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Priority of Antecedents Influencing the Behavior of Purchasing Medical Equipment's – A Comparative Study in Uttar Pradesh, India

Sanjeev Pandey¹ and Sandeep Srivastava²

Department of Humanities and Social Sciences, Jaypee University of Engineering and Technology, Raghogarh, Guna-473226 E-mail: sanjeevrmpl@gmail.com

Abstract: The customer being the focus of several research studies lacks in explicitly incorporating various customer antecedents that are important in understanding the customer preferences in the medical equipment products in the Indian context. This paper examines the priority of antecedents of the customer purchase intention while purchasing general healthcare equipment namely glucometer and respiratory medical equipment namely Cpap/Bipap and the discussion regarding the reasons for the identified patterns. Sample: A sample of 493 customers has been taken from major cities of Uttar Pradesh. It can help many of the medical equipment's supplier companies to understand the consumer behavior, employ their competitive strength and maintain policies and strategies more effectively. Findings: The study highlights the change in ranking based on literature findings and the newly developed customer conviction index ranking. The study also highlights the identification of the antecedents that should be focused in purchasing of health equipment. The important antecedents are Price followed by the Brand and Quality of the product. Conclusion: The findings of the paper serves as a guidelines for the medical equipment manufacturers, private practitioners, physicians and hospital owners who want to open their franchisee in India or market their products in India. The organizations involved with the sales of medical equipment products in India need to rely on the findings of the paper. The analysis of the data is done using SPSS 21.0 tool.

Keywords: Brand Image, Price, Subjective norms, Attitude, Perceived quality and Purchase Intention.

I. INTRODUCTION

In today's scenario of marketing, identifying the best product features and understanding the consumer behavior is very important. For any company to identify customer needs and fulfill the same is the basic strategy. Understanding antecedents that influences the consumer purchasing decision is critically important for the companies which are competing globally. Consumer behavior is activities which are associated with

² Jaypee University of Engineering and Technology, Raghogarh, Guna- 473226

choosing, purchasing and making decisions to meet consumer needs. Study of consumer behavior can determine why people consider certain products and which determinants have effects on their decision-making process. East *et al.* (2008). Models of consumer behavior have two main goals: first, to describe, control and predict consumer behavior and the second one is to help researchers communicate among determinants which influence the product purchasing. Bareham, (1995). Some models of consumer behavior are including black box model that includes input, purchaser and output. On the basis of secondary research conceptual framework has been given in Fig. 1.

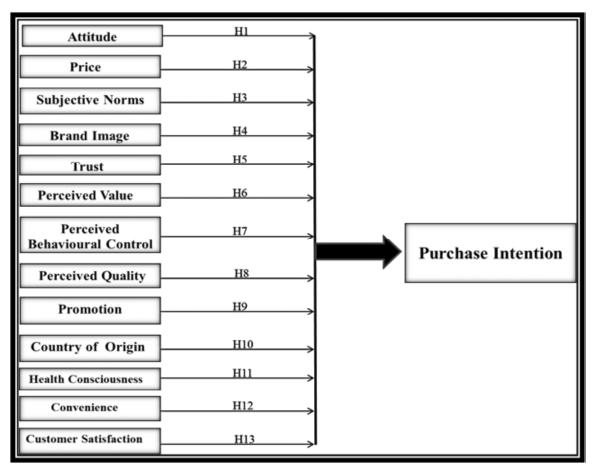


Figure 1: Conceptual Framework

Source: Author's own findings

a) About medical equipment- glucometer and Cpap/Bipap

Medical equipment (also known as armamentarium) is designed to aid in the diagnosis, monitoring or treatment of medical conditions. We all are aware that *glucometer* is used to measure level of sugar in the body. Cpap machines will solely be set to one pressure that is still consistent throughout the night. CPAP machines are used in treatment for preventive sleep disorder. The patients who are suffering from snoring problem, Cpap machine is the solution. For the foremost half, CPAP machines deliver a gradual, continuous stream of pressurised air to patient's airways to forestall them from collapsing and inflicting symptom events.

b) Difference between Bipap and CPAP

Cpap machines will solely be set to one pressure that is still consistent throughout the night. However, several CPAP machines have a ramp feature that starts off with a lower pressure setting and bit by bit builds to the prescribed pressure. This comfort feature merely makes the pressure at the start a lot of tolerable and fewer immediate, once the pressure builds to the specified setting; it stays at that setting for the remainder of the night. When a CPAP volumetric analysis study, your sleep technician and doctor can verify the pressure settings for your CPAP machine and set the machine to deliver that actual quantity of pressure endlessly.

