Influence of Customer Expectation in Innovative Product Design and Development –A Case Study

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Abstract— **Need is a mother of all new inventions. Many Multi National Companies capturing their product development ideas from customer expectation only. If the company is not able to fulfil the expectation of customer demand and need, then the product sales growth fall in the market .The best example we can see in 1980's, The Hindustan motors not updating their customer expectation it lead to downfall of Ambassador Car from the market. This paper demonstrates Student expectation in evaluating the new ball point pen product analysis based on group of students survey result. It lead to decline in new product and analysis of various parameter like customer personality, customer perception, customer learning ,commercialization, integration of company and customer with common line and packaging hypothesis were tested by employing Pearson's correlation coefficient which was facilitated by statistical software SPSS.**

Keywords— *Pearson's correlation coefficient, customer personality, customer perception, customer learning, SPSS.*

I. INTRODUCTION

Launching new products and services in the market represents an important source of increasing the size of a business and the profits of a company. The success of introducing new product in the market is a critical issue of the current marketing programs (Mccole, 2005, and Hoffman, 2005). New Product Development (NPD) speed is critical because product life cycles are shrinking and obsolescence is occurring more quickly than in the past while competition also has intensified. Consequently, to grow, it has become imperative for firms to move new product to market faster. Companies such as Gillette, Honey well and Xerox are often cited as examples of firms that compete on development speed. Firms that succeed in speeding new products faster to market than competitors can obtain first-mover advantages. These advantages stem from the firms competitive start over rivals and are expected to result in dominant market position (Fred and Erik 2009; Hoechst 2000).

Customer satisfaction, a term frequently used in marketing, is a measure of how products and services supplied by a company meet or surpass customer expectation. Customer satisfaction is defined as "the number of customers, or percentage of total customers, whose reported experience with

a firm, its products, or its services (ratings) exceeds specified satisfaction goals. Below customer expectation will

lead customer dissatisfactions. So, in the new product development process, we need essential consideration for customer expectation.

II. LITERATURE REVIEW

Kenneth C. Adiele (2012), attempts to explain the   new product and consumer innovative behavior . From this , it is clearly inferred that electronics home appliance companies should always take into cognizance consumer personality, customer   perception and customer learning when evolving new products as there will always influence   consumer adoption   behavior. He recommended that the companies should always evolve product that matches with customer personality and intensify marketing communication strategies to continuously create an enduring perception of their products in the minds of their targeted customers.

Sanaz Monsef (2012), had tried to focus on the four distinct stages of the new product process for measuring factors of new product development success: Planning, Development, Marketing   and   Commercialization.   It   is   found   that organizational structural dimensions play important role in the success of NPD process in open innovation environment. Subsequently, a conceptual framework is proposed.

Giuseppe   Vignali   (2010)   focused   that   new   product development in the food packaging industry. This paper argued that the success of the NPD process of the company examined was grounded on some main strong points i.e. Differentiation in product, Voice of customer as regard to the new product, the launch of new product was accurately planned by the company and the several resources were spent in this phase.

Josuhua D. Zimmerman (2009) demonstrated the new product development and supply chain risk..From this paper analyzes

Boeing's rationale for the 787's unconventional supply chain, describes Boeing's challenges for managing this supply chain, and highlights some key lessons for other manufacturers to consider when designing their supply chains for new product development.

Vahid Najafi (2009) shows that Iran Chodro Company (IKCO'S) objective of marketing research during new product development (NPD) process as well as how this process should be implementing with comparison of this literature review and also based on view points of interviewer. There major finding was made firstly. the IKCO'S new product development has not well developed based on the information achieved from marketing research secondly IKCO'S mangers accepts that marketing research is an essential tool for new product development success. Thirdly, today IFCO'S mostly use marketing research as a sales and marketing support sustain during some NPD phases, which should be revised to cover the whole process of new product development.

Enric Barbe (2009), described that the innovation management in the product development process .Through this paper he concluded him selves as "Innovation is a key factor for competitiveness."

From the literatures, we identified most influenced parameters like customer personality, perception, learning, product innovation, product commercialization, integration of company and customer with common line and packaging in the new product development process.

III. PROBLE STATEMENT

The earliest forms of writing can be traced back to the Sumerian Civilization. In fact, clay tablets are found in summer around 3200 B.C shows pictographic writing which later developed into Cuneiform. Mesopotamia clay is most common writing surface, and standard writing implement was the end of a sharply cut reed. The second civilization to develop the writing was Egyptian in 500 B.C. The character used by Egyptian called as Hieroglyphs. The Indus script comes next which can be tied down to 2500BC. The Indus script, which has not yet been deciphered, is known from thousands of seals, carved in know from thousands of seals, carved in steatite or soapstone. China was the last of early Civilization to introduce writing, around 1600 B.C. The revolution of pen history has six important phases viz., Ink Pen, Steel Pen, Roller Pen, Ball Point Pen , Gel Pen and Digital Pen are others.

