Impact of Multi-Dimensional Factors on Consumer Purchase Decision: An Empirical Study on the Steel Products

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Abstract: Steel is a vital commodity for any modern economy and is also considered as the backbone of human civilization. To infer from the literature review, and qualitative research, that for a commodity product like steel marketer the multi-dimensional factors that are typically associated with purchase intention in buying a steel product will be as relevant, albeit in a different manner. With the objective of the study to identify the affecting factors which influence the purchase intention of the consumers towards branded steel products in India. The primary focus of the study is done by considering "AM/NS India Ltd" which is a private steel manufacturer taken as. With this regard, the study identified the factors brand awareness, retail stores, distribution network, quality, and price, and also developed their links with the consumers' attitudes towards the steel products. Subsequently, empirical testing confirmed the hypothesized relationship of these five actors with consumers' purchase intention attitude towards the steel products. From the study, the result showed that higher brand awareness, quality of the steel products, and price plays a significant role in creating a positive impact on the purchase intention of the consumer. Finally, the summary of the study, analysis, implication of the results, limitations, and finally the conclusion and recommendation has been drawn.

Keywords: Brand, Consumer behaviour, Purchase intention, Retailing, Steel products.

I. INTRODUCTION

Commodities such as steel, cement, aluminum etc. are bought based on the nature of the basic product for mass consumption. The growth in the Indian steel sector has been driven by domestic availability of raw materials such as iron ore and costeffective labor. Understanding of consumer behavior is essence for survival of any business organization. In changing cultural, demographic, political and economic environment the consumers taste and preferences are changing drastically and suddenly the existing business model gets outdated. According to Prophet (2001), Saunders and Watt (1979) industrial products are different from retail products. As the demand and sales from the 'industrial / OEM and Export' segment has come to a stagnant level, steel companies have to explore new segment to increase their sales. With the growing demand in the retail sector, companies must concentrate on sales through retail segment from where steel companies can get consistent sales volume which requires steel companies to increase purchase intention among its customers according to Xiao and Leo

According to Kotler (2011), purchasing decisions are the actions of consumers whether they want to buy or not a product from various factors that influence consumers in purchasing a product or service, usually consumers always consider quality, price and whether the product is known to the public. Brand values and Purchasing decisions according to Mitchel and Reast (2001) are a process of making consumer decisions about purchases that combine knowledge to choose two or more alternative products available which are influenced by several factors, including quality, price, location, promotion,

convenience and service. Decision making by consumers to purchase products or services begins with awareness of the fulfilment of needs or desires and awareness of subsequent problems. In this study, "AM/NS India Ltd" which is a private steel manufacturer taken as the primary focus of the study.

'AM/NS India Ltd' is a joint venture between 'ArcelorMittal and Nippon Steel', two of the world's leading steel companies which acquired 'ESSAR Steel' in December 2019 which has an annual production capacity of 9-MTPA having plant located at Hazira, Gujarat, and two downstream production plant in Maharashtra. AM/NS India has the widest range that spans the spectrum of steel products encompassing over 300 grades of steel and value-added products. The products manufactured at AM/NS India are flat steel products such as: Hot-rolled products (HR), Cold-rolled products (CR), Galvanized products (GI), and Pre-painted Color-coated products (PPGI). AM/NS India segmented its customers into distinct categories as: Retail, OEM, and Export segment.

II. RESEARCH GAP

Literature review and interviews of steel industry experts indicated some dominant factors such as brand awareness, retail stores, distribution network, quality and price affect the purchase intention of the consumer that might have a significant impact on retail sales of branded steel products.

"The decision-making process for purchasing can be divided into five stages, namely recognizing needs, seeking information, evaluating alternatives, making decisions, post-purchase evaluation." (Suryani, 2012: 17).

III. OBJECTIVE OF THE STUDY

The objective of this study is to determine the impact of multi-dimensional factors on consumer purchase decision on steel products. What are the major factors like brand awareness, retail stores, distribution network, quality and price affect the purchase intention of the consumer.

IV. HYPOTHESIS FORMULATION

Based on the qualitative research, the study arrived at the five major factors that influencing the purchase intention of retail branded steel products. Detailed description of each factor and theoretical arguments related to hypotheses development are as follows.

