"The Role of Semantics in Influencing the Buying Behaviour of Consumers for Smartphones with Special Reference to Samsung Mobiles"

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Abstract: Semantics is the study of the meaning and it emphasises on the relation between signifiers, like words, phrases, signs, and symbols, and what they stand for, their significance. The Semantic Web empowers the depiction of concepts articulated in human language to data in such a way that enables automatic dispensation, where software can understand and reason how different elements of data are related. The concept of semantic targeting utilizes this capability to identify these concepts and the contexts in which they occur, enabling marketers to deliver highly targeted and specific ad campaigns to web pages. Consumers are the kings of market and with the customer playing the distinct roles of buyer, and user, consumer buying behaviour has become an integral part of strategic market planning.

The consumer has been delighted with the kind of response they are getting from numerous companies these days. The reason behind change in consumer behaviour is because the consumer is no more treated as a hire purchaser, but, he is treated as the decider of the company's fortune. Guessing or measuring the consumer attitude is as tough as predicting consumer's mind.

Consumers are continuously choosing among the various products though they are not aware of the products and usage, even though they are intentionally purchasing the various new brands without any knowledge about the new products, furthermore, if new five companies enter into the market, for every consumer it is very difficult to understand the features of the new products and this makes confusion among the consumers to obtain the information.

Therefore this study focusses on the role of semantics in influencing the buying behaviour of consumers for smartphones with special reference to Samsung Mobiles.
Keywords: Buying Behaviour, Semantics, Smartphones, Semantics Marketing, Semantic Web

1. Introduction

The consumer will respond according to the product quality and reliability, the fundamental understanding of products is necessary to understand the product features, product reliability and product benefits. The consumer is the end user of the product and therefore consumers buy the products in the market. Distribution channels and networks play an important role in the consumer goods industry. The consumer is the ultimate user of every product and without any consumer there is no market as such.

In every region, the different consumers are using different kind of products. Every consumer has their own tastes and preferences and therefore every consumer's opinion and preferences are different from one another. The local marketers have a good idea about what the local consumers are using (region wise). For example: The South Indian food habits and tastes and preferences are different, when compared to north Indian food habits.

Behaviour is a reflection in which everyone shows his or her image. Behaviour is the process of responding to stimuli. Consumer behaviour is to do with the activities of individuals in obtaining and using the goods and

services and it encompasses the decision-making process that precedes and determines purchases.

2. Review of Literature

Hawkins etc, (1998), for many products, consumers frequently has numerous choices as to where they are going to actually obtain the product. In the old days, most consumers had access only to "general" stores for most products. Gradually, in urban environments, specialty and discount stores evolved. Today, a consumer may generally choose to buy most products either at a relatively high price, frequently with a significant amount of service, in a specialty store, or with lower service in a discount store.

Grewa, R. et al.,(2001) in order to find out Early-Entrant Advantage, Word-of-Mouth Communication, Brand Similarity, and the Consumer Decision-Making Process found out that development of insights into the competitive dynamics between an early entrant and a follower by studying the influences of (a) the type (vivid or pallid) and the valence (positive or negative) of WOM information on a follower brand and (b) the similarity between the two focal brands on various stages of the consumer decision-making process. We also demonstrate that the effect of WOM and its interaction with similarity depends on the decision-making task.

Similar to research on the attraction effect found that similarity between the early entrants and later entrant tends to favour the early entrant. Specifically, similarity between the two focal brands tends to (a) enhance the consideration and the choice likelihood for the early entrant in the stimulus-based task; (b) enhance the retrieval, the consideration, and the choice likelihood for the early entrant in the memory-based decision-making task; and (c) reduce the follower's consideration likelihood in the memory-based task.

Rence, E. (2006) in her effort to find out what drives consumer behaviour: preference of age groups, found out that purchasing habits fluctuate over time with every generation, but because of increased access to new technology and uncertainty due to world events and insecure future, the consumer trends of generation has changed. In order for businesses to appeal to these consumers, it is important to understand what these buying habits are, how they have changed and what techniques can be utilized to expand sales among five consumer segments. A recent article from American Demographics Advertising Age highlights these changing behaviours. Each of these market segments demonstrate different purchasing habits due to varying life experiences, increased knowledge of new technology, and a hope or an uncertainty for the future. This wide array of consumer habits requires different marketing techniques. In order for downtown businesses to successfully market to each of these generations, it is necessary for them to understand how to most effectively appeal to people of all ages through the selection of products and advertising methods.

