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The Impact of Service Quality on Decision Making Process in Metal Forming Industries

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Abstract: *This research paper is the study of the impact of Service Quality on the lubricants purchase decision of metal forming industries. The researcher in his research has found different attributes of service quality which are independent variables whereas the attributes of purchase decision process are dependent variables. The study is basically to assess the co-relation that exists between these variable by using One-Way ANOVA technique. The outcome of the research and recommendation made thereafter will help metal forming industries to focus on strategic angle of this variable and use it to identify the important dimensions of service quality based on customer and /or end user perception. In recent times, there has been a tremendous shift in the structure and operation of industrial organizations. Advancements in technology and exposure to new products, have positioned the industrial manufactured to demand a very high quality products. Moreover, service quality is becoming imperative for organizations to understand its impact on the final. This research study on 282 respondents from various management levels in metal forming industries shows that service quality has a significant impact on the decision making process apart from the other variables under study. A total of 282 employees from different metal forming industries were studied and the results are presented in this paper. Implications for researchers, managers, and industries are considered.*

Keywords: *Service Quality, Decision Making, Metal Forming, Product Quality, ANOVA, Lubricant Purchase.*

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I. Introduction

The decision-making process can be used to analyze purchasing decision of certain product that required enormous level of engagement from a customer (Kotler & Armstrong, 2002). Decision making is a very important dynamic behavior as it reflects choice and choice reflects a preference for consequences. Decision making also affects other dynamics of behavior such as creativity, conflict, cohesion, performance and satisfaction. Decision affects not only the decision maker, but also often other individual groups and organizations.

Perception, thus is defined as the first event in the chain which leads from stimulation to action. As part of perception, some stimuli from environment are rejected, and some are selected. Three elements shape perception: the perceiver, the target or the perceived and the context or situation within which perception occurs. There are attributes of each of these elements that shape the perception by interacting among themselves. The accuracy of perception and attribution is limited due to errors of judgment that also include our biases. When a person is cautious about not allowing the rather or the judge to make an unfavorable perception or attribution, or attempts to influence the other person so that he makes a favorable judgment, such a person would engage in impression management.

Perceived Service Quality is defined as the products offered and service provided meets key customer requirements and how reliably these requirements are delivered. SQ is an important element in the decision-making process in an organization. Customers often judge the quality of the products and services on the variety of informational attributes associated with the product. These are basically intrinsic with respect to product and extrinsic with respect to service. Perceived service quality has direct impact on customer's buying decision especially during the time where the risk involved is having significant implications. Aaker (1991) and Zeithamal (1988) said that the service quality is not actually the quality of brands and products, rather it is the judgment of the customer about overall experience, excellence and superiority. It has to do, therefore, with a judgment that is essentially derived from the product and service offerings to the customer with a long term horizon (Oliver, 1997). Zaithamal et.al (1996) put forward five factors of service quality; reliability, tangibility, response capacity, security and empathy.

Understanding a decision as a selection of a proposed course of action implies the existence of uncertainty, some intention for choice making and influence of others. While rational decision making can lead

to optimal decisions, the conditions required for such a decision may not always found in reality. These conditions include availability and processing of complete information and correct conception of a problem.

For industrial buyers, the decision to adopt an innovation is motivated by a search for relative advantage.Relative advantage can be defined as the incremental profit that will be realized from the innovation, compared to the available alternatives. Incremental profit can be realized either from an increase in revenues or a decrease in costs. The phrase "relative advantage" implies competition.

A firm's motivation to search for relative advantage may be related to (1) its market share relative to its competitors, (2) the recent trend of changes in its market share, (3) its absolute size, and (4) its profit trend. These relationships are not clear, however. One study found that product performance and product quality relative advantage of the service quality together explained about half of the variation in time of adoption of products by metal forming industries. Fredrick Webster Jr. (1969)

II. Literature Review

In today's rapid changing Industrial environment and intense exposure to global technologies and experiences, one of the most challenging tasks of marketing management is to predict the behavior of the OBB. In earlier days, organizational buying concerns only with the purchase of products for use in an organizational activity, but in recent times products coupled with value added services gaining increasing importance in B2B Industrial environment.

