

Drivers of Customer Satisfaction in an Industrial Company from Marketing Aspect

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Abstract—One of the basic concepts in marketing is the concept of meeting customers' needs. Since customer satisfaction is essential for lasting survival and development of a business, screening and observing customer satisfaction and recognizing its underlying factors must be one of the key activities of every business.

The purpose of this study is to recognize the drivers that effect customer satisfaction in a business-to-business situation in order to improve marketing activities. We conducted a survey in which 93 business customers of a manufacturer of Diesel Generator in Iran participated and they talked about their ideas and satisfaction of supplier's services related to its products. We developed the measures for drivers of satisfaction first by as investigative research (by means of feedback from executives and customers of sponsoring firm). Then based on these measures, we created a mail survey, and asked the respondents to explain their opinion about the sponsoring firm which was a supplier of diesel generator and similar products. Furthermore, the survey required the participants to mention their functional areas and their company features.

In Conclusion we found that there are three drivers for customer satisfaction, which are reliability, information about product, and commercial features. Buyers/users from different functional areas attribute different degree of importance to the last two drivers. For instance, people from buying and management areas believe that commercial features are more important than information about products. But people in engineering, maintenance and production areas believe that having information about products is more important than commercial aspects. Marketing experts should consider the attribute of customers regarding information about the product and commercial features to improve market share.

Keywords—B2B, Customer satisfaction, Commercial, Industry.

I. INTRODUCTION

ONE of the basic concepts in marketing is the concept of meeting customers' needs. If customers are satisfied, they can improve a firm's bottom line in different ways. When the number of satisfied customers increases, they talk about the firm to others and this positive word-of-mouth makes new customers to move toward the firm [1]. Furthermore, most researchers believe that if customers are satisfied, they will be motivated to repurchase from the firm and remain loyal to it. There are a lot of studies that emphasize on the role of customer satisfaction for a firm's success and how this can be evaluated, [2] but most of them are restricted to business-to-consumer (B2C) marketing. It is not easy to generalize B2C Studies to B2B situations, because these two behaviors have a lot of underlying differences.

Organizational buying or B2B is a complex process and includes a lot of people from various functional areas, various purposes and possible conflicting decision criteria [3]. Some researches [4],[5] indicate that when different members of shopping centers (for example, engineers or buyers) want to select an industrial supplier, different factors are important for them. For instance, findings of [5] has shown that for buyers or shopping managers, getting discount is more important than for engineers. Likewise, [4] studies indicate that for purchase managers, business aspect of a supplier is more important. But the difference between these studies and ours is that, they consider customer needs when selecting a supplier, but we consider customer satisfaction with a supplier. Basically, we study customer satisfaction based on respondents' opinion about a supplier, and then connect the importance of these opinions with their main functional areas.

Most academicians and practitioners know that when customer satisfaction improves, customers will become loyal to business and it makes people talk positively about the business and ultimately the profits will grow. Also, when customers are satisfied, they will have less complaints and therefore, the costs of complaint controlling will decrease. Thus, evaluating customer satisfaction and understanding factors that creates this satisfaction will be useful for the firms to find methods to enhance product quality and then improve their competitive advantage [6]. International Organization for Standardization (ISO) 9000 has recently adopted some changes that include customer satisfaction, and its certified companies must collect and analyze data on customer satisfaction and use them to enhance organizational performance [7].

Since customer satisfaction is essential for lasting survival and development of a business, screening and observing customer satisfaction and recognizing its underlying factors must be one of the key activities of every business. Meanwhile, Organizational buying circumstances are very complex, and it is probable that shopping manager's satisfaction is driven by different sets of factors compared to those of engineering manager. For example, shopping managers consider commercial aspects more important, but engineering managers pay more attention to technical information about the product. If this assumption is correct, then it is logical that when communicating with organizational buyers, we pay attention to their functional areas, and do not use the same approach for all customers. Our opinion is that B2B business people are familiar with different needs of different organizational buyers, so during the time before sale, they adopt personalized and tailored communications which are exclusive for every department in the same organization (customer). But, we have seen one research in print that

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acknowledged that factors relating to buyer's functional areas affect organizational buyer's satisfaction in a different way and that was done by Goutam Chakraborty. We just experimentally show such a relationship in Iran and compare the results with the above mentioned research.