Wongwan P. (2007) study about Factors Affecting Consumers' Purchasing Decision for Personal Computer in Muaeng district, Lampang Province found that on utilization behaviour, the most samples under study used PC for typing purpose, every day, 2-4 hours per day, during 06.01-12.00 a.m., at the workplace or office, had one PC for used preferably Acer brand, generally bought PC from computer shop in shopping centre with cash considered the usefulness and special features of PC when making buying decision, and contemplated to get a new PC if the old one becomes out-of-order or no longer in working life. The chi-square test suggested the relationship existed between the following sets of independent and dependent variable: PC using purpose related just only the age of PC user; PC using frequency, time duration, location and owning a PC are not related to age, and education, occupation, income and sex. The study on buying decision was made for two groups, PC owners and non-PC owners. The most influential aspect of product factor was basic training for PC owners. But guarantee period for non-PC owners. The most crucial consideration in price factor was the price level itself for PC owners and discount for membership for non-PC owners. Good reputation computer shop uses the most important element of distribution factor for both PC and non-PC owners. In promotion factor, PC owners took price reduction as the most influential while non-PC owners regarded the advertisement through leaflets or brochures. Other external factors affecting buying decision most for PC owners was the cheaper compiler prices and for non- PC owners was the use of PC for home entertainment. The primary problem or concern for both groups appeared to be the frequent malfunctioning of the machine. For advice, the PC owners gave priority importance to pre-purchase training while the non-PC owners addresses the availability of a standby set for use in case the existing PC go out-of-order.

Nagaraja (2004) opined that, buying behaviour is very much influenced by experience of their own and of neighbour consumers and his own family. The involvement of his own family members was exerting maximum influence on his purchases. Above all, the quality of the product and its easy availability were the primary and the vital determinants of his buying behaviour. Consumers were influenced by touch and feel aspect of any promotional activity.

Kotler, stated that, consumer behaviour is the study of how people buy, what they buy, when they buy and why they buy. It is a subcategory of marketing that blends elements from psychology, sociology, social psychology, anthropology and economics. It attempts to understand the buyer decision making process, both individually and in groups. It studies characteristics of individual consumers such as demographics, psychographics, and behavioural variables in an attempt to understand peoples' needs. It also tries to assess influence on the consumer from the group such as family, friends, reference groups, and society in general, for example, while consumers purchase the shoe, then they go for family decision, comfort, satisfaction, price and quality. Every family member doesn't have the same opinion to buy the same product; different family members have different choice to buy the product. So, in one family consumer behaviour is different.

Sowa (2004) lists the models proposed in the second half of the 20th century for the
understanding of language and its implementation on computers: the statistical model, he syntactic model, the logical model, the lexical model, and the neural model. According to
Sowa, every approach is based on a specific theory − statistics, mathematics, grammar rules
while ignoring aspects of Language to which technology is not able to adapt. The logical models based on Philosophical Logic produced formal semantic theories of superior quality when compared to concurrent approaches. Such theories have been widely used in ontology research in the context of the SW. However, as with formal semantic theory, these models suffer from the inability to deal with an ordinary text written by people for the purpose of communication. Language thus remains restricted to sentences deliberately written in a notation that is merely similar to natural language.

Charles Peirce's Semiotic Theory (American logician and mathematician, 1839 - 1914)
defines the three main components of a language: syntax, semantics and pragmatics (Sowa, 2000). This notion of language is used in Knowledge Representation (KR), a field of Artificial Intelligence associated with the development of expert systems. In this context, language usually corresponds to a type of logic.

Branchman and Levesque (2004) define the semantics of a language as the specification of the meaning presumed for syntactically well formed expressions. Hence, the semantic specification does not correspond precisely to the meaning of the terms, but only to the meaning of the sentences according to an interpretation function. This function leads to the notion of interpretation. Nevertheless, in order to obtain specifications for the meaning of sentences a simplistic world view needs to be adopted. This view should only consider that:

    i)   There are objects in the world;
    ii)   For each predicate P, of arity one, some objects satisfy P and others don't, with the decision being obtained through the interpretation function;
    iii)   Other aspects of the world are not of interest.

