PERCEPTION OF WHOLESALERS AND RETAILERS WITH REGARD TO TRANSPORTATION MANAGEMENT

Vipul Chalotra
Ph.D., Assistant Professor, Dept. of Commerce
Govt. Degree College (Boys), Udhampur
E-Mail: vipulchalotra@gmail.com

ABSTRACT

Proper transportation is seen as one of the fundamental reasons for smooth inflow and outflow of goods. Transportation management avow immense benefits to firms, wholesalers, retailers and customers in the form of incessant and regular supply of goods in accordance with the demand, permanent retention of customers, market diversity, unlimited inventory etc. The present research highlights the wholesalers and retailers perception regarding transportation management operating in Udhampur District of J&K State. The research structure was inspected by empirical analysis of first hand/primary data collected. Validity and reliability of the scales in the construct were assessed through BTS and Cronbach-alpha. The results revealed that Effective transportation management leads to improvement in business performance, customer centeredness plays vital role in planning for transportation management and it ultimately assists in formulating effective transportation network & design. Further, it provides proper routenization of goods, influences product costs, lowers inventory, creates time & place utilities, improves plant efficiencies and as a whole lowers the overall costs.

Keywords: Transportation Management, Wholesalers, Retailers.

INTRODUCTION

Effectual transportation management is documented as mechanism for calculating the overall firms operations and performance. Proper transportation leads to placing the right product with calculated demand at the right time, meeting incessant demand requirements, covering of more & more markets, broader distribution along the globe, the entire orbit and making the product viability and acceptance. Due to the growth and advancement of knowledge, technology,

expertise, the markets became more urbane and globalised, transport geographers began to cuddle on new ways of accepting the crucial role of transportation at local, National and global scales (Tolley & Turton, 1995). As a result, there has been a significant augment in the number of means & number of transportation types to outfit the needs of elevated and widely accepted product at lesser upholding costs. Then transport manufacturers have focused their concentration on the minimization of the life-cycle-cost and on its main decisive factors, in particular reliability, maintenance and availability of products (Black, 2001). Effectual Transportation system makes products movable through and from appropriate and regional efficacy for endorsing value-added under the least cost principle. Transport influences the consequences of logistics activities and persuades production & sale and entire marketability.

Value/cost of transportation differs with different industries. For those products with small quantity, low weight and high value, transportation cost simply occupies a very small part of sale and is less regarded; for those big, heavy and low-valued products, transportation occupies a very big part of sale and affects profits more and therefore it is more regarded. Effective transportation plan and systems results in supply chain efficiency by lowering and lessening inventory (Barrett, 1998), transferring timely inbound merchandise from supply/origination sites to mechanized manufacturing hubs (Carter & Ferrin, 1995), plant competencies and distributing quality products to customers in an cost efficient manner (Giuliano and Narayan, 2003).

REVIEW OF EXISTING LITERATURE

Transportation literature divulges the magnificence of transportation. Research on transportation issues and its significance dwelled after the mid-1980s and took a rather sclerotic move ahead from vital spatial communication models to more urbane network loom to cost effectual faction of goods across space and time (Knowles, 1993 and Black, 2003). The task that transportation imparts in supply chain management system is more multifaceted than transporting/moving goods for the proprietors. Its intricacy can take effect only during extremely high quality management. By dint of well-handled and supportive transport system, goods may well be sent to the right place at right time in for satisfying customers' demands. It fetches effectiveness and develops a bridge between producers & consumers. Consequently transportation in the contemporary era is the base of competence & market in business logistics and diversifies other imperative functions of logistics system. In addition and nutshell, a good transportation system disseminating the logistics activities brings reimbursements not only to the service and market quality but also to the company and firm competitiveness.

Apt transportation design and network planning comprises all functions and sub-functions into a system of movement of goods effectively in order to minimize and stammer cost, maximize quality and prompt service to the customers which