- 1. Brand Awareness: Brand image according to Kotler and Keller (2016), Aaker (1996) is the consumer's perception of a brand as a reflection of the associations that exist in the consumer's mind. Based on the discussion with the experts from the industry, it is understood that brand awareness is playing a significant role in the success of retail other competitors like 'JSW Steel and Tata Steel'. For e.g., 'JSW Shoppe' is an initiative taken by the company to provide better reach, experience and awareness to the retail consumers about their product range.
 - Hypothesis 1: Higher Brand Awareness leads to higher purchase intention.
- 2. Retail Stores: Retailing of branded products according to Laforet (2008) plays a significant role to influence the consumer purchase behaviour. According to Mandal (2006) steel being a commodity product, to differentiate from other local players, 'JSW Steel and Tata Steel' have initiated a unique kind of 'retail model' where customers can visit the steel retail shops, see the display material, touch and feel the products, and also get insights about the various products, quality, price related information from the retail stores.
 - Hypothesis 2: Presence of Retail stores is positively related to purchase intention.
- 3. Distribution Network: According to Mandal (2006) and Gopal (2012), Tata Steel and JSW Steel have been able to capture retail market through a strong distribution network across rural India. For Example: Tata Steel mimics the distribution network of a soap company. As a result of strong distribution network, Tata Steel's retail sales have increased as more customers intend to purchase from Tata. Hypothesis 3: Strength of Distribution Network is positively related to purchase intention.
- 4. Quality: Quality is a major concern for the customers. According to Mudambi (2002), quality and process are important factors for B2B market. Nobody wants to do experiment while construction of his own dream house. Based on the inputs received from the experts from the industry, process control and quality assurance play an important role in the industry and competitors like Tata Steel and JSW steel have maintained the quality of their products which differentiates from local players.
 - Hypothesis 4: Quality of product is positively related to purchase intention.
- 5. Price: Steel being a commodity product, unlike other products like FMCD, automotive etc the price of the steel

products is highly dependent on price of their raw material, and it is volatile in nature. Because of this, companies are not able command a premium over their price from their products.

Hypothesis 5: Price has a positive association with purchase intention.

V. CONCEPTUAL FRAMEWORK

Based on the aforesaid hypotheses, the conceptual graphical model having 5-Independent variables and one-Dependent variable is represented in Fig.1.



Fig. 1. Conceptual Framework

VI. METHODOLOGY AND ANALYSIS

The nature of the research is Qualitative Research. The cross-sectional descriptive research design was used. Thus, this study considered only retail branded steel products 'Galvanised Corrugated Sheets and Colour-coated products'. The following were the study areas and methodologies that have been used: -

Primary data and Secondary data collection:- Primary data through surveying and interview and Secondary data from white papers, journal articles, case studies and company websites etc.

1) Interviewing and discussion with the industry key executives (CXOs), experts, consumers, and partners like: distributors, and dealers/retailers.

The study carried out the survey using the questionnaire for the descriptive hypotheses and experiment for causal hypotheses. Table-1 lists the variables that were used in the study.

TABLE 1: List of Variables used

Variables	Variable Type				
Brand awareness level	Independent Variable				
Presence of retail stores	Independent Variable				
Strength of distribution network	Independent Variable				
Quality of product	Independent Variable				
Price of product	Independent Variable				
Purchase intention	Dependent Variable				

Nature of this research is 'Exploratory cum Conclusive' with 4 of the hypotheses being exploratory cum descriptive and one being exploratory cum causal in nature.

The study adopted categorical scales to collect demographic data of the sample like age, location, gender and occupation. For the independent variables brand awareness levels, presence of retail stores, strength of distribution network, quality of product and price of product 5-point Likert scale was used. For the dependent variable Retail Sales, a 5-point Likert scale was used. For descriptive hypotheses, questionnaire survey used. For the causal hypothesis testing, H1: Higher Brand Awareness leads to higher purchase intention, we conducted an experiment which has been designed as follows.

Independent Variable:- Brand Awareness; Dependent Variable:- Purchase Intention; Extraneous Variables (Controlled):- Price, Product quality, Inflation, Service, Distribution network, Presence of retail stores. These are controlled by showing images with same product information and only changing the brand logo.

The images shown in Fig.2 were displayed to 'Control group and Treatment group' respectively.



Fig.2: Control Group (Image without Brand Logo), Treatment Group (Image with ArcelorMittal Brand Logo)

Question asked in the experiment:-

Assume you need a coloured steel sheet for the roof of your house and price / service are no bar. How likely are you to buy this steel sheet for the roof of your home? The survey and experiment have been shared with small sample to get feedback.