II. THEORETICAL BACKGROUND

In B2B framework, the customer satisfaction research has mainly emphasized on 'disconfirmation of expectations' model, which means customers are satisfied when they compare their feelings about a product's performance to their expectations [2]. According to marketing concept, we must think of any product as a total product, which involves main advantages of the product plus its supplementary features. The customer will be satisfied if he/she understands that the product's performance is the same or even better than his/her expectations (confirmation), and if it does not happen, negative disconfirmation will make the customer dissatisfied [2]. It is not difficult to adopt this model in B2C circumstances, but it might cause some problems in B2B conditions. The results of studies and theoretical debates on customer behavior are not usually related to industrial marketer. B2C customer satisfaction is completely different from B2B customer satisfaction, and the main distinction is the shopping manager, which is not the same as the end user of the product or service. Thus, the satisfaction with the shopping process in different parts of the buying organization must be considered seriously in organizational customer satisfaction [8].

In industrial marketing context, buyers and sellers usually have durable and close relationship and the interaction between and within each firm is complex [9]. For that reason, we must consider customer satisfaction in industrial marketing as exclusive to relationship. While there is no particular recognized technique for evaluating customer satisfaction [10], the majority of researches use these three steps:

- 1) Deciding on the features that can be changed in the products or services provided,
- 2) Requesting from the customers to give their opinions about those features,
- 3) Asking the customers' general idea about satisfaction with the company [11]

It is believed that customer's opinion about every main product parts that makes the total product, affects his/her satisfaction with the firms' products and services. Therefore, the main product parts can be considered as the reasons of total satisfaction [12].

The central part of every exchange is the product, so its features (price, product and quality) can significantly influence an industrial relationship [9]. Since the products in industrial marketing are very complex [13], a wide range of technical records and documents are often required. For this reason, customer's opinion about information related to the product, is the main factor for his/her satisfaction in B2B situation. Furthermore, Services are other factors that affects customer's satisfaction. Services, involve technical services (for example, maintenance, mending, and operation) [14], financial services (for example, credit policy) and after-

delivery supportive services (for example, guarantee coverage). Managing and controlling orders and complaints are very important in B2B situation. Managing the orders involves order planning, order creation, order receiving and admission, arrangement and performing, which ultimately results in timely and trustworthy delivery to customer. It is believed that most customers never complain, unless the problem is very serious [15]. Therefore, a supplier must be able to effectively answer the complaints and adopt an established policy to manage returns.

We can easily identify general issues that might be important for customers in B2B situations (like reliability, price, and what is said above) by reviewing the literature. But these issues must be validated by investigative studies with experts from the particular industry, because products and services are very different and complex in B2B circumstances. As a result, we accomplished four detailed interviews with customers of the sponsoring company, and two detailed interviews with different managers from various functional areas of the sponsoring company, and made the following list of issues that might be important for customers to be satisfied with the company's products or services:

- 1) supplier reliability
- 2) sticking on delivery schedule
- 3) technical characteristics of the product
- 4) breadth of product line
- 5) competitive prices
- 6) credit strategy
- 7) return policy, and
- 8) Warranty coverage.

We can summarize the above list to three features of 'reliability' (items 1 and 2), 'information about the product' (items 3 and 4), and 'business aspects' (items 5 to 8). Reference[16] also reported the same features. As we argued before, we theorize that industrial buyers' opinions about a supplier in these three features have a positive relationship with their total satisfaction with the supplier (see Figure 1). This model first applied by Goutam Chakraborty.

Hypothesis 1: buyers' opinions 'reliability', 'information about the product' and business aspects' of a supplier have a positive relationship with their total satisfaction with the supplier.