Uschold (2001) distinguishes and defines the types of semantics present in the world of computer systems, classifying them as real-world semantics, axiomatic semantics and Model-Theoretic Semantics. According to the author, semantics on the SW identifies itself mainly with real world semantics, an expression used to indicate the mapping of objects from the world to a computational model.

        Axiomatic semantics is a rather specific approach defined within the scope of languages and standards used on the SW, specifically the Resource Description Framework Schema (RDFS).

According to Fikes and McGuinness (2001), the goal of axiomatic semantics is to enable the translation of RDFS descriptions into logic, or rather, to establish rules for mapping RDFS in FOL. This mapping is performed specifically to provide automatic inference capacity to the representation language considered. Model-Theoretic Semantics is related to the Theory of Models.

According to W3C Uschold (2001) presents another classification for semantics, which sheds light on misinterpretations regarding the term, since it is related to the way semantics is expressed and to whom it is directed. The author distinguishes four types of semantics sequentially aligned in a semantic continuum, stressing that among these types mentioned the first three are not appropriate for machine processing.

3.   Statement of the Problem:
        Enormous amount of data is collected through web, app or software's regarding the behaviour of consumers and making a suitable interpretation of those data is important. Semantics plays important role in many aspects and this project aims at determining its role in influencing the buying behaviour of consumers.

4. Objectives of the Study:
- To ascertain the current trends in consumer behaviour due to semantic marketing.
- To assess the effects of semantics in influencing buying behaviour of consumers towards tangible goods.
- To analyse how factors of semantic marketing affect consumer buying process on Samsung smartphones.

5. Hypothesis:

H_0: There is no effect of price in the buying process of consumers for smartphones.

H_1: There is an effect of price in the buying process of consumers for smartphones.

6. Scope of the study:

With the increase in technology, the data that is generated everyday by everybody results in a huge volume. These data form an integral part of human behaviour like their language, culture, interests, habits, etc. In present scenario, the consumer is the focus of marketing efforts and if we are able to analyse the concept and context of these data, we can significantly influence the buying behaviour of the consumers.

7. Research Methodology:

7.1 Research design: In order to achieve the objectives of this study, a quantitative methodology has been used. The current study has been designed as a causal study with statistical control research design to study the factors which influence buying behaviour of consumers towards tangible goods. A questionnaire survey method has been used to seek responses from the student, working man and women etc. Sources of data will be primary data and secondary data (Journals, websites)

Types of research	Descriptive, Exploratory
Sampling Design	Convenience sampling
Sample size	100
Sources of data	Both primary and secondary
Tool for collection of data	Questionnaire (open and closed type)
Statistical tool	Graphs, Chart, % Analysis, Chi-square Test

7.2 Type of Study

The research is of exploratory at the first instance, to identify the variables (in which variables such as age, sex, income, lifestyle, credibility, awareness etc.) that affect the purchase decision. Later, descriptive research design has been taken help of to describe the consumer attitude.

7.3 Data Collection tools
Primary Data: The primary data has been collected through a structured questionnaire which contains both open and close ended questions.
Secondary Data: The secondary data is obtained from books, magazines, newspapers, internet, and journals.

7.4 Tools for testing
Chi Square Testing

7.5 Sampling method and its size
Both probability sampling (like stratified random sampling for the descriptive research purpose) and non-probability sampling (like judgment sampling for exploratory research) sampling techniques is used. A sample size of 100 is taken for the research purpose.

7.6 Plan of analysis
 The data collected are presented in the tabular form and contains the exact figure & its percentage of the total samples which is further presented in a graphical diagram.
 The data has been quantified using both MS EXCEL and SPSS.
 Chi Square test has been conducted to test hypotheses using SPSS.
 The inference to be drawn from studying the analysis, which leads to the conclusion and recommendation

8. Limitations of the Study
 The study was limited to Bangalore city.
 The duration of the study was very short as it was restricted to just four weeks.
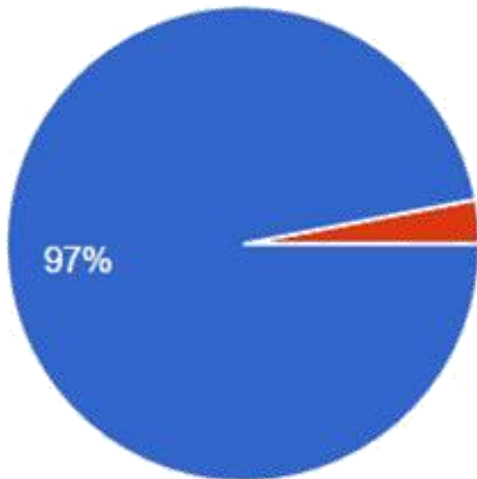
9. Data Analysis