The main distinction between Bipap and CPAP machines is that Bipap machines have 2 pressure settings: the prescribed pressure for inhalation (i-pap), and a lower pressure for exhalation (e-pap), the twin settings permits the patient to urge additional air in and out of their lungs.

c) When Bipap is used?

One of the complaints regarding CPAP devices is that some patients realize the constant singular pressure troublesome to exhale against. For patients with higher pressure strengths, breathing against the incoming air will feel troublesome, as if they need to force their breath.

Bipap also can be set to incorporate a breath temporal order feature that measures the quantity of breaths per minute an individual ought to be taking. If the time between breaths exceeds the set limit, the machine will force the person to breath by briefly increasing the gas pressure.

d) Which patients get benefited from Bipap?

- Bipap machines prescribed to sleep apnea patients with high pressure settings or low oxygen levels.
- When CPAP has failed to adequately treat certain patients, Bipap are often used after.
- Bipap can be useful for patients with cardiopulmonary disorders such as congestive heart failure.
- Often prescribed to people with lung disorders or certain neuromuscular disorders.

II. OBJECTIVES

The objectives of this research paper are as follows:

- a) To compare the findings of the analysis of two medical equipment (glucometer and Cpap/Bipap) in Indian context from the customer viewpoint.
- b) To develop an Index for better understanding the consumer mindset in purchasing medical equipment in India.

To achieve the first objective various antecedent of customer purchase intention were identified through literature review. Thirteen antecedent of customer purchase intention were identified. The Antecedents were then ranked according to their importance in the literature review. Table 1 depicts the ranking of antecedents. The ranking is based on the number of times (counts) the antecedents are prominently discussed in the papers. (Pandey and Srivastava, 2016)

Table 1
Ranking of the antecedents on basis of literature review

S.no.	Antecedents	Counts
1)	Attitude	[29]
2)	Price	[20]
3)	Subjective Norms	[14]
4)	Brand Image	[13]
5)	Trust	[12]
5)	Perceived Value	[11]
7)	Perceived behavioural control	[11]
3)	Perceived quality	[9]
9)	Promotion	[7]
10)	Country of origin	[6]
1)	Health consciousness	[5]
12)	Convenience	[5]
13)	Customer satisfaction	[2]

Source: On the basis of availability of existing literature. (Pandey and Srivastava, 2016)

III. METHODOLOGY

The analysis employed in this paper is enquiry. The results of the analysis of two medical equipment products namely glucometer and Bipap/Cpap are compared to find out the ranking based on β (beta) values. The paper then proposes a methodology for estimating the index number based on the gap analysis.

Following methodology is used in the analysis of both products.

The tactic used is that the probabilistic random sampling within the procedure of survey the list of shoppers – Patients, hospitals still as doctors using glucometer, Bipap and Cpap devices has been organized, the final sample size is 493. The responses from the major town of Uttar Pradesh have been taken. The main cities that square measure lined during this paper are Lucknow, Barabanki, Kanpur, Allahabad, Agra, Varanasi, and Gorakhpur.

The sample unit is Hospitals [both government and private], Patients and doctors. Initial Sample size: 550; [200 hospitals + 350 Patients]. Out of total sample size of 550, 50 respondents haven't given any response and 7 weren't interested in any respect, so there have been 493 valid respondents.

a) Questionnaire design

The form developed had been divided into 2 elements. Half A of the form had queries on demographic details of the potential respondents as well as name, gender, age, occupation education and income in Rs per month. The half B contains 43 statements that cowl things of dependent and freelance variables of the study. Every statement was given as a five-point Likert scaled-response question with 1 being "strongly disagree" to 5 "strongly agree". The multi-scaled things accustomed live the constructs were sourced

from totally different analysis studies. Once surfing many analysis papers scales of things of all the fourteen variables has been custom-made from previous analysis

IV. FINDING OF THE ANALYSIS

The finding of the multiple regressions done on the primary data collected through questionnaire has been analyzed. The results are given in Table 2. The following interpretations are derived:-

a) Glucometer

The *p*-value of the attitude (*p*-value = .000) is less than 0.05 which shows that attitude has significant impact on purchase intention. The p-value of price (*p*-value = .254) is greater than 0.05, therefore *price has insignificant impact on purchase intention*.