As it is said before, one reason for complexity of industrial marketing relationships is that a lot of people involve in making decision on shopping. These people are usually from various functional areas (such as shopping, management, engineering, maintenance, etc.) in the buying firm. These people have their own interests and orientations, and they have different standards to evaluate a supplier. But [17] did not find any considerable differences in the level of customer satisfaction between people from various functional areas. Although the level of satisfaction with a supplier might be the same between people from various functional areas, the importance of the drivers of satisfaction is probably different for them, and it depends on the features that are important for them when evaluating a supplier. We suppose that in this industry, 'supplier's reliability' is a consistently important factor that affects customer's satisfaction with a supplier, apart from his/her functional area (because it helps ensure suitable

functioning of Diesel Generator products. We found this issue by interviewing the customers (pretests) and the it is the same as what the field expert believes.

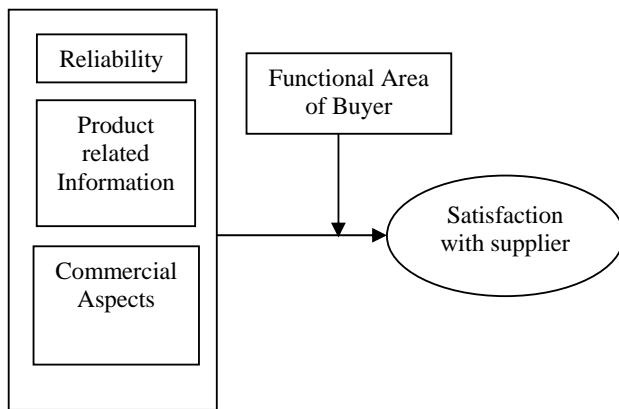


Fig. 1 Drivers of customer satisfaction (Goutam Chakraborty)

But in our opinion, the importance of other two components is different for respondents from shopping and management vs. respondents from engineering, maintenance and production areas. As it is said above, when choosing the supplier, commercial aspects are more important for shopping managers, while for engineers, technical aspects are more important [17]. We think that these preferences will probably continue after purchase. Therefore, commercial features are more important for satisfaction of respondents from shopping management than for respondents from engineering, maintenance and production, for whom, information about the product is more important for generating satisfaction. Figure 1 illustrates this proposed moderating relationship. Hence, we hypothesize that;

Hypothesis 2a: 'commercial aspects' are more important than 'information about the product' for overall satisfaction of respondents from shopping, management, finance and accounting.

Hypothesis 2b: 'Information about the product' is more important than 'commercial aspects' for overall satisfaction of respondents from engineering, maintenance and production.

III. METHODOLOGY

A. Research Context

This research emphasizes on the relationship between a supplier of Diesel Generator products (such as Generator, spare parts, switchboards, etc.) and industrial buyers from various industries. MN Ind. Co. is the manufacturer of Diesel Generators and their related equipments (such as relays, switchboards, filters etc.). The extensive application of Diesel Generators and lack of stable power in remote areas and downtime related to their crashing, highlights their importance.

B. Measures Development

As it is said before, we developed the measures for drivers of satisfaction first by as investigative research (by means of feedback from executives and customers of sponsoring firm).

Then based on these measures, we created a mail survey, and asked the respondents to explain their opinion about the sponsoring firm which was a supplier of diesel generator and similar products. Our questions were like: 'this supplier is reliable' or 'this supplier informs us about technical features of its products, using well-written documents'. Then we measured each item using seven-point Likert scale, whose extremes were 'strongly agree' and 'strongly disagree'. To measure satisfaction, we used question such as 'In general, how satisfied are you with products and services of this suppliers?' To answer this question, respondents used 7-point likert scale, in which 0 percentage represented 'not satisfied at all' and 100 percentage represented 'totally satisfied'. Furthermore, the survey required the participants to mention their functional areas and their company features (for example, number of personnel, annual income).