IBB can be formally defined as the act of individuals directly involved in obtaining and using goods and services required in manufacturing of the products, including the decision making processes that precede and determine these acts. IBB is very complex and for marketing to be successful, it is not only sufficient to know what customers require? Marketing personnel need to deep dive in the requirements and identify why it is required? Some of the important questions that relate to IBB are;

1. What is the Need of the customer?
2. Who are those participate in the Buying process?
3. Why they need to buy?
4. How Does the Industry Buy?
5. What are the choice criteria? And more importantly…..
6. How many people are involved in the Buying Decision Process?

A product that give engineers the performance characteristics they demand, production managers get the delivery, reliability they need, purchasing managers the value for money they seek and shop floor workers comfort and ease of operation is likely to be highly successful. Therefore, study of all these participants who influences the buying decision and the complexities involved makes marketing an extremely interesting task forms a basis for this research.

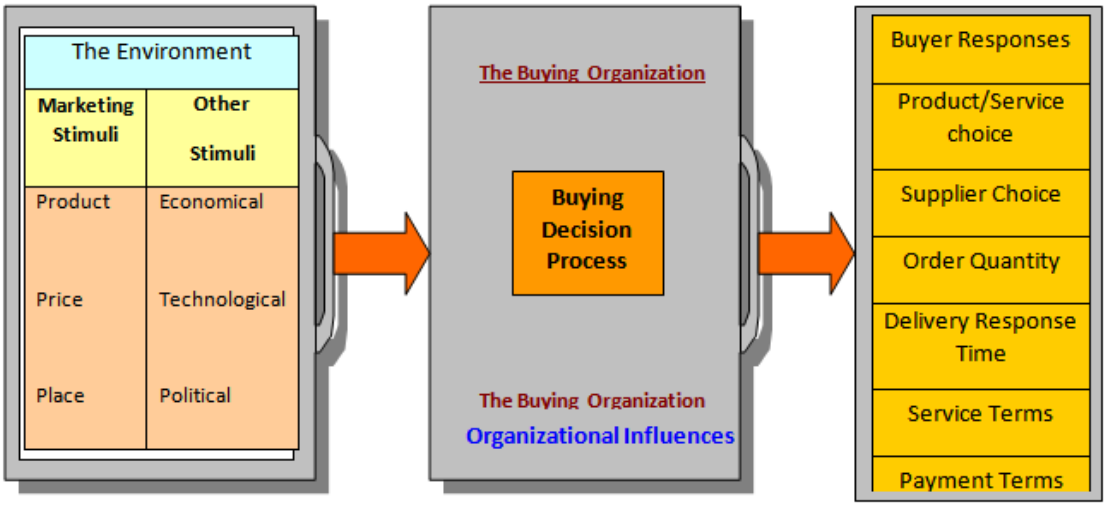

Fig 1: Business Buyer Behavior - Stimuli

- **Motivation Of The Research**
  - Metal Forming Industries is the fastest growing industry in India.
  - Metal Forming Industries consumes significant quantity of Process Lubricants
  - Disproportion in Demand of Process lubricant and lubricants suppliers in Indian market.
  - No New Branded entrant in Process Lubricants market since last one decade.

Aim of the Research

In Business to Business (B2B) MF industries, strategic interdependencies exist between the marketing and other business functions similar to any other firms. For marketing managers in firms whose customers are other firms, it would be helpful to understand the process by which firms decide to adopt new products, processes, or practices. Thus, the focus changed to everyone in a company who can provide an input to the buying process and is actively involved as the boundaries of different horizontal and vertical levels. Therefore, concept of Buying Center become important as various people from various functions being involved in a purchasing process of company. The proposed research work focuses on investigating the behaviour of buying center in MF industries and will aim to act as an interface between organization and marketers to take advantage of positive contributors and work on other factors as an area of improvement.

