cycle time, to better process responsiveness and logistics cost reduction in factor 3 show that the factors mentioned above are the main reasons why 3PL client organization approach 3PL firms in Abu Dhabi.

Factors influencing to success	Component		
	1	2	3
Technical competence	0.889	-0.06	-0.282
Storage facilities	0.809	-0.274	-0.052
Flexibility	0.734	0.268	0.169
Documents accuracy	0.691	0.019	0.398
Attitude towards customer/relationship	0.691	0.282	0.319
Ability to meet customer needs	0.652	0.098	0.333
Financial stability	0.625	-0.597	-0.074
Reputation	0.552	-0.489	-0.046
Strategic commitment to customers	0.362	0.868	0.064

Delivery time	-0.176	0.765	0.355
Cost	0.158	0.734	0.506
Good communication	-0.012	0.296	0.898
Quality of services	0.508	0.041	0.72
Reliability of the 3PL provider	-0.027	0.517	0.646

Table-9: Rotated Component Matrix

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	6.272	36.893	36.893	6.272	36.893	36.893	6.058	35.636	35.636
2	3.762	22.131	59.024	3.762	22.131	59.024	3.695	21.736	57.372
3	2.839	16.703	75.727	2.839	16.703	75.727	3.12	18.355	75.727
4	0.899	5.288	81.015						
5	0.814	4.787	85.802						
6	0.471	2.769	88.571						
7	0.427	2.512	91.082						
8	0.363	2.137	93.219						
9	0.26	1.532	94.751						
10	0.239	1.408	96.159						
11	0.183	1.075	97.234						
12	0.163	0.956	98.19						
13	0.098	0.575	98.765						
14	0.072	0.424	99.19						
15	0.059	0.348	99.537						
16	0.05	0.294	99.832						
17	0.029	0.168	100						

Table-10: Total Variance Explained for necessity of 3PL services

	Component		
	1	2	3
E-Commerce application	0.947	0.161	0.049
To increase inventory turn	0.924	0.045	0.087
Operation of IT systems	0.914	0.076	-0.01
Diverting capital investment	0.908	0.1	0.118
Improve return assets	0.882	0.114	0.069
Access to emerging technologies	0.86	0.239	0.069
Corporate restructuring	0.144	0.893	0.208
Productivity improvements	0.143	0.875	0.264
Access/Expansion to unfamiliar markets	0.393	0.74	0.134
Improve process lead time	0.597	0.737	0.108
Improve conformance quality	0.546	0.588	0.324
To develop supply chain flexibility	0.493	0.555	0.417
Improve process capability and cycle time	0.088	0.094	0.835
To better process responsiveness	0.007	0.049	0.827
Logistics cost reduction	0.006	0.478	0.763
Improved customer service	0.082	0.032	0.661
Focus on core competencies	0.152	0.18	0.515

Table-11: Rotated Component Matrix

VII. CONCLUSION

From the Friedman's test, the full truck load and the transportation management are the important services outsourced by 3PL user firms in Abu Dhabi. These areas have "P" value which is under 0.01, hence the rejection of the null hypothesis at 1 percent level of significance. From the Pearson correlation coefficient analysis**,** the various business performance measures of areas such as shortfall from 3PL operations, performance of 3PL operations, markets availing of 3PL users, success of 3PL operations, use of 3PL services and customer satisfaction are highly correlated with outsource Services in the third-party logistics industry in Abu Dhabi, UAE. From the regression analysis, area of shortfall from 3PL operations and success of 3PL operations are supported and Performance of 3PL operations, markets availing of 3PL users and use of 3PL services are not supported with customer satisfaction for 3PL clients in Abu Dhabi, UAE. Factor analysis reveals that technical competence, storage facilities and flexibility, strategic commitment to customers, delivery time, cost, good communication, quality of services and reliability of the 3PL provider are the main influencing success factor in 3PL operation as considered by 3PL users and the loading of e-commerce application, to increase inventory turn and operation of the IT systems, corporate restructuring, productivity improvements and access/expansion to unfamiliar markets, improve process capability and cycle time, to better process responsiveness and logistics cost reduction factors are the key reasons why the 3PL user organizations are approaching 3PL firms in Abu Dhabi. This analysis is very useful for decision makers and higher officials in the companies to identify the best factors influencing the 3PL market and to know how the business measures have impact on the customers satisfaction and the services outsourced by 3PL users in Abu Dhabi, UAE.