contributes to the concept of business management and logistics. The system, once put in place, must be effectively managed (Ewing, et al., 2003). Transportation management in the contemporary times even offers intensive vicinity for technology application. Masters and LaLonde (1994) expresses that traffic management has connoted an information-intensive task.This situation is particularly factual today in light of growing intricacy in the transportation environment, given interest in running inbound and outbound flows requirements, globalized and comprehensive supply chains, sensitive documentation and tracking requirements for global shipping, just-in-time operations with free shipping and delivery, revised and prolonged hours of imparting services and its proper regulations and many more complexities. Communicative technologies are the main instruments in upholding transportation management as portrayed by Crum et al. (1990, 1996, 1997, and 1998) and Williams et al. (1994, 1995, 1996, and 1998) by actually implementing electronic data interchange (EDI) throughout the 1990's. Many researches has examined the roles, benefits and challenges of new transportation management and has revealed that the transportation system now is approaching towards the usage of communicative technologies, like the Internet (Murphy and Daley, 2000; Dresner, Yao and Palmer, 2001; Boyson, Corsi and Verbraeck 2003; Patterson, Grimm and Corsi, 2003; Nair, 2005 ;Griffis, Goldsby and Cooper 2003)), mobile communications (Manrodt, Kent and Parker, 2003; Giaglis et al., 2004), and satellite-based systems (Rishel, Scott and Stenger, 2003). Further, Goldsby and Eckert (2003) interprets electronic transportation marketplaces and expressed the association between transportation exchanges and (Transportation Management System) TMS technology. Vannieuwenhuyse, Gelders and Pintelon (2003) exposes a web-based choice support tool for transportation mode selection. Eventually Caplice and Sheffi (2003) represent an optimisation-based transportation procurement approach facilitated by on line auctions. The present study notices down the perception of wholesalers and retailers with regard to transportation management.

RESEARCH HYPOTHESES

Based on extensive review of literature the following hypotheses had been framed for the present study:

- **Ha (1) :** Effective transportation management has positive impact on business performance

- **Ha (2):** Wholesalers & retailers regard effective transportation management to be customer centric

- **Ha (3):** Proper transportation management assists in formulating effective transportation network & design

Objective: To analyze the impact of effective transportation on business performance, Customer centeredness and on effective transportation network & design.

RESEARCH DESIGN AND METHODOLOGY

Research design and methodology comprises area of research, nature of data/information (Primary or secondary), questionnaire/schedule, research tools applied etc. The research methodology adopted proceeds as follows:

SAMPLING AND DATA COLLECTION

The study was conducted on 74 wholesalers and 120 retailers selling/dealing with the products/goods of small scale manufacturing industries operating under SIDCO and SICOP in the Udhampur District of J&K state. The number of wholesalers identified under different product categories was: cement (12), pesticide (2), steel (2), battery/lead/alloy (12), menthol (1), guns (3), conduit pipes (2), gates/grills/varnish (5), maize/atta/dal mills (14) and miscellaneous (20). Some of the major wholesalers contacted were Surbhi enterprises, M/S Raj Battery Corporation, M/S DBN Traders, M/s Swastik Enterprises, M/S Binothia Hardwares, Allied Agencies, Devika Agencies, Sangam Automobiles, M/S Inder Medical, ESS ESS Traders etc. The product-wise retailers identified were cement (22), pesticide (4), steel (4), battery/lead/alloy (20), menthol (2), conduit pipes (8), gates/grills/varnish (5), maize/atta/dal mills (33) and miscellaneous (27). The main retailers contacted during the study were Krishna Agencies, Prakesh General Store, United Auto Spares, Highway Motors, Armstrong Transformers, Bagawati Sales Agencies, Dogra Cements etc.

THE SURVEY INSTRUMENT

First hand primary information for the study were gathered by administering self-prepared questionnaire prepared after consulting eminent experts and intensive literature review which contained general information and 21 statements initially kept in the sphere of transportation management. Statements in the questionnaire were in descriptive form, ranking, dichotomous, open ended and five -point Likert scale, where 1 stands for strongly disagree and 5 for strongly agree. Statistical technique known as Snowball/referral sampling had been applied because the current research involves only those wholesalers and retailers who were selling and using the products manufactured by small scale manufacturing industries of Udhampur District.

COLLECTION OF DATA

The first hand/primary data were gathered by making three to four visits for obtaining response from respective respondents. The precious and secondary information were gathered from various sources namely referred books, empirical

research papers from online & hard copies of journals. Various multivariate tools such as Mean, standard deviation were used for drawing meaningful inferences.

RELIABILITY AND VALIDITY OF THE INSTRUMENT

Reliability: Four factors were obtained after scale purification falling within the domain of transportation management in supply chain management. As evident from the Table 1.1, the Cronbach's reliability coefficients for all 21 scale items underlying four factors ranges from 0.656 to 0.988. The alpha reliability coefficients for F1 (0.988), F2 (0.982) and F3 (0.820) is higher than the criteria of 0.77 obtained by Gordon and Narayanan (1984) indicating high and sophisticated internal consistency. Anyhow, F4 (0.656) is also at a minimum acceptable level of 0.50 as recommended by Brown et al. (2001) and Kakati and Dhar (2002) thereby obtaining satisfactory internal consistency. However, the overall alpha reliability score for all factors is very much satisfactory at 0.861. Adequacy and reliability of sample size to yield distinct and reliable factors is further demonstrated through Kaiser-Meyer-Olkin Measure of Sampling Adequacy that is 0.871 and all factor loadings between items and their respective constructs being greater than equal to 0.55.