Need and Rationale for the proposed Investigation

The behavior of buying center in business to business (B2B) MF industries has rapidly changed over the past decades especially after the economic liberalization as markets become more competitive, technology evolves faster than ever and customer expectations are more value driven. Various literatures cited has revealed that extensive work and a large amount of research data already available in the field of market research and studying the organizational Behavior. Most of these studies concentrated on specific industry segments and specific country e.g. Electronic Industry, Banking Sector, etc. Moreover, these studies had been conducted in other countries and very few are available in Indian context.

Significance of the study

This research study is being conducted in order to provide a basis for the assessment of the buying behaviour in the present MF industries in the procurement of process lubricants. This assessment will help the process lubricant suppliers with the information on additional factors that influence buying decision apart from Product, Price, promotion, Brand, etc. Besides, it's provide information on some critical factors that influences the decision making so the marketing strategies can be reformulated with these factors. It also updates new marketers to work on entry/exit strategies for their business. Not only that, the result of the study is expected to be contributing to the understanding of the Perceived risk both financial and performance, perceived service quality, interpersonal relationship and perceived brand ranking towards customers purchase decision.

III. Research Objectives

The main objective of this research is to give understanding of industrial buying process in MF Industries for procurement of process lubricants and provide recommendations to existing/new entrants how to reach right people with their message. For this purpose, MF industries based in the state of Maharashtra will be targeted as potential customers. Each of these industries are basically B2B type and has buying center – a group of people, who are responsible for buying decisions. (Webster & Wind, 1996). The research will be based on direct communication with these people in order to understand their roles and identify various factors that affect their decisions.

- Assist the marketers to know the perception of customers well in advance w.r.t. perceived risk, Service quality, and interpersonal relationship and design the marketing strategy accordingly.

Sources of Data Collection

Primary data

The study was accomplished for the specific segment who is involved in manufacturing of MF components, one of the needs of which was understanding of buying process in these MF industries. To understand the process, demands for a primary data analyses. Primary data is data observed or collected directly from the people who are involved in the entire process. Following are some of the methods used in collecting primary data:

- Questionnaire
- Interview
- Online Survey (e-mail)
- Telephonic Interview

According to this information a list of potential companies was created and proposals to take part in the interview were sent. These companies were selected from the five strata;

1. Steel Industries
2. Forging Industries
3. Casting Industries
4. Wire and Tube Drawing Industries
5. Cast Iron Foundries

Additionally, some samples have been selected from the Lubricant Manufacturing companies. Individuals from various functions involved in buying process will be interviewed. Anticipating some of the companies may not respond at all or may provide unclear and poor information, it was decided to circulate additional questionnaires to the responding organizations. Using the knowledge and information gathered for the theory, the research questionnaire was developed so that questions were straight, easy and aimed to minimize the uncertainties. Based on these interviews, it was possible to gain valuable and unique information, concerning compositions of buying center and buying processes in context of process lubricants procurement.

Secondary Data

The sources of secondary data may be different: books, magazines, newspapers, internet, earlier conducted surveys, etc. The organizational buying behavior has been studied by many authors such as Philip Kotler, Frederick E. Webster Jr., Yoram Wind, Ajay Kumar Kohli, David Jobber and others. Their books and articles were used as sources of theoretical information. Secondary analysis of different statistics was also conducted to help to choose the right kind of companies for the case study, which is described further. Secondary data required for the study is collected from various research papers, academic books, Industry published reports, journals and magazines. EBSCO is being used to collect the literature available across the globe on industrial buying behavior. Some useful information is also collected from the open source by browsing websites such as Google Scholar, Wikipedia, etc.

Hypothesis Construct

H_{02} – Service quality does not impact on the buying Behaviour of process lubricants

H_2 – Service quality has significant influence on the buying Behaviour of process lubricants in various types of Metal forming Industries and users.