After initial exploratory research, it was identified that target customers for AM/NS retail products are customers living in Tier-3 towns and rural areas of India belonging to ages above 30 years and those who are working middle class. Therefore, these specific samples were being studied. Statistically sample size was determined using the below equation.

$$n = \frac{\sigma^2 \times z^2}{D^2}$$

The Standard deviation = Range /4 = (5-1)/4=1; For a 95% confidence interval, z= 1.96; Level of precision, D = 0.05. The study used 30 times the number of independent variables to arrive at sample size= 30x5=150.

SAMPLING TECHNIQUE: Non-Probability convenient Random sampling technique based on judgment of surveyor has been used for the purpose of data collection. The population elements have been selected on the basis of our own judgment. The survey questions were sent to the respondents to understand the acquaintances in rural parts of India or Tier-3 towns via 'WhatsApp and Telegram'.

The population of this study was composed of all Indian steel branded products customers. The sampling frame

consisted of residents of more than 150 urban and rural Indian consumers from different parts of Karnataka and Maharashtra State only. This evaluation is based on primary data generated through questionnaire and collected from the respondents who purchase steel products for their own construction purpose only and as such its findings depend on accuracy of data. The sample is selected randomly. Structured questionnaire was used as instrument for collecting the primary data looking into the nature of study the questionnaire mainly contented questions which were closed ended. a structured and closed ended questionnaire was prepared for customers only covering various demographic parameters. The questionnaires started with a brief note describing the study. Following the description, respondents were asked to select one option from the given list and answer the questions consisting of measures needed for this study. The response were recorded and measured by using nominal scale and Likert scale. To collect qualitative information certain observation were made and data collected were noted. The data collected thus was both qualitative and quantitative in nature.

Data Analysis: The sample size of 150 respondents was selected randomly and the sample profile for this study are customers living in Tier-3 towns and rural areas of Karnataka and Maharashtra States, India belonging to ages above 30 years and those who are working middle class etc. The behaviour of these consumers is observed and data were collected through structured questionnaire method. Data preparation begins with preliminary check of all the questionnaire for its completeness. The collected data was edited, coded, tabulated, grouped and organized according to the requirement of the study and then entered into SPSS for the analysis.

Normality Check: Variables were checked for Normality and whether Skewness and Kurtosis were within limit. Also, the outliers were checked through the Box plots and Descriptive statistics in SPSS.

TABLE 2: Quality and Descriptive Statistics results

Quality Cumulative Frequency Percent Valid Percent Valid 2.0 2.0 1.5 6.6 2.0 14 9.2 9.2 15.8 2.5 16 10.5 10.5 26.3 3.0 49 32.2 32.2 58.6 3.5 37 24.3 24.3 82.9 4.0 19 12.5 12.5 95.4 3.3 3.3 98.7 1.3 1.3 100.0 100.0 100.0

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Brand Awareness	152	2.0	5.0	3.230	.8857	.305	.197	905	.391
Retail Store	152	1.0	5.0	2.464	1.0279	.483	.197	655	.391
Distribution Network	152	1.0	5.0	2.520	1.1493	.167	.197	-1.345	.391
Quality	152	1.0	5.0	3.069	.7828	369	.197	.274	.391
Price	152	1.0	5.0	4.092	.7772	-1.137	.197	1.964	.391
Purchase Intention	152	1.5	5.0	3.628	.7837	256	.197	306	.391

Descriptive Statistics

Demographics- Descriptive analysis:

From the descriptive analysis of demographics collected, the study found that a typical steel sheet buyer comes from Tier-

2, Tier-3 cities is aged 40+, earning between Rs.25k-50k per month and owns their own business.

Descriptive analysis- Correlation:

Hypotheses H2 to H5 demanded the study to test the association of the dependent variable "Purchase Intention" with independent variables like "Quality, Price, Retail Stores and Distribution Network". The study performed a Correlation test on SPSS for all these variables and found that all the dependent variables have positive correlation (association) with purchase intention which proves the hypotheses H2 to H5 were correct. Further it is found that of all the independent variables, brand awareness and the quality were most positively associated with buyer's purchase intention. The result is shown in Table-3.