Validity : The four factors obtained alpha reliability higher & equal to 0.50 and KMO value at 0.871, indicating significant construct validity of the construct (Hair et al., 1995).

DATA ANALYSIS AND INTERPRETATION

The suitability of raw data for factor analysis obtained from channel wholesalers was examined through Anti-image, KMO value, Bartlett's Test of Sphercity, (p-value = 0.000), Principal Component Analysis and Varimax Rotation (Stewart, 1981) indicating sufficient common variance and correlation matrix (Dess et al., 1997 & Field, 2000). The KMO value (0.871) and Bartlett Test of Sphercity (1232.084) indicated acceptable and significant values. The process of R-Mode Principal Component Analysis (PSA) with varimax rotation retained all the 21 statements originally kept in the domain of transportation management. The 21 statements got grouped into four factors with 91.32% of the total variance explained. The communality for 21 statements ranged from 0.70 to 0.97, indicating very high degree of linear association among the variables. The factor loadings ranged between 0.604 to 0.917 and the cumulative variance extracted ranged from 49.64 to 91.32 percent. The percentage of variance explained by each factor came out to be F1 (49.64%), F2 (26.13%), F3 (9.25%) and F4 (6.297%) is displayed in the Table 1.1. A brief description of factors emerged is as under:

Factor 1 (Improvement in business performance): The first significant factor appeared with twelve variables namely: "Effective transportation maximizes customer service", "Proper transportation network improves plant efficiencies", "Effective transportation design reduces warehousing costing", "Transportation affects prices of products in markets", "Effective transportation design results in lowering inventory", "Transportation design places right product at the right time", "Effective transportation design leads to improved safety & social regulations", "Transportation design influences product costs", "Transportation disseminates improved production technology", "Responsive transportation system lowers the overall cost", "Transportation design helps in creating time & place utilities" and "Helps in timely movement of goods from supply sites to manufacturing firms". All the variables egresses with significant mean score ranging from 4.51 (Transportation design helps in creating time & place utilities) to 4.63 (Helps in timely movement of goods from supply sites to manufacturing firms). The factor loadings for all the variables appeared significant ranging within .778 to .898 which states that all the variables are significantly contributing towards the factor. The communalities fluctuate between ".702 to .969" again connoting the high significance of variables contribution towards the factor.

Factor 2 (Transportation network & design): The second important factor emerged with five variables, i.e. "Transportation network is customer responsive", "Huge profit margins are kept by transportation agencies", "Freight rates & interstate tax influences transportation design", "Speed is critical element in transportation" and "Supplier scheduling affects transportation design". The variable "Transportation network is customer responsive" contributes 4.51 mean value, .895 factor loading and .908 communality to the factor acknowledging significant contribution. The mean values ranges between "4.51 to 4.55", factor loadings (.830 - .895) disclosed satisfactory contribution and communalities revealed valuable support of the variables (.908 - .979). The overall mean score (4.52) and standard deviation (.604) of this factor is satisfactory which highly contributes to the domain of transportation management.

Factor 3 (Customer centric): The third and most significant factor came up with two variables namely, "Transportation management provides proper routenization of goods" and "Responsive transportation design simplifies customer search process". The variable "Transportation management provides proper routenization of goods" scored good mean value of 4.70, significant factor loading of .917 and supportive communality value of .944. This variable highly and significantly contributes to the factor. The variable "Responsive transportation design simplifies customer search process" emerged with significant mean score (4.50), but moderate factor loading which states that this variable contributes less to the factor but communality is high with value .887. The overall mean score of the

factor is highest among all dimensions with value 4.60 which portrays significant contribution of the factor towards the dimension of transportation management.
Factor 4 (Transportation effectiveness): The last factor concentrated on two variables viz-a-viz "You have effective inbound & outbound transportation" (mean score = 4.08, factor loading = .890 and communality = .938) and "Transportation network design keeps the demand & supply of goods in equilibrium" (mean score = 4.52, factor loading = .604 and communality = .951). Due to significant mean value & factor loading, the first variable is contributing significantly to the factor. The second variable appeared with good mean score but with less factor loading value which portrays that the variable contributes less significantly towards the factor. The overall contribution of this factor to the dimension is significant with good mean value of 4.30.