Purchasing product online

Fig.9.1 Preference of buying product online

Yes	97	97%
No	3	3%

Table 9.1 Preference of buying product online

Interpretation: By looking at the above graph we can interpret that 97% of respondents have purchased online whereas only 3% of people like to shop offline.
Inference: Since the maximum number of respondents belong to the young generation so most of them opt for online shopping.

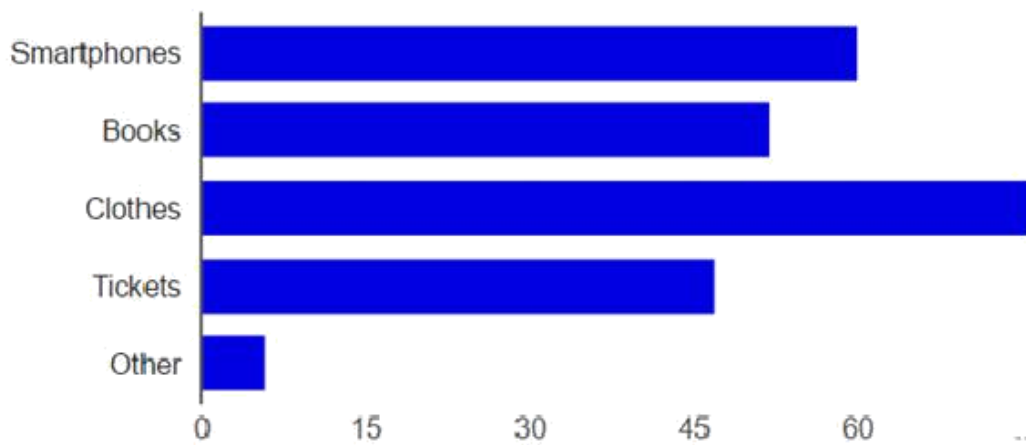**If yes, the type of purchased items**

Fig.9.2: Types of purchasing

Smartphones	60	61.2%
Books	52	53.1%
Clothes	76	77.6%
Tickets	47	48%
Other	6	6.1%

Table 9.2: Types of purchasing

Interpretation: By looking at the above graph we can interpret that 77.6% of people like to buy clothes and 61.2% people buy smartphones online which the highest among the others.

Inference: Since we get better deals online therefore most of the people tend to buy more clothes, smartphones and tickets online.
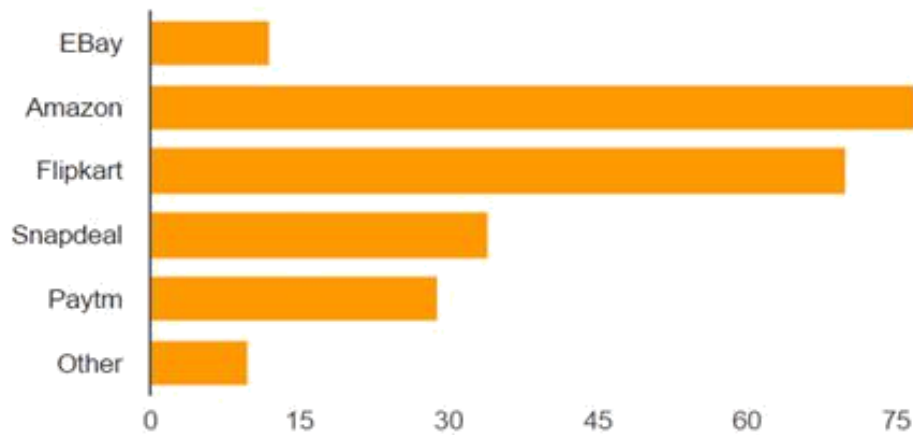
Websites from which you like to buy

Fig. 9.3: Websites for buying online

EBay	12	12%
Amazon	77	77%
Flipkart	70	70%
Snapdeal	34	34%
Paytm	29	29%
Other	10	10%