IV. CASE STUDY

The primary data were drawn from a set of students of reputed university in Chennai, India, which constitute our level of analysis. Twenty structured questionnaires about current Indian pen market is our primary data collection device, which were distributed to hundred students in the university campus. Questionnaires were carefully coined by ensuring that the study objective are considered and included five major parameter like customer personality, perception, learning,

product innovation, product commercialization, integration of company and customer with common line and packaging in the new product development process.

A. Demographic Details

Samples' Gender branches and year with frequency presented in the below table.I.

Table I. Demographic Detail for Samples

Gender	Frequency
Male	47
Female	53
Total	100
Branch	
Circuit	51
Non circuit	49
Total	100
Year	
First year	20
Second year	28
Third year	33
Fourth year	19
Total	100

Mean scores and standard deviations of product innovation factor are calculated and shown in table II.

Table II. Mean and Standard Mean for Product Innovation Factor

Factor	Mean	Std. Deviation
Customer personality	3.4300	.66548
Customer perception	2.6950	.69955
Customer learning	2.9900	.96656
Commercialization	2.7700	.64909
Integration of company and customer with common line	2.9350	.82467
Packaging	2.6400	.57331

These tables indicates

Customer personality is the highest mean score in the new product innovation dimension. Packaging is the lowest mean score in the new product innovation dimension.

V. A CONCEPTUAL MODEL FOR PRODUCT INNOVATION AND HYPOTHESES (H)

The proposed research model examines relationships between product innovation and five variables: customer personality, customer perception, customer learning, product commercialization, integration of company and customer with common line and packaging.

Table III. Correlation table for Product Innovation Factor

Product Innovation Factor	customer personality	customer perception	customer learning	product commercialization	integration of company and customer with common line	packaging	Product innovation
Pearson Correlation	.061	-.056	.258**	.180	-.102	-.028	1
Sig. (2-tailed) (p)	.545	.577	.010	.073	.312	.785	
N	100	100	100	100	100	100	100

SPSS 19 was used to analyze the response of this study. Pearson correlation was used to analyses correlation among the six variables. The correlation analysis gives the results about the variables whether they tend to vary together or not. The results of the correlation analysis of our research variables may be seen on correlation table III.

Customer Personality: positively and not significantly correlated with Product innovation.
As it is seen in the table 3, there is no significant correlation (at the $p < 0.001$ Level) between Customer Personality and Product Innovation. Thus the hypothesis is not supported.

Customer perception: negatively and not significantly correlated with Product innovation.
From the table 3, it is evident that there is no significant correlation (as $p < 0.001$) between Customer perception and Product Innovation. This means that the hypothesis is not supported.

Customer learning: positively and significantly correlated with Product innovation.
Also there is a significant correlation (as $p < 0.001$) between Customer learning and Product Innovation. This means that hypothesis is supported.

Commercialization: positively and significantly correlated with Product innovation.
As it is seen on (table 3), there is significant correlation (at the $p < 0.001$ Level) between Commercialization and Product Innovation. This means that hypothesis is supported.

Integration of company and customer with common line: negatively and not significantly correlated with Product innovation.
As it is seen on (table 3), there is no significant correlation (at the $p < 0.001$ Level) between Integration of company and customer with common line and Product Innovation. This means that hypothesis is not supported.

Packaging: negatively and not significantly correlated with Product innovation.

As it is seen on (table 3), there is no significant correlation (at the $p < 0.001$ Level) between Packaging and Product Innovation. This means that hypothesis is not supported.
Table IV represented summarizes the results for the five hypotheses in the product innovation model.

Table IV. Hypotheses summarize for Product Innovation Factor

Hypotheses	Accept/Reject
Customer personality	No
Customer perception	No
Customer learning	Yes
Commercialization	Yes
integration of company and customer with common line	No

VII. CONCLUSION

From the correlation analysis, customer learning and product commercialization are most important influencing parameter in the new product development process. Therefore new pen market should always take into customer learning and commercialization. Most of the students like low cost and high technology pen which supports the hypothesis pertaining to product commercialization. The methodology of this research work can be applied to any Fast Moving Consumer Goods (FMCG) to find out the customer influencing factors.

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