WHOLESALERS' & RETAILERS' PERCEPTION REGARDING TRANSPORTATION MANAGEMENT

Table 1.2 displays mean response of wholesalers' and retailers' with regard to transportation management. The wholesalers' mean perceptions regarding transportation management ranges between 4.08 – 4.70 connoting above average and good response. The statement "Proper transportation network provides proper routenization of goods" emerges to be the strongest among all with mean value 4.70 and the statement "You have effective inbound and outbound transportation" with least score having mean value 4.08. This highlights that transportation management provides proper routenization of goods, influences product costs, lowers inventory, creates time & place utilities, improves plant efficiencies and as a whole lowers the overall costs. On the contrary, the retailers' perception regarding transportation management fluctuates between 3.10 – 4.60 mean scores. Again, the statement "Proper transportation network provides proper routenization of goods" emerges to be strongest with mean value 4.60 and the statement "You have effective inbound and outbound transportation" as the weakest with mean value 3.10. Retailers' perception is also indifferent as compared to wholesalers. The overall mean score of wholesalers is 4.53 and retailers' is 4.25. Thus, it can be concluded that wholesalers have high perceptions regarding transportation management due to fragmented location of customers and on demand delivery for profits.

Table 1.3 shows output from regression analysis to elicit the impact of transportation management on business performance. The result of linear regression analysis enticed that the correlation between predictor and outcome is positive with values of R as .822, which signifies good correlation between predictor and the outcome. In the model 1, R is .822 which indicates 82% association between dependent and independent variable. R-Square for this model is .721 which means that 72% of variation in transportation management can be explained

from the independent variable. Adjusted R square (.623) indicates that if anytime another independent variable is added to model, the R-square will increase. Further beta value reveals significant relationship of independent variable with dependent variable. Change in R square is also found to be significant with F-values significant at 5% confidence level. Thus the hypothesis "Effective transportation management has positive impact on business performance" is accepted as represented by its significance level $p < .05$.

Table 1.4 avows output from regression analysis to elicit the impact of transportation management to be customer centric. The result of linear regression analysis enticed that the correlation between predictor and outcome is positive with values of R as .803, which signifies high correlation between predictor and the outcome. In the model 1, R is .803 which indicates 80% association between dependent and independent variable and that too high correlation. R-Square for this model is .716 which means that 71% of variation in transportation can be explained from the independent variable. Adjusted R square (.786) indicates that if anytime another independent variable is added to model, the R-square will increase. Further beta value reveals significant relationship of independent variable with dependent variable. Change in R square is also found to be significant with F-values significant at 5% confidence level. Thus the hypothesis "Wholesalers & retailers regard effective transportation management to be customer centric" is accepted as represented by its significance level $p < .05$ (.024).

Table 1.5 divulges output from regression analysis to extract the impact of proper transportation management in building transportation network & design. The result of linear regression analysis enticed that the correlation between predictor and outcome is positive with values of R as .890, which signifies high correlation between predictor and the outcome. In the model 1, R is .890 which indicates 89% association between dependent and independent variable and that too high correlation. R-Square for this model is .792 which means that 79% of variation in transportation can be explained from the independent variable. Adjusted R square (.765) indicates that if anytime another independent variable is added to model, the R-square will increase. Further beta value reveals significant relationship of independent variable with dependent variable. Change in R square is also found to be significant with F-values significant at 5% confidence level. Thus the hypothesis "Proper transportation management assists in formulating effective transportation network & design" is accepted as represented by its significance level $p < .05$ (.027).

CONCLUSION

Transportation management encompasses massive benefits in terms of regular availability of goods, meeting the unexpected demands of the masses, assists in justifying distinguished competitiveness, promoting product to distant markets

and maintaining product value and image. The research was carried out on 74 wholesalers and 120 retailers and their discernment was noticed down regarding transportation management. The results highlighted that transportation management provides proper routenization of goods, influences product costs, lowers inventory, creates time & place utilities, improves plant efficiencies and as a whole lowers the overall costs. Wholesalers have high perceptions regarding transportation management due to fragmented location of customers and on demand delivery for profits. The results further revealed that effective transportation management leads to improvement in business performance, customer centeredness plays vital role in planning for transportation management and effective transportation management ultimately assists in formulating effective transportation network & design. However, The findings of the study is limited to small scale industries of district Udhampur of J&K State, so results drawn cannot be generalized for wholesalers and retailers functioning in other parts of country having dissimilar business environment.