The *p*-value of subjective norms (*p*-value = .000) is less than 0.05 which shows that it has significant impact on purchase intention. The *p*-value of brand image (*p*-value = .000) is less than 0.05 which shows that it has significant impact on purchase intention. The *p*-value of trust (*p*-value = .000) is less than 0.05 which shows that it has significant impact on purchase intention.

Thus The *p*-value of *perceived value* (p-value = .853) is greater than 0.05 which shows that it has *insignificant impact on purchase intention*. The p-value of perceived behavioural control (p-value = .000) is less than 0.05 which shows that it has significant impact on purchase intention. The p-value of perceived quality (p-value = .000) is less than 0.05 which shows that it has significant impact on purchase intention.

The *p*-value of promotion (*p*-value = .000) is less than 0.05 which shows that it has significant impact on purchase intention. The *p*-value of country of origin (*p*-value = .000) is less than 0.05 which shows that it has significant impact on purchase intention. The *p*-value of health consciousness (*p*-value = .000) is less than 0.05 which shows that it has significant impact on purchase intention. The *p*-value of convenience (*p*-value = .000) is less than 0.05 which shows that it has significant impact on purchase intention.

The *p*-value of *customer satisfaction* (*p*-value = .852) is greater than 0.05 which shows that it has *insignificant impact on purchase intention*.

Therefore from Table 2 we can see that price; perceived value and customer satisfaction does not have any impact on purchasing glucometer. Whereas all other antecedents have positive impact on purchasing glucometer.

(b) Bi-pap & Cpap

The following interpretation has been drawn when linear multiple regressions has been applied in the primary data and is shown in Table 3-

The p-value of *subjective norm* and *customer satisfaction* is greater than 0.05 therefore insignificant in purchasing Bipap and Cpap. The p-value of all other antecedents were less than 0.05, hence they are significant.

Among significant antecedents β -coefficient of Brand Image has highest value (β =.194) signifies that while purchasing Bipap and Cpap customer consider or gives brand as their first priority followed by

Table 2
Result of multiple linear regression analysis drawn from SPSS.21

Model	Unstandardized Coefficients		Standardized Coefficients	T- value	Sig.(p-value)	
	В	Std. Error	Beta			
(Constant)	0.162	0.784		2.609	0.000	
AT	0.102	0.029	0.094	3.578	0.000	
PR	0.057	0.030	0.046	1.903	0.254	
SN	0.262	0.039	0.174	6.768	0.000	
BI	0.284	0.039	0.187	7.374	0.000	
TR	0.231	0.039	0.152	5.911	0.000	
PV	0.005	0.036	0.001	0324	0.853	
PBC	0.119	0.039	0.077	3.069	0.000	
PQ	0.241	0.039	0.160	6.168	0.000	
PRM	0.315	0.057	0.143	5.493	0.000	
COO	0.100	0.039	0.008	1.234	0.000	
НС	0.183	0.036	0.124	5.025	0.000	
CV	0.009	0.054	0.006	1.027	0.000	
CS	0.004	0.036	0.002	.0314	0.852	

Source: SPSS output

Convenience (β =.154), Promotion (β =.152,) Perceived quality (β =.151), Attitude (β =.146), Price (β =.133), Health consciousness (β =.130), Trust (β =.120), Country of origin (β =.114), Perceived behavioural control (β =.078) and Perceived value (β =.077).

This study also incorporates that the two antecedents *Subjective Norms* having Beta-Value (β = .026) and *customer satisfaction* having Beta-value (β = -.001) does not have any impact on purchasing Bipap and Cpap devices.

The results signify that if a person is health conscious and has enough budgets to purchase Bipap and Cpap, he is least concerned about the suggestions given by family member or colleagues. The customer looks for the brand and convenience in the purchase of the devices. This clearly indicates that a subjective norm does not have any impact on purchasing Bipap and Cpap devices.