Table 9.3: Websites of buying online

Interpretation: By looking at the above graph we can interpret that maximum number of respondents like to purchase online from Amazon and Flipkart which is 77% and 70% respectively though they are aware of other websites too.
Inference: Most of them buy from Amazon or Flipkart or Snapdeal because they get variety of products there as well as feel safe to shop in those sites.
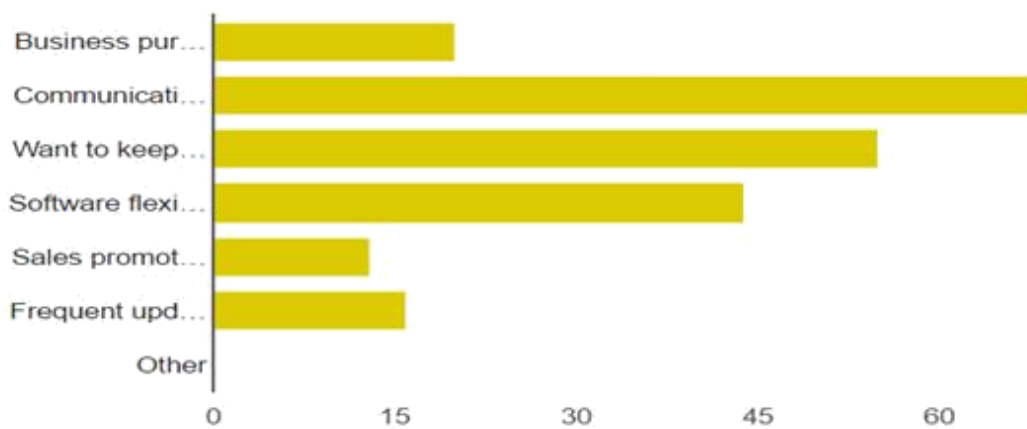
Reasons for buying a smartphone

Fig. 9.4: Reasons for buying a smartphone

Business purposes	20	20%
Communication (video & audio)	68	68%
Want to keep updated with technology (Personal image)	55	55%
Software flexibility	44	44%
Sales promotion (discounts and offerings)	13	13%
Frequent updates and variety of models	16	16%
Other	0	0%

Table 9.4: Reasons for buying a smartphone

Interpretation: By looking at the above graph we can interpret that people like to buy smartphones for communication (68%), to keep updated with technology (55%) and for software flexibility (44%).
Inference: By looking at the above graph we can say that apart from communication people like to buy a smartphone because of personal image and software flexibility.

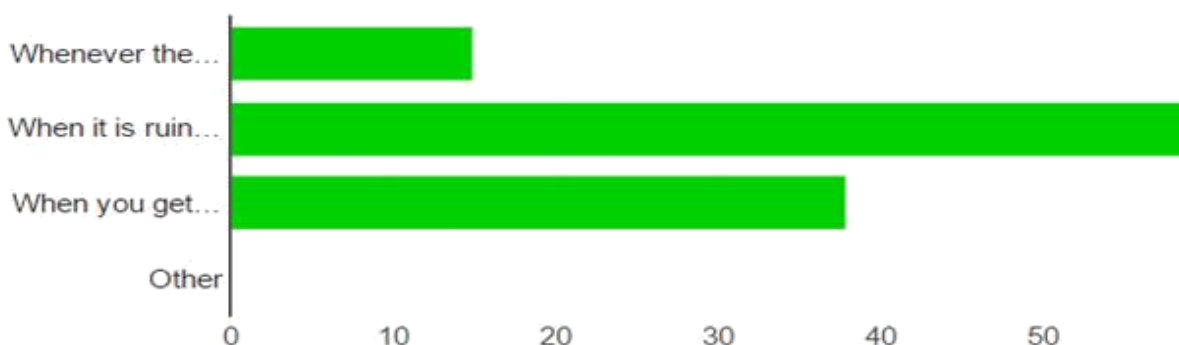**Reasons for changing a mobile**

Fig 9.5: Reasons for changing a mobile

Whenever there is new mobile versions	**15**	15%
When it is ruined	**59**	59%
When you get bored from your phone	**38**	38%
Other	**0**	0%

Table 9.5: Reasons for changing a mobile

Interpretation: By looking at the above graph we can interpret that people change their smartphones mostly when it gets ruined (59%).