A structured questionnaire was constructed to indicate the importance of variable on Service Quality. The purpose of the questionnaire is to help find out opinion of various members of Buying Centre and assess their behaviour w.r.t abovementioned variables. Our data collection and analysis will be directed to various members of DMUs and also different functions of metal forming industries who are directly or indirectly involved in the purchasing decision of process lubricants. The questions are constructed in such a way to answer our research questionand the questions were also constructed in relation to the various independent variable which are under the research study.

Descriptive Data

The descriptive table as shown below in Table 1 provides some very useful descriptive statistics, including the mean, standard deviation and standard error for the dependent variable i.e. Service Quality for each separate group of management position as well as when all groups are combined. These figures are useful when you need to describe the data.

Table1 : Descriptive Data

		N	Mean	Std. Deviation	Std. Error
Service Quality	Junior	21	3.6786	.44118	.09627
	Middle	79	3.5823	.70792	.07965
	Senior	109	3.5275	.62207	.05958
	Top	60	3.6625	.67933	.08770
	General	13	3.0000	.90139	.25000
	Total	282	3.5585	.67204	.04002

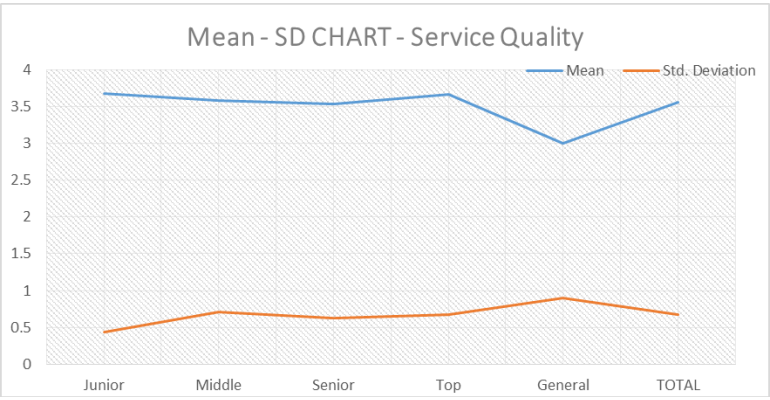

Fig 2: Mean SD Chart – Service Quality

Table below shows the output of one way ANOVA analysis and whether there is a statistically significant difference between our group means. From the below table it is evident that the significance value is 0.021 (P = 0.021) which is less than 0.05. Therefore, there is a statistically significant difference in the mean of Service Quality with respect to the management position or more specifically members of buying center within the organization. However, which of the management position level or the behavior of which groups differs.

Table2 : One Way ANOVA – Service Quality

		Sum of Squares	df	Mean Square	F	Sig.
Technical Service Quality	Between Groups	5.156	4	1.289	2.933	.021
	Within Groups	121.754	277	.440		
	Total	126.910	281			

The test statistic (F) degrees of freedom which are the first two values circled in the column df and the P-Value which is circled in column sig are the outcome of SPSS. The P-value which is used to decide the conclusion of the test; which means Table 2 displays a P-Value of 0.021. As the P-Value is less than 0.05, we reject the Null Hypothesis.

The data presented in Table 2 provides statistically significant evidence that Management position does have significant impact upon Service Quality requirements with One-way ANOVA, F = 2.933, df = 0.440, P < 0.05 i.e. 0.021. Having found statistically significant evidence that the Management position does have significant impact upon Service Quality, the next step is to explore the difference between the various management positions are found. Various possibilities are assessed as there could be difference between all the management positions or one of the group having a different mean. As the ANOVA produces statistically significant test, post hoc test to be carried out where the difference between the groups can be found. SPSS provides a number of post hoc tests, for the purpose of the research work scheffe has been used and the results are presented in Table 2.