Table 3
Result drawn from SPSS.21 :CoefficientsSource: SPSS output

Model	Unstandardized Coefficients		Standardized Coefficients			
	В	Std. Error	Beta (\beta -value)	T-value	Sig. (p-value)	
(Constant)	0.184	0.697		4.642	0.000	
AT	0.193	0.030	0.146	6.425	0.000	
PR	0.175	0.030	0.133	5.802	0.000	

contd. table 3

Model	Unstandardized Coefficients		Standardized Coefficients		
	В	Std. Error	Beta (\beta -value)	T-value	Sig. (p-value)
SN	0.042	0.031	0.026	1.332	0.183
BI	0.353	0.041	0.194	8.702	0.000
TR	0.222	0.044	0.120	5.063	0.000
PV	0.141	0.037	0.077	3.811	0.000
PBC	0.165	0.043	0.078	3.795	0.000
PQ	0.285	0.042	0.151	6.779	0.000
PRM	0.407	0.063	0.152	6.425	0.000
COO	0.201	0.040	0.114	5.069	0.000
НС	0.238	0.042	0.130	5.626	0.000
CV	0.425	0.063	0.154	6.800	0.000
CS	-0.001	0.035	-0.001	-0.042	0.966

The comparative analysis is shown in Fig. 2 based on the beta values of both Glucometer and Cpap/Bipap which is the output of the primary data when applied in *SPSS 21.0 tool.* From the bars in the Fig. 2 clearly reveals that the price, perceived value, and customer satisfaction is insignificant.

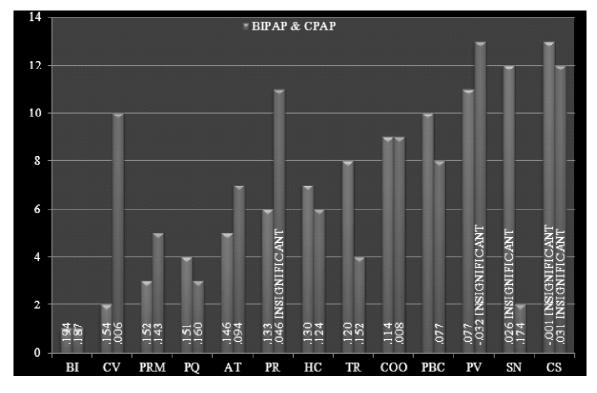


Figure 2: Comparative analysis of glucometer and Cpap/Bipap based on the beta values

Source: Author's own findings

V. DEVELOPMENT INDEX

(a) Gap identification

The objective of an organization making medical equipment's is found out the customer mind-set in a particular sampling frame. It is difficult to ascertain the priority of the antecedents affecting purchase intention. The widely accepted high influencing factors in global context might not be applicable to a particular country context.

Hence it is important to find out the antecedents which should be given greater attention for the medical equipment manufacturer. To achieve this objective, organizations must ascertain the priority of the antecedents. This can be done by espousing the idea of antecedent *gap analysis*.

It helps organizations to emphasize the antecedents that may be not well taken seriously by the organizations and consequently enlighten them on any gaps that should be rectified.

The aim of developing the index is to construct a valuable system for evaluating the antecedents of customer purchase intention. For this purpose, the antecedents affecting customer purchase intention were identified and were analysed with the help of analytical research for glucometer and CPAP/BIPAP (respiratory equipment) based on extensive literature review. A questionnaire was prepared to judge the antecedents for glucometer and CPAP/BIPAP. With the mean values, a gap analysis was done to identify the gaps in antecedents for the two medical equipment products in India.

b) T-Test

The t-test statistics was used to test whether or not two mean values of the antecedents of the customer purchase intention have different mean values on dependent variable. The t-test statistics allows us to answer this question by using the t-test statistic to determine a *p*-value that indicates how likely these results could have occurred by chance. By convention, if there is a less than 5% chance of getting the observed differences by chance, it can be concluded that a statistically significant difference was found between the values of antecedents related to two products (i.e., glucometer and CPAP/BIPAP).

Paired t-test was used to explore the difference between the means of antecedents of glucometer and CPAP/BIPAP. It was presumed that the gap between antecedents of glucometer and CPAP/BIPAP correspond to the need for more focus. Therefore, the larger the mean difference, the more the marketing efforts will be needed.

The mean values of the antecedents of glucometer and CPAP/BIPAP from all the questionnaires were taken to conduct the t-test. Table 4 shows the data used for the t-test.

Titled Paired Samples Statistics, is where SPSS has generated descriptive statistics for the variables. The data can be used here to describe the characteristics of the glucometer and CPAP/BIPAP. The outcome of correlation and means of both the products is shown in Table 5 & Table 6.