TABLE 3: Correlation Matrix between all variables

Correlations									
		Brand Awareness	Retail Store	Distribution Network	Quality	Price	Purchase Intention		
Brand Awareness	Pearson Correlation	1	.644	.579	.514	.053	.611		
	Sig. (2-tailed)		.000	.000	.000	.515	.000		
	N	152	152	152	152	152	152		
Retail Store	Pearson Correlation	.644	1	.724	.518	.095	.462		
	Sig. (2-tailed)	.000		.000	.000	.242	.000		
	N	152	152	152	152	152	152		
Distribution Network	Pearson Correlation	.579**	.724	1	.560	.044	.436		
	Sig. (2-tailed)	.000	.000		.000	.588	.000		
	N	152	152	152	152	152	152		
Quality	Pearson Correlation	.514**	.518**	.560**	1	.175	.620		
	Sig. (2-tailed)	.000	.000	.000		.032	.000		
	N	152	152	152	152	152	152		
Price	Pearson Correlation	.053	.095	.044	.175	1	.383		
	Sig. (2-tailed)	.515	.242	.588	.032		.000		
	N	152_	152	152	152	152_	152		
Purchase Intention	Pearson Correlation	.611	.462	.436	.620**	.383**	1		
	Sig. (2-tailed)	.000	.000	.000	.000	.000			
	N	152	152	152	152	152	152		

HYPOTHESIS TESTING: Two-Sample T test for brand awareness influencing purchase intention was done. Hypotheses H1 tried to identify if brand awareness matters for purchase intention. The study performed an experiment collecting brand awareness and purchase intention data from two samples: Control group which was not shown any brand logo and the Treatment group which was shown the Arcelor Mittal brand logo and asked respondents if they would like to purchase the product keeping all other extraneous variables under control. From the Two sample t-test the study found that the mean score of control group was significantly higher than the mean score of treatment group with significance value <5% which is shown in Table-4. This proved that brand awareness mattered for the purchase intention in steel products and also showed that ArcelorMittal does not have a positive brand image in the minds of buyers.

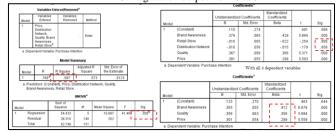
TABLE 4: Two sample t-test results in SPSS

		Gr	oup Statis	tics								
	TYPE	N	Mean	Std. Deviatio	Std. Error in Mean	7						
Purchase	1.00	80 72	3,97 <u>5</u> 0 2,2639									
	1.00	12	2.2039	1.3/3/	3 .1011	o 1 rea	tillent Gi	oup				
	Independent Samples Test											
			\neg	Levene's Test Varia		of t-test for Equality of Means						
						Mean Std. Error				95% Confidence Differ		
				F	Sig.	t	df	Sig. (2-tailed)	Difference	Difference	Lower	Upper
Purchase	Equal vi	ariances ed		34.565	.000	9.410	150	.000	1.71111	.18183	1.35183	2.07039
	Equal vi	ariances not ed				9.180	113.919	.000	1.71111	.18640	1.34184	2.08038

Multivariate Linear Regression determines relation between purchase intention and other variables. Hypotheses H1 states that brand awareness is positively influences or impacts purchase intention. So, to determine the relation between purchase intention and all independent variables through a multivariate linear regression analysis used in SPSS. It is found that the regression model had a R^2 value of 0.587 which says 58% of the variance in purchase intention is explained by the variation in the dependent variable. The model had a Significance value of 0 (<5%). However, the individual unstandardized coefficients were only significant for brand awareness, quality and price. Retail stores and distribution network did not seem to impact purchase intention of the buyer. The standardized coefficients showed that brand awareness is the most important variable for deciding to purchase a steel retail product.

The regression equation can be written as follows: $Purchase\ Intention = 0.365*Brand\ Awareness + 0.356*Quality + 0.301*Price + 0.125$. The result is shown in the Table-5.

TABLE 5. Regression output from SPSS



VII. RESULTS AND DISCUSSIONS

The outcome of this study provides significant insights about the consumers purchase intention towards the branded steel products. The first hypothesis of this study was "higher brand awareness leads to higher purchase intention". The result showed that higher brand awareness plays a significant role in purchase intention. Thus, a clear and strong brand image will help companies to position their brands suitably. The second hypothesis of this study was "presence of retail stores is positively related to purchase intention". The result showed number of retail stores is positively correlated to purchase intention but do not seem to impact sales. Thus, company can focus on store experience rather than number of stores. The third hypothesis of this study was "strength of distribution network is positively related to purchase intention". The result didn't support enough for this. Thus, strength of distribution network does not seem to impact purchase intention. But improving distribution network increases the product availability in the market. The fourth hypothesis of this study was "quality of product is positively related to purchase intention" and the result supported this. Thus, we can conclude that consumers perceived quality of product has significant positive impact on purchase intention towards the products. Launching innovative and better-quality products than competitors will aid the companies to increase the purchase intention in the consumers. The fifth hypothesis of this study was "price has a positive association with purchase intention". The result showed that price towards steel products has significant positive impact on purchase intention. Customers are influenced by pricing and tend to buy products that are low priced Therefore, companies should take appropriate actions against the factors responsible for creating positive attitude toward their steel brands. Our study has also shown how the

consumers' attitude toward steel brand forms through different antecedents.