Homogeneous Subsets

Table3; Service Quality

Scheffe

Management Position	N	Subset for alpha = 0.05	
		1	2
General	13	3.0000	
Senior	109		3.5275
Middle	79		3.5823
Top	60		3.6625
Junior	21		3.6786
Sig.		1.000	.939

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 30.667.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

The post hoc tests compares the Management position groups more specifically the buying center. The results are shown in Table 3. The footnotes give details related to the calculation that SPSS has used in carrying out the analysis and need not have to be interpreted. The columns or subset show the mean of the Service Quality reponses given by each group in different columns. The arrangement of the mean values in columns or subsets which management position groups differ or do not differ significantly in terms of the requirements of Service Quality while making purchasing decision.

If the means for the two groups are shown in different columns that indicates that there is statistically significant evidence of a difference between their mean values. For Example, the mean of General management is the only group shown in Column 1 by itself and does not appear in column 2. This indicates that the Service Quality requirements perceived by the General management group is significantly different to the mean resulted in all the management position groups.

On the other hand, the means for remaining management position groups are shown in the same column which indicates that there is no statistically significant evidence that their mean values differ. For

example, the mean of management position groups of Junior, Middle, senior and top are shown together in column 2. This shows that the service quality requirements by these groups do not differ significantly.

Table4 : Post Hoc Tests – Multiple Comparisons

Scheffe

Dependent Variable	(I) Management Position	(J) Management Position	Mean Difference (I-J)	Std. Error	Sig.
Technical Service Quality	Junior	Middle	.09629	.16277	.986
		Senior	.15105	.15800	.922
		Top	.01607	.16810	1.000
		General	.67857	.23397	.081
	Middle	Junior	-.09629	.16277	.986
		Senior	.05476	.09796	.989
		Top	-.08022	.11353	.973
		General	.58228	.19843	.075
	Senior	Junior	-.15105	.15800	.922
		Middle	-.05476	.09796	.989
		Top	-.13498	.10658	.808
		General	.52752	.19453	.122
	Top	Junior	-.01607	.16810	1.000
		Middle	.08022	.11353	.973
		Senior	.13498	.10658	.808
		General	.66250*	.20282	.033
	General	Junior	-.67857	.23397	.081
		Middle	-.58228	.19843	.075
		Senior	-.52752	.19453	.122
		Top	-.66250*	.20282	.033

*. The mean difference is significant at the 0.05 level.

The two most important columns in this table are column I and J (Management Position) and column Sig. Each row involves the comparison of one group to each of the remaining four groups For example, consider the row which is General Management position is compared with remaining management position groups i.e. Middle, Senior, Top and Junior and the significance levels for each of this group is presented in the last column labelled as sig. In order to determine if General management position and other group are different, the value of significance needs to be considered.

For the General group v. Junior, Middle, Senior and Top group the significance level is at 0.081, 0.075, 0.122 and 0.033 respectively. Since the value of P is greater than the .05 level required for statistical significance, the Junior, Middle and Senior groups are not significantly different. Applying this same procedure to the Junior Group and Top management group comparison, the results indicates that there is a statistically significant difference since P = 0.033 which is less than 0.05. The total comparison of each group with the remaining groups show that General Management group and Top Management significantly different and the remaining groups with General management group are not significantly different from each other.

IV. Conclusion

(1) Perceived Risk, Service Quality and Interpersonal relationship are the most important factors among the purchasing criteria for lubricants in the metal forming industries. The brand image or more specifically, the Brand ranking is no considered as the most important factor by the respondents when buying process lubricants. Top and senior management responses does considered brand ranking as important factor however references from similar type of industries scored more than the brand ranking. The outcome of one

way ANOVA for Brand ranking also supported to this line of argument and indicated that the respondents feels brand ranking is least important amongst all the factors.

To conclude, factors such as Perceived risk, service quality and Interpersonal relationship directly influencing the industrial buying behavior has been identified and investigated.

Managerial Implications

Managerially, the results of this research study emphasize on several selling and buying perspectives. The study suggests that marketers and salespeople should be cognizant that it is important to know that users and influencers are not the only individuals in an organization who participate in the decision-making process. A systematic approach in identifying DMUs and then designing the strategy according to their needs is a critical factor in winning and implementing of new process lubricants.

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