Table 4
Data Used for the t-test

Antecedents	Glucometer (average mean value)	Cpap (average mean value)
Attitude	3.593	3.216
Price	3.768	2.954
Subjective Norms	3.430	3.960
Brand Image	3.630	3.137
Trust	3.375	3.119
Perceived Value	3.405	3.256
Perceived Behavior Control	3.441	3.090
Perceived Quality	3.574	2.796
Promotion	3.186	2.749
Country of Origin	3.465	3.115
Health Consciousness	3.322	2.762
Convenience	3.190	2.718
Customer Satisfaction	3.406	2.940

Source: Author's own findings

Table 5
Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean	
Pair 1	Glucometer	3.4454	13	0.16655	0.04619	
	Bipap	3.0629	13	0.32708	0.09072	

Source: Output from SPSS

Table 6
Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Glucometer & Bipap	13	0.234	0.441

Source: Output from SPSS

Table 7
Paired Samples Test

		Paired L	Paired Differences					df	Sig.
		Mean	Std. Deviation	Std. Error Mean	Interv	Confidence al of the ference			(2-tailed)
					Lower	Upper			
Pair 1	Glucometer - Bipap	0.38255	0.33046	0.09165	0.18285	0.58224	4.174	12	0.001

Source: Output from SPSS

As shown in Table 7 the result is: t(12) = 4.174, p < 0.05. Due to the means of antecedents of the two different medical equipment product and the direction of the t-value. It can be concluded that there was a statistically significant difference in the Antecedents of Glucometer and CPAP/BIPAP, from 3.45 ± 0.16 to 3.06 ± 0.32 ; a decline of $.38 \pm 0.33$ (p < 0.05).

It implies that the paired samples *t*-test provides sufficient evidence to conclude that the antecedents of customer purchase intention for glucometer and CPAP/BIPAP are different.

c) Antecedents Gap Analysis of Indian consumers

The gap analysis is performed for all the respondents participated in the survey. The Gap is computed by:

Customer conviction index is the priority of a particular antecedents and it was determined based on the gap and the importance of the antecedents. The initial importance of antecedents was taken from the ranking based on literature survey.

Customer conviction index = Importance to the Antecedents x Gap

The gap analysis is conducted as given in Table 8. The purpose of this exercise was to measure the gap between the antecents of customer purchase intention for glucometer and CPAP/BIPAP with Indian scenario.

Table 8
Gap Analysis

Antecedents	Glucometer	Срар	Mean difference	Ranking (Counts Literature review)	Index	New ranking
Price	3.768	2.954	0.8144	12	9.772	13
Brand Image	3.630	3.137	0.4922	10	4.922	12
Attitude	3.593	3.216	0.3767	13	4.898	11
Perceived Quality	3.574	2.796	0.7782	6	4.669	10
Perceived Behavior Control	3.441	3.090	0.3509	7	2.456	9
Trust	3.375	3.119	0.2562	9	2.306	8
Promotion	3.186	2.749	0.4371	5	2.185	7
Health Consciousness	3.322	2.762	0.5605	3	1.681	6
Country of Origin	3.465	3.115	0.3495	4	1.398	5
Perceived Value	3.405	3.256	0.1487	8	1.189	4
Convenience	3.190	2.718	0.4726	2	0.945	3
Customer Satisfaction	3.406	2.940	0.4658	1	0.465	2
Subjective Norms	3.430	3.960	-0.530	11	-5.830	1

Source: Author's own findings

Table 9 depict the difference in the ranking based on different context of study. This signifies that it is possible to find general customer mind-set regarding a particular set of products (in this paper medical

equipment). The method attempts to know more about the customer insight by considering two different products in the same category (glucometer and Cpap/Bipap). The outcome of this table is the enhanced knowledge about the customer in a particular product category which can be utilized by the organizations in framing strategies of the Table 9 can be understood easily by the graphical representation of ranks which has been shown in Fig. 3.

Table 9 Comparison based on ranking

Ranking based on literature		Ranking based on customer conviction index		
Antecedents (LR) Global		Antecedents(India)		
Attitude	1	Price	1	
Price	2	Brand Image	2	
Subjective Norms	3	Attitude	3	
Brand Image	4	Perceived Quality	4	
Trust	5	Perceived Behavior Control	5	
Perceived Value	6	Trust	6	
Perceived Behavior Control	7	Promotion	7	
Perceived Quality	8	Health Consciousness	8	
Promotion	9	Country of Origin	9	
Country of Origin	10	Perceived Value	10	
Health Consciousness	11	Convenience	11	
Convenience	12	Customer Satisfaction	12	
Customer Satisfaction	13	Subjective Norms	13	

Source: Author's own findings

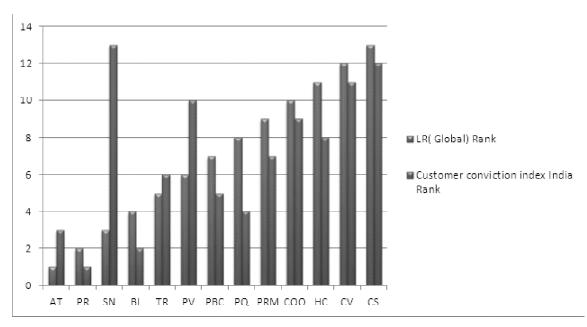


Figure 3: Graphical representation of the ranks.