Inference: Since most of the respondents are students so they can't afford to buy a phone whenever they wish to and which is why they tend to buy a phone when actually they need it.
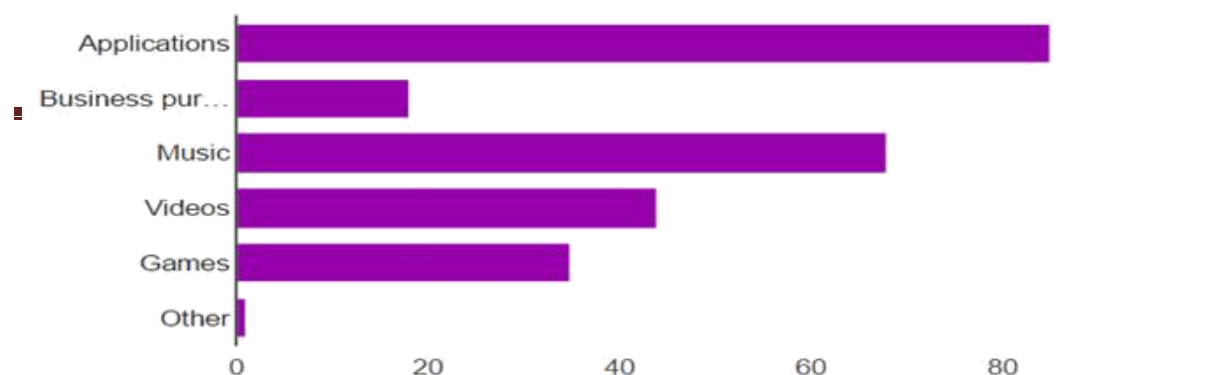
Usage in a smartphone

Fig. 9.6: Kinds of usage in a mobile

Applications	**85**	85%
Business purposes	**18**	18%
Music	**68**	68%
Videos	**44**	44%
Games	**35**	35%
Other	**1**	1%

Table 9.6: Kinds of usage in a mobile

Interpretation: By looking at the above graph we can interpret that people use their smartphones for applications (85%), music (68%), videos (44%), games (35%) and for other purposes too.
Inference: Since today's youth are more onto using new sort of applications, listening to music, playing games etc.
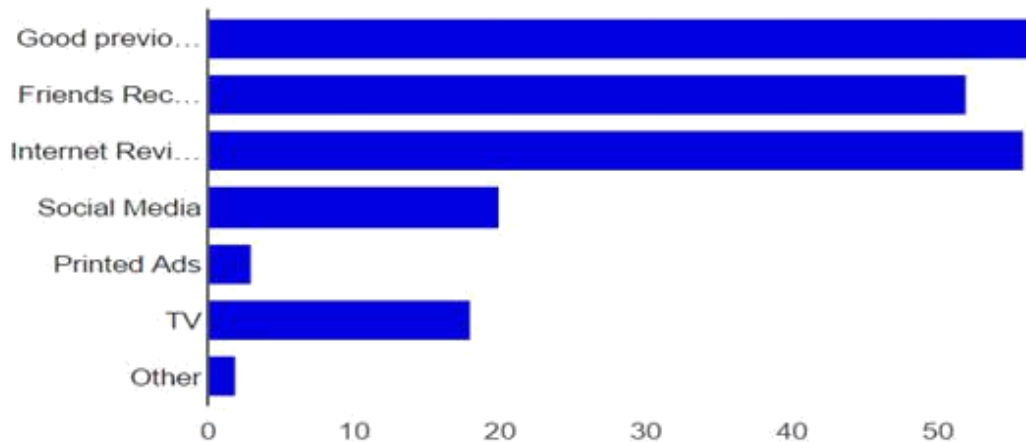
Decision for buying a smartphone

Fig. 9.7: Decision made for buying a smartphone

Good previous experience	57	57%
Friends Recommendations	52	52%
Internet Reviews	56	56%
Social Media	20	20%
Printed Ads	3	3%
TV	18	18%
Other	2	2%