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Table 1.1: Results Showing Factor Loadings and Variance Explained After Scale Purification (Rotated Component Method) for Transportation Management

Factor-wise Dimensions	Mean	S.D	F.L	Eigen Value	Variance Explained %	Cumulative Variance %	Comm-unality	
F1 Improvement in business performance	**4.57**	**.498**		**14.513**	**49.642**	**49.642**		**.9882**
Maximises customer service	4.58	.496	.898				.925	
Improves plant efficiencies	4.59	.494	.896				.926	
Reduces warehousing costing	4.55	.500	.896				.969	
Affects prices of products	4.55	.500	.896				.969	
Results in lowering inventory	4.58	.496	.895				.938	
Places right product at the right time	4.58	.496	.895				.938	
Leads to improved safety	4.54	.501	.862				.958	
Influences product costs	4.58	.496	.842				.902	
Disseminates improved production technology	4.55	.500	.822				.866	
Lowers the overall cost	4.62	.488	.802				.834	
Creates time & place utilities	4.51	.503	.782				.849	
Timely movement of goods	4.63	.512	.778				.702	
F2 Transportation network & design	**4.52**	**.604**		**2.018**	**26.132**	**75.774**		**.9826**
Customer responsive	4.51	.667	.895				.908	
Huge profit margins	4.55	.576	.866				.960	
Freight rates & interstate tax	4.52	.601	.863				.979	
Speed is critical element	4.52	.601	.859				.947	
Supplier scheduling	4.54	.577	.830				.936	
F3 Customer centric	**4.60**	**.560**		**1.987**	**9.253**	**85.087**		**.8209**
Provides proper routenization of goods	4.70	.542	.917				.944	
Simplifies customer search process	4.50	.579	.684				.887	
F4 Transportation effectiveness	**4.30**	**.839**		**.973**	**6.294**	**91.321**		**.6569**
Inbound & outbound transportation	4.08	1.15	.890				.938	
Keeps dd & ss in equilibrium	4.52	.529	.604				.951	

Footnotes: KMO Value = .871; Bartlett's Test of Sphercity = 1232.084; df = 103, Sig. =.000; Extraction Method Principal Component Analysis; Varimax with Kaiser Normalisation; Rotation converged in 6 iterations; 'FL' stands for Factor Loadings, 'S.D' for Standard Deviation and 'α' for Alpha.

Table 1.2: Statement-wise Mean Perception of Wholesalers and Retailers with Regard to Transportation Management

Statement	Wholesalers	Retailers
Transportation Management	**Mean**	**Mean**
1. Proper transportation network provides proper routenization of goods	4.70	4.60
2. Responsive transportation design simplifies the customers search process	4.50	4.35
3. Transportation design helps in creating time and place utilities	4.51	4.34
4. Transportation disseminates improved production technology	4.55	4.34
5. Efficient transportation design leads to improved safety and social regulations	4.54	4.27
6. Transportation network design keeps the demand & supply of goods in equilibrium	4.52	4.29
7. Freight rates & interstate tax influences transportation design	4.52	4.27
8. Supplier scheduling affects transport design	4.54	4.29
9. Your transport network is customer responsive	4.51	4.27
10. You have effective inbound and outbound transportation	4.08	3.10
11. Speed is critical element in transportation	4.52	4.31
12. Huge profit margins are kept by the transportation agencies	4.55	4.26
13. Transportation design influences product costs	4.58	4.27
14. Effective transportation design reduces warehousing costing	4.55	4.24
15. Transportation affects prices of products in markets	4.55	4.27
16. Transportation design places right product at the right time	4.58	4.29
17. Effective transportation design results in lowering inventory	4.58	4.27
18. Proper transportation network improves plant efficiencies	4.59	4.30
19. Effective transportation maximises customer service	4.58	4.30
20. Responsive transportation system lowers the overall cost	4.62	4.35
21. It helps in moving timely inbound goods from supply sites to manufacturing factories	4.63	4.41
Total Mean	**4.53**	**4.25**

Table 1.3: Regression Model Summary

Model	R	R^2	AdjustedR^2	Std. Error of Estimate	F value ANOVA	Sig. level		t	Sig. level
1.	.822	.721	.623	.2442	31.621	.000	.262	2.803	.004

a. Predictors: (Constant), Improvement in business performance

b. Dependent Variable: Effective transportation management

Table 1.4: Regression Model Summary

Model	R	R^2	AdjustedR^2	Std. Error of Estimate	F value ANOVA	Sig. level		t	Sig. level
1.	.803	.716	.786	.2083	27.343	.000	.286	2.184	.024

a. Predictors: (Constant), Customer Centric

b. Dependent Variable: Effective transportation management

Table 1.5: Regression Model Summary

Model	R	R^2	AdjustedR^2	Std. Error of Estimate	F value ANOVA	Sig. Level		t	Sig. level
1.	.890	.792	.765	.2184	28.981	.000	.198	2.303	.027

a. Predictors: (Constant), Transportation network & design

b. Dependent Variable: Effective transportation management