IV. SELECTION OF SAMPLE

Our reason for choosing this industry is that the author is an expert in this field. Moreover, the sponsor of this research is a large producer of Diesel Generator equipment in Iran (who asked us to be unnamed). This producer let us use its customer base for collecting data. Then, we were able to randomly select a sample of 93 firms from this database which was around 30 percent of the total database). Then we sent the survey to a contact person in each selected firm, by e-mail. We received 11 complete answers, and the response rate was 11.2 percent, which was low so we contact the person who was in charge and satisfied some of them to arrange appointment, so we have 25 answer and total response rate increased to 26%. which is logical according to the character of the sample (business customers) and lack of financial motivation given to the respondents. We examined the characteristics of the sample and compared them to the recognized characteristics of the customer base, but there were not any special variations. As it is demonstrated in Table I, we divided the respondents into two groups according to their major job function and qualitative results from previous studies and managerial insights. Pay attention that generally, there is not any considerable difference between the opinions of the respondents from the first group (i.e. shopping, management and accounting) and the second group (i. e. engineering, maintenance and production) about the given company on the three drivers of satisfaction.

V. ANALYSIS AND RESULTS

A. Overview of Analysis

To make sure about the dimensionality of the factors used in this research, we first use exploratory factor analysis and then, we use confirmatory factor analysis. Next, we applied regression analysis to obtain the importance of these factors in affecting customers' satisfaction with the sponsoring firm.

B. Factor Analysis

Since the size of our sample is big enough, first we randomly divide data into estimation (n=53) and validation (n=40) sample, and then we conduct exploratory factor analysis.

We examined the correctness of our data for factor analysis. All correlations between items were more than 0.40. We also recognized that general measurement of sampling adequacy (MSA), and all individual item MSAs are suitable for factor analysis. Moreover, Significant Bartlett's Test of Sphericity (Chi-square = 2120.885, $p < 0.000$) also showed the correctness of the data for factor analysis. Since we believe that our components are interrelated, we run exploratory factor analysis on the estimation sample by utilizing principal component (PCA) and oblimin rotation. As a result, three clear components emerged that could capture around 82 percent of total variance. (Factor 1: Eigen value – 5.02, variance captured – 61.3 percent; Factor 2: Eigen value – 0.83, variance captured – 12.2 percent; Factor 3: Eigen value – 0.57, variance captured – 8.6 percent) Also, a three components solution was supported by a scree plot. The loadings of the items on the three items were the same as our expectation. Using the same PCA on the validation sample data further confirmed the exploratory results. The equal three components appeared in the validation sample (Table II). This could help cross-validating the solution and gave more confidence to our three factor solution. We ultimately conducted principal component analysis again on the whole sample to check for factor loadings of items which are shown in Table II. All of these findings illustrate healthiness of measures.

At the end, we conducted a confirmatory factor analysis by utilizing LISREL 8.5 [19] to validate the three factors on the estimation and validation sample data. The fit measures for confirmatory factor analysis model largely reveal a good fit. Furthermore, the statistical significance of all factor loadings was at 5 percent level, which indicated a good model. Besides, we examined the construct validity of our measures. We evaluated measures of the internal consistency level among items of a single construct. We also assessed the differences among items of various constructs and convergent validity for each of the three construct. Item reliabilities, tests of composite reliability and average variance extracted were also tested. The composite reliabilities were high and exceeded and was beyond the commonly admitted benchmark of 0.70 [20].

Factor loadings are as follow:

MN is a reliable supplier 2)MN provide timely delivery,3)MN offers a large breadth of products, 4)MN provides well documented Technical specification,5)MN products are competitively Priced,6) MN offers a good credit policy,7) MN offers good return policy,8) MN has good warranty

he amount of variance captured by a construct in relation to the variance was measured by average variance extracted, because of the random measurement error. The entire estimates of average variance extracted were more than the 0.50 minimum cutoff that [21] proposed. Together, these findings represent good measurement properties. Table III illustrates these values.

C. Regression Analysis

Following the factors validation, we created summated rating scales for every construct, using average scores on the items belonging to every construct. We tested our hypotheses by using multiple regression model, considering 'general satisfaction' as the dependent variable and the three drivers in Figure 1 as independent variables. Initially, we conducted regression analysis on the complete sample by forcing all the independent variables in the model at the same time. The results can be seen in Table IV. The overall model was statistically significant ($F = 456.1$, $p < 0.00$).