REFERENCES

1. Ashok. R, Rajesh. R," Business Performance Measures for the Third-Party Logistics Industry in UAE", International Journal of Recent Technology and Engineering, Volume-8, Issue-4, pp-2952-2958,2019
2. Vincent Kirenga Munanira and Patrick Mulyungi," The Effect of Third-Party Logistics Service Providers on Supply Chain Performance in Rwanda Manufacturing Companies-A Case of Bralirwa Limited", International Journal of Research in Management, Economics and Commerce, Volume 08 Issue 05, May 2018, Page 102-114.
3. Buket.O, Arzum.B," An Analysis of Third-Party Logistics' Performance and Customer Loyalty", International Journal of Marketing Studies, Vol. 9, No. 6; 2017.
4. Tu Van Binh," Factors Impacting of Third-Party Logistics Provider", China-USA Business Review, Dec.2016, Vol.15, No.12, 616-627.
5. A.D. Shalini Prieya, S. Sankaranarayanan," Identification of Factors for Logistics Capabilities in Third-Party Logistics (3PL) Service Providers", Research journal of social science & management, Volume: 06, Number: 06, pp 23-29, October 2016
6. Maina Mildred Bwari, Pamela Getuno, David Kiarie," Effects of third-party logistics on supply chain performance in Kenya (A case of East African Breweries Limited Company)" Journal of Applied Management Science, pp. 16-50, Vol. 2 Issue 5 May 2016.
7. Hazwani Ahmad Tarmizi, Nitty Hirawaty Kamarulzaman , Ismail Abd Latiff , Azmawani,Abd Rahman," Factors behind Third-Party Logistics Providers Readiness towards *Halal* Logistics", International journal of supply chain management,pp.53-62, Vol. 3, No. 2, June 2014.
8. Djoko Roespinoedji, Niki Hadian, Saadah, Veronika Listi Ferdini Damopolii, Azizan Mohamed Isa," The Effect of Supply Chain Management on Indonesian Pharmaceutical Industry", International journal of supply chain management, pp.65-75, Vol. 8, No. 2, April 2019.
9. Balakrishnan, VN and Mohamad Khan, Jamal Khan (2018): Influential Factors of Competitive Advantage Progression on SME Third-Party Logistics in Selangor Malaysia[https://mpra.ub.uni-muenchen.de/89091/]
10. Ashok. R, Rajesh. R," An empirical analysis of different factors for the implementation of third-party logistics industry in UAE", Proceedings of 252nd The IIER International Conference, pp.5-10, UAE, 2019.
11. Mary, Oloko, Senaji, Orwa;" Critical Success Factors and Organizational Performance of Indigenous Third-Party Logistics Business in Transport Sector in Kenya", www.strategicjournals.com, strategic Journals, Vol. 3, Iss 1, (3), pp. 55 - 84, Feb 15, 2016.
12. Rajesh.R, Ganesh.K, Pugazhendhi.S", Drivers for logistics outsourcing and factor analysis for selection of 3PL provider" Int. J. Business Excellence, Vol. 6, No. 1, 2013.

13. M.S. Sohail, S.A. Anwar, J. Chowdhury, and N.R. Farhat, "Logistics Outsourcing in the United Arab Emirates", Journal of Marketing Channels, 13(1), 2006, pp. 21-36.
14. Akram Jalal," Enterprise Resource Planning: An Empirical Study of Its Impact on Job Performance" International Journal of Business and Information, Volume 6, Number 1, June 2011.
15. Noorliza Kari," Exploring the comprehensive framework of third-party logistics providers competitive advantage: a resource-based view approach", Australian Journal of Basic and Applied Sciences, 8(23) Special 2014, Pages: 345-351.
16. Hua, Wei and Jing, Zhou, "An Empirical Study on E-commerce Logistics Service Quality and Customer Satisfaction" (2015). WHICEB 2015 Proceedings. 62.
17. Ashok. R, Rajesh. R," Insight of Third-Party logistics Market in India and UAE", International Journal of Engineering and Advanced Technology, Volume-9 Issue-1, PP 4861-4870,2019

AUTHORS PROFILE

R.Ashok working as a Quality Control and Quality Assurance Engineer in Drake & Scull Engineering LLC,United Arab Emirates.He did his Bachelor of Mechanical Engineering in 1997 and Master of Production Engineering in 1999.He has more than 6 years of Teaching experience in India and 13 years Industry experience in Qatar and UAE.He has attended several International Conferences ,Workshops and published 3 papers in International journals.

Dr. R. Rajesh working as a Principal in Rohini College of Engineering and Technology, Anjugrammam, India. He has more than 22 years' experience in Teaching. He has published 125 papers in International and National journals