Table 9.7: Decision made for buying a smartphone

Interpretation: By looking at the above graph we can interpret that the buying decision of smartphones depends on the previous experience (57%), friend's recommendations (52%), and internet reviews (56%), TV (18%).
Inference: The above graph shows that how our previous experience, friends' recommendations and internet reviews change our mindset of buying a new handset.
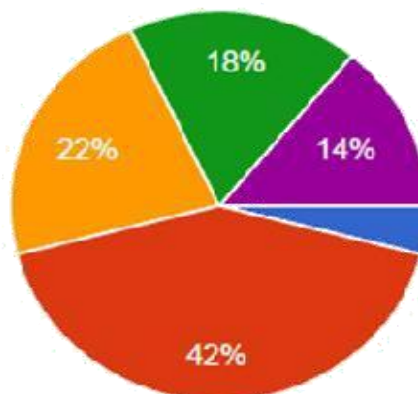
Range for a smartphone

Fig. 9.8: Range for buying a smartphone

Below 10000	4	4%
10001 – 15000	42	42%
15001 – 20000	22	22%
20001 – 25000	18	18%
More than 25000	14	14%

Table 9.8: Range for buying a smartphone

Interpretation: Since most of the respondents were students and being unemployed they would prefer the range 10001 to 15000 and 15001 to 20000 which is 42% and 22% respectively.
Inference: Due to lack of money and to save a bit of money, today's youth like to buy a mid-range smartphone with the latest features in it.

Fig. 9.9: Importance of "guarantee and maintenance" on purchasing decision

Not Important	5	5%
Neutral	27	27%
Important	68	68%

Table 9.9: Importance of "guarantee and maintenance" on purchasing decision

Interpretation: By looking at the above graph we can interpret that guarantee and after sales maintenance service (68%) plays an important role in respondent's purchase decision.
Inference: Since the smartphones are getting cheaper day by day so the thinking in people's mind that it won't last for so long and for this reason guarantee and after sales maintenance service comes into picture.

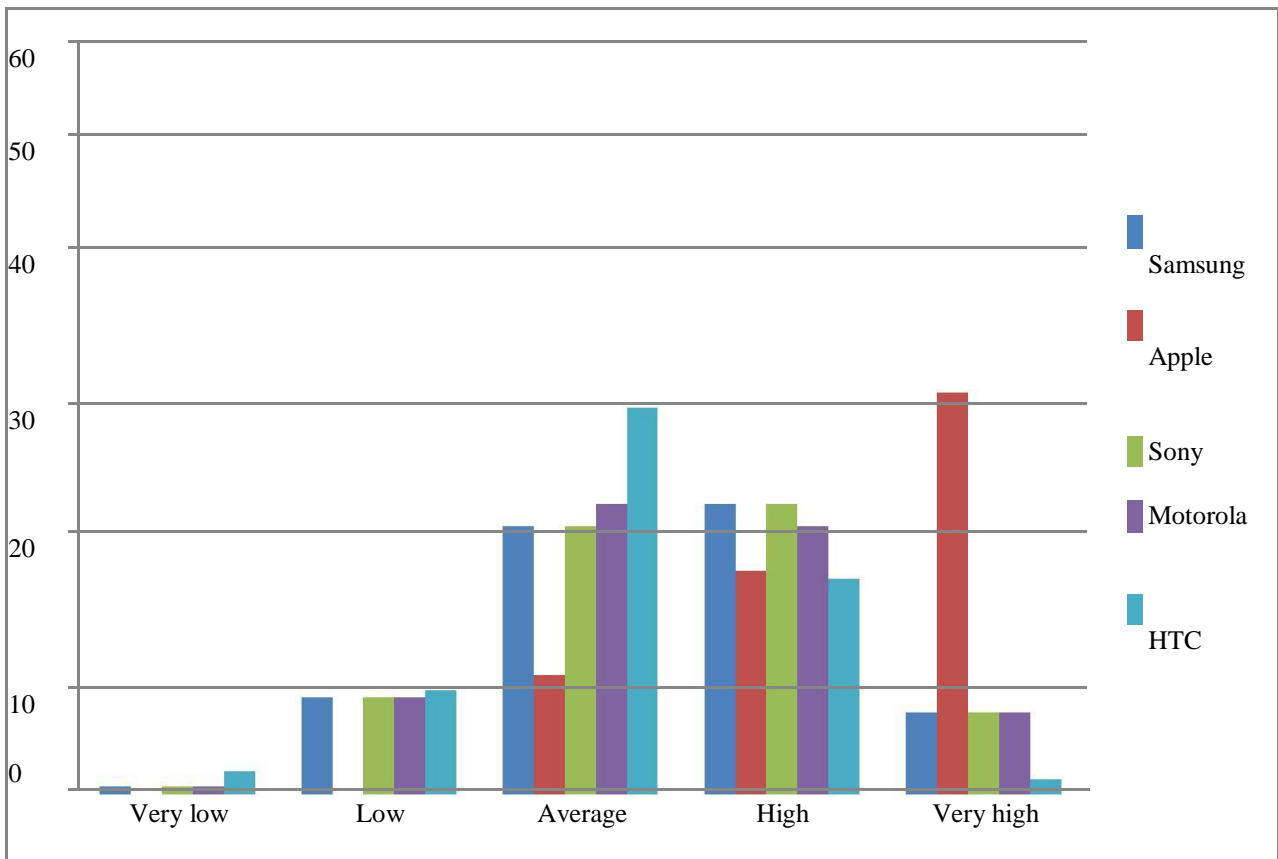**Kindly give your feedback on the following brands w.r.t. price.**