The total independent variables could explain around 67 percent of the variance in general satisfaction. With reference to the t-test of regression coefficients in the model, all three independent variables (reliability, information about the product, and business aspects) statistically influenced overall satisfaction in a positive and considerable manner. These results supported hypothesis 1 and the idea that reliability, is the most important factor ($B = 0.71$), and business aspects and information about the product come afterwards ($b = 0.18$, and $b = 0.09$).

Items for reliability are a)MN is a reliable supplier b) MN provides timely delivery, the product related information includes c)MN offers a large breadth of products to choose from d) MN provides well documented technical specifications for its products. The commercial aspects include MN products are e) competitively priced, f) offers a good credit policy, g)offers a good return policy and h) has good warranty coverage on its products.

To examine hypothesis 2a and 2b, we split the sample into two groups according to respondents' functional areas. The respondents in group 1 were from shopping, management and accounting areas, and the respondents in group 2, were from engineering, maintenance and manufacturing areas. The size of both groups was suitable for hypothesis testing. We forced all the three independent variables in the model at the same time to so separate regression analysis for each group. Table V illustrates the results.

TABLE I
FUNCTIONAL AREA OF RESPONDENTS AND MEANS OF MEASURES USED IN THIS STUDY

Functional Area	Satisfaction	Reliability	Product related information	Commercial Aspects
Purchasing				
Management				
Finance				
Group 1	7.56	5.74	6.84	6.78
Engineering				
Maintenance				
Production				
Group 2	8.12	6.13	6.91	6.56
t-statistics	-0.46	-0.87	-1.82	1.12
p-Value	0.61	0.39	0.21	0.31
Total	7.58	6.11	6.81	6.82

TABLE II
FACTOR LOADINGS

Item	Reliability	Estimation sample Product related Information	Commercial aspects	Reliability	Validation sample Product related Information	Commercial aspects	Reliability	Entire sample Product related Information	Commercial aspects
1	0.89			0.83			0.91		
2	0.94			0.91			0.93		
3		0.83			0.66			0.78	
4		0.89			0.57			0.82	
5			0.69			0.68			0.71
6			0.83			0.91			0.92
7			0.91			0.86			0.87
8			0.81			0.78			0.81

Note: Loadings less than 0.45 suppressed in this table

TABLE III
CONSTRUCT MEASURES AND VALIDITY

Construct	Item	Estimation sample Std load	CR	Validation Sample Std load	CR	Entire Sample Std load	CR
Reliability			0.912		0.891		0.882
	a	0.93		0.91		0.93	
	b	0.88		0.84		0.84	
Product Related			0.796		0.771		0.781
	c	0.81		0.76		0.72	
	d	0.79		0.85		0.82	
Commercial aspects			0.792		0.898		0.785
	e	0.69		0.71		0.68	
	f	0.76		0.84		0.79	
	g	0.82		0.91		0.81	
	h	0.85		0.92		0.79	

Note: In this table "Std load" is Standardized loading, "CR" is Composite reliability according to Factor Analysis (LISREL Results)

TABLE IV
RELATIONSHIP BETWEEN ANTECEDENTS AND OVERALL SATISFACTION
DEPENDENT VARIABLE: OVERALL SATISFACTION

Antecedents	Std. est.	Overall Standard error ^a	t- statistic
Reliability	0.71	0.04	29.1
Product related Information	0.09	0.05	2.8
Commercial aspects	0.18	0.06	4.6
Overall R ²	0.68		
Adjusted R ²	0.67		
F	456.1		