Overall, this research would contribute to the understanding of the growing steel retail market. In addition, this research would be a valuable resource for steel companies in setting up marketing strategies and to enable them take right decisions for the success, profitability and the sustainability.

VIII. MANAGERIAL IMPLICATIONS

As there are very limited studies in Indian steel industry context, this work shall help the managers, researchers and the practitioners to learn the nuances of steel retail in the given context. From the study, the result showed that higher brand awareness, quality of the steel products, and price plays significant role in creating positive impact on purchase intention of the consumer which shall help the steel companies, distributor/retailers in making better marketing strategy decisions.

IX. CONCLUSION

Due to stagnant demand and sales from the 'OEM and Export' segment has pushed steel companies to explore new segment to increase their sales. Growing demand in the retail sector, and also various Government initiatives has raised demand for steel in retail segment. Hence, the steel companies must concentrate on sales through retail segment to ensure consistent sales volume. From the study, the result showed that higher brand awareness, quality of the steel products, and price plays significant role in creating positive impact on purchase intention of the consumer. Thus, creating a clear and strong brand image, launching innovative and better-quality products than competitors increase the consumers perceived quality of product, and the competitive pricing strategy will aid the companies to increase the purchase intention in the consumers, and it will help companies to increase their retail branded products sales. Therefore, companies should take appropriate actions against the factors responsible for creating positive attitude toward their steel brands. The study has also shown how the consumers' attitude toward steel brand forms through different antecedents.

X. LIMITATIONS OF THE STUDY

The study has some limitations that offer opportunities for future investigation. All the efforts have been made to ensure that the research is design and conducted to optimize the ability to achieve the research objective. However, there are some constrains that do not validate the research but made to be acknowledge. This study is restricted to the branded retail steel products., i.e., Galvanised Corrugated sheets and Colour-coated products only; and in the states of Karnataka and Maharashtra only, and time was the limit. Therefore, additional exploration is necessary before any generalization of these findings can be made. This evaluation is based on primary data generated through questionnaire and collected from the respondents who purchase steel products for their own construction purpose only and as such its findings depend on the accuracy of data. The sample consists of more than 150 urban and rural Indian consumers from different parts of Karnataka and Maharashtra State. The sample is selected randomly and in single phase so as the opinion suggested by the executives is situation based. The research relies on the feedback of the customer, which is inherently subjective, and thus any generalizations drawn may not be entirely accurate. Certain issues in the study concentrate on both perceptions and attitude of respondents. Many other factors seem to have effect on consumer attitude and purchase behaviour. The major tool which is used for evaluation, is 5-point Likert scale and Nominal scale and thus it has its own limitations.

XI. SCOPE FOR FUTURE RESEARCH

Further research might useful in different commodity-based products like cement, aluminum, wood, petroleum etc., and the study can also be extended to evaluating and validating the performance of the brand equity performance in the unexplored market.

APPENDIX

Questionnaires and Statistical Outputs:

- Brand Awareness
- o I am aware of the brand ArcelorMittal Steel? (BA1)
- I can easily recognize ArcelorMittal brand from other steel brands like Tata and JSW (BA2)
 - Retail Stores
- Arcelor Mittal Steel has good number of retail stores across country (RS1)
- Arcelor Mittal retail store is more visible than Tata and JSW (RS2)
 - Distribution Network
- Arcelor Mittal has a strong distribution network across the country (includes service centres) (DN1)
- Arcelor Mittal's strong distribution network offers greater product availability as well as more variety (DN2)
 - Quality
- I am happy with ArcelorMittal Steel's product quality (OL1)
- ArcelorMittal offers better quality steel than Tata or JSW (QL2)
 - Price
- ArcelorMittal steel products are budget-friendly (P1)
- ArcelorMittal steel products are priced lower than Tata and JSW (P2)
 - Purchase Intention
- I buy ArcelorMittal steel products because I know the brand well (PI1)
- I would like to purchase products of ArcelorMittal brand (PI2)
 - Control Group
- How likely are you to buy this steel sheet for the roof of your home? (C2)
 - Treatment Group
- How likely are you to buy this steel sheet for the roof of your home? (T2)
 - Demographic
- o Select your Age group (in years) (DQ1)
- Select your Occupation (DQ2)

- o Monthly Household Income (Rs. per month) (DQ3)
- o Select which location you are from (DQ4)

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