Source: Authors own findings

d) Radar Chart

A radar chart (also known as spider chart) graphically shows the size of the gaps between antecedents of glucometer and CPAP/BIPAP.

The chart displays the antecedents of glucometer and CPAP/BIPAP and makes visible priorities with respect to worldwide scenario and Indian scenario. A radar chart is extremely helpful in interpreting the data. A radar chart is used when numerous different factors, which need to be examined, are all related to one item. A radar chart permits to view the "big picture" swiftly. A radar chart has many axes along which data can be plotted. In a radar chart, a point close to the centre on any axis indicates a low value. A point near the edge is a high value.

In our study, a radar chart can be used to compile and interpret the data about the antecedents of customer purchase intention as shown in **Fig. 4.** On each axis, respective antecedents of customer purchase intentions are plotted.

In interpreting a radar chart, each axis in addition to the overall shape is checked to observe how well it clarifies the gaps. If the difference in the antecedents for glucometer and Cpap/Bipap is projected, the radar chart could easily spot the largest gap as well as the smallest gap.

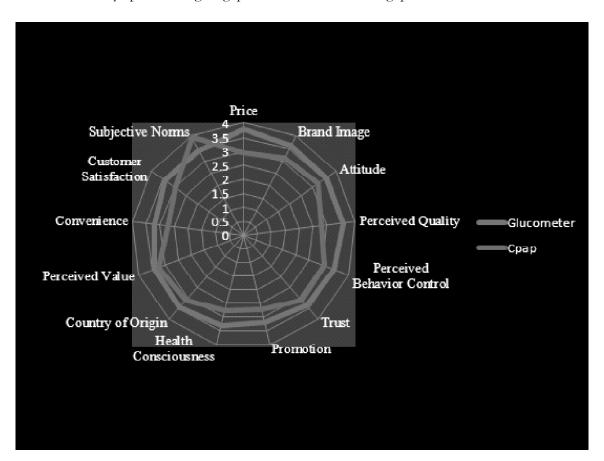


Figure 4: Radar Chart

Source: Author's own findings

VI. DISCUSSION

From the findings of the literature review it can be inferred that attitude is an important antecedent of customer purchase intention followed by price, because India is not among developed countries, the customer is very price conscious while purchasing medical equipment followed by the brand image. In Indian the customers gives priority to quality in comparison to global perspective. The reason being that in India there is abundance of fake products and the customer is well aware of this fact and key factor is that they are life saving devices. Subjective norm does not play a vital role in Indian context while purchasing medical equipment products. Whereas as per findings of literature review Subjective norms is much above in ranking globally unlike in India because Indians are much more health conscious but they don't want to disclose their health issues on social platform for instance to peers, colleagues and friends. A comparative analysis on the antecedents on the basis of existing literature and present findings has been incorporated in the study. Doctors and Hospital owners should focus on customer conviction which can be the thumb rule for foreign companies.

VII. CONCLUSION

Finally from the findings it depicts that the study is very useful for the private practitioners, physicians and for hospital owners who want to open their franchisee in India. If they want to initiate in India they should be well aware of Indian culture and strictly rely on the findings. Hospitals should focus on the price of the product followed by brand and quality. Same findings can be applicable for the foreign companies who are willing to establish in India or for a new venture. For instance, Phillips is a well-known brand focusing on Electronics Appliances in India. Now it has entered in the Health Care products also. Same is the case with the ResMed (Australia) and GE Healthcare. Phillips Respironics enter India and really done well in the market. The reason behind their success is customer orientation, customer conviction and well known Indian culture.

VIII. LIMITATION AND FUTURE SCOPE

Having all the valuable insights and in spite of exhaustive efforts this paper also have some limitations and future scope. Sample size can be increased and some more states can also be considered as the study is confined to only one state for the generalized result. In future more antecedents can also be taken into account for better results.

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