Fig. 9.10: Preference based on price on various smartphones.

	Very low	Low	Average	High	Very high
Samsung	1	13	36	39	11
Apple	0	0	16	30	54
Sony	1	13	36	39	11
Motorola	1	13	39	36	11
HTC	3	14	52	29	2

Table 9.10: Preference based on price on various smartphones.

Interpretation: By looking at the above graph we can interpret that the price of Apple phones are very high (54%) while Samsung (39%) and Sony (39%) are high.
Inference: Since Apple has high brand value as compared to others so most people have given Apple as very high with respect to price.

10. Hypothesis Testing

H$_o$: There is no effect of price in the buying process of consumers for smartphones.

H$_1$: There is an effect of price in the buying process of consumers for smartphones.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	166.646[a]	16	.000
Likelihood Ratio	163.474	16	.000
Linear-by-Linear Association	71.036	1	.000
N of Valid Cases	100		

a. 17 cells (68.0%) have expected count less than 5. The minimum expected count is .09.

3.1.1 INTERPRETATION:

p = 0.000   á = 0.05
p   0.05
Since p is   0.05, we reject H$_o$ and accept H$_1$.

Therefore, there is an effect of price in the buying process of consumers for smartphones.

11. Findings

1. Majority of people with smart phones can connect internet in their mobile phone without any hassle.
2. Majority of the respondents were satisfied towards the service provided by the E-commerce websites. Quick delivery, easy mode of payment, range of products and easy replacements has increased customer satisfaction and customer loyalty.
3. Majority of the respondents mentioned that they wait for a special date or offer while purchasing products.
4. Most of the respondents belong to the age group 20-30 years.
5. Most of the respondents agreed that targeted advertisement can alter their purchase decision. Different websites like Google and Bing serve targeted advertisement to serve ads whereas shopping portals like Amazon make use customized suggestions to motivate consumers to purchase.
6. It was found out during the research that most of the users agree to the Online buying behaviour being tracked by the advertisers.
7. Most respondents preferred customized shopping experience compared to shopping by self exploration. Customized shopping experience saves time and results in better user experience.
8. Most of the respondents are either student or employee in some organization.
9. Most of the respondents prefer to buy online.
10. Respondents purchase various kinds of products online such as clothes, smartphones etc.
11. Most of the respondents like to shop online quite often.
12. Most of the respondents buy from Amazon or Flipkart because they get variety of products there as well as feel safe to shop in those sites.
13. Most of the respondents rated the services provided by those websites as very good based on their accessibility, variety and safety.

12. Conclusion

Semantics is a growing concept which is sure to play a dominant role in almost all aspects of marketing in the coming days. The awareness of need for user behaviour analysis is increasing in India as well as around the world and with the help of more powerful storage and analysis tools, this has become possible for many organizations. Today, across all industry verticals, companies are under stress towards customer retention and must deal with a resultant complexity to meet the demand. They need to keep up with the consumer behaviour to provide customized shopping experience. As seen from the analysis people agree towards their shopping behaviour being tracked if they can get better shopping experience.

The penetration of internet is ever growing, people are being more aware about online shopping and payment systems and India being one of the fastest growing consumer market as well as internet technology, it is the best time to implement semantic strategies to promote sales.

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