Note A: ^a From models run separately on each group

TABLE V
RELATIONSHIP BETWEEN ANTECEDENTS AND OVERALL SATISFACTION

Antecedents	Dependent variable: overall satisfaction Group 1			Group 2			Difference t-tests ^b std. estimates between groups
	std est.	Standard error ^a	t-statistic	Std est.	Standard error	t-Statistic	
Reliability	0.71	0.04	24.1	0.69*	0.07	14.51	0.06
Product related Information	-0.01	0.05	-0.19	0.16*	0.08	4.2	-0.29
Commercial aspects	0.18*	0.06	6.01	0.04	0.08	1.1	0.27
Overall R ²	0.69*			0.62			
Adjusted R ²	0.68*			0.61			
F	270.2			186.1			

Note A: ^a From models run separately on each group; ^b Cohen and Cohen (1983); * Coefficient is statistically significant

Overall models were statistically significant for both groups. (Group 1: $F = 270.2$, $p < 0.000$, Group 2: $F = 186.166$, $p < 0.000$). Together, the independent variables could explain around 68 percent of the variance in total satisfaction for the first group and around 61 percent for the second group. Referring to the t-test of regression coefficients in the model for the first group, reliability and business aspects influences positively on overall satisfaction ($p < 0.0$), however, information about the product was not statistically significant. For the second group, according to t-test of regression coefficients, reliability and information about the product were statistically significant ($p < 0.01$) and positively influenced overall satisfaction, whereas business aspects were not significant. We conducted a Chow test [22] to see whether these group differences are significant. Table V illustrates the results, which demonstrate that the coefficient of 'reliability' was not considerably different among groups. The coefficients for "product related information" and "commercial aspects" were strongly different between the two groups. These results support our predictions about Hypothesis.

We considered a measure on performance rating in conjunction with the global measure of satisfaction in our survey. We asked the respondents the following question: 'In general, what is your rating for this supplier?' We evaluated the answers by a seven-point scale with two extremes of 'much worse than suppliers in the Diesel Generator industry' and "much better than suppliers in the Diesel Generator industry."

VI. CONCLUSION

Since the significance of having long-term relationship is increasingly recognized, understanding customer satisfaction is becoming more and more important. This research focuses on customer satisfaction complexity in B2B operations, and adds to our understanding of factors influencing customer satisfaction in B2B situations. We identified three factors via literature studies and expert interviews that drive overall customer satisfaction in B2B circumstances. Our findings supported the significance of these factors. The most important driver of satisfaction was 'reliability'. The other two factors – 'commercial aspects' and 'information about the product' – were also important in predicting overall satisfaction, and are not same among respondents from various functional areas. Respondents from shopping, management

and finance or accounting area believed that the commercial aspects are more important and respondent from engineering, maintenance and production believed that information about the product is more important. These results are persistent with the findings of Goutam Chakraborty.

Obviously, it is important for any company to measure customer satisfaction in order to achieve long term success. It is shown by our studies that customer satisfaction relies mainly on the shopping process not just the product. We found that customer's opinion about reliability of the supplier is the most influential factor in customer satisfaction. This is true for all members of buying center. May be it is natural, since lack of reliability of supplier may results in downtime, whose cost is often high. One of the remarkable findings of this research is that generally, there were significant difference among respondents from various functional areas in terms of their average satisfaction with a supplier.

VII. RESTRICTION AND ADDITIONAL RESEARCH

Since the design of the study is cross-sectional, it is not easy to establish fundamental relationship between variables, because it presents a static view of the relationship. Therefore, a longitudinal research can help to overcome this constraint. Moreover, this research relies on customers' opinions about a supplier of Diesel generator equipments and their satisfaction with it. For this reason, the results of this research cannot generalize to other industries and they must be interpreted cautiously. Although our sample was big ($n > 30$), our reply rate was just modest.

Another drawback of this research is the lack of items utilized for evaluating the constructs. To obtain a good response rate with better quality, the number of questions in the survey was kept to a minimum. Although all three factors are logically reliable, it could be better to evaluate them with more items, because by so doing, we could assure that we were correctly tapping the complete realm of every construct. It is suggested that further researches should endeavor to obtain this goal by evaluating the constructs by more items. We could describe a significant amount of variance in overall satisfaction with these three factors, but some more factors might involve in total satisfaction in B2B situation, which can be studied in future.

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