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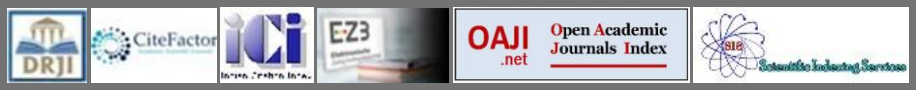

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Understanding Comprehension and Preference for Smart Phones amongst the Youth

Dr. Ravi D. Vaidya*

Abstract

A smart phone is a device that lets you make telephone calls, but also adds in features that, in the past, you would have found only on a personal digital assistant or a computer-- ability to send and receive e-mail and edit Office documents, for example. May 2012 is an important point the internet history of India as the mobile internet usage surpassed the desktop internet usage for the first time. The Indian handset market is in transition, moving from feature phones to smart phones, and in Q2 2013, India became the world's third largest smart phone market, with the domestic smart phone market growing by 129%. The segment is anticipated to continue its ride with a CAGR of 60% during 2011-2015, while the mobile handsets will register a CAGR of 13% in the same period. 48% of all users who access data through a smart phone are in the age group 18 – 24 years. This study makes an attempt to understand the comprehensibility of a smart phone amongst the youth. The study also focuses on the preferences for a smart phone and the preferences for the class of application software that users would want to access on a smart phone. Responses were collected through a structured questionnaire using convenience sampling. The data was subjected to statistical analysis using statistical software packages. The key benefit to be derived from this work is an enhanced understanding of the variables and factors determining preferences for smart phones amongst the youth.

Key Words: *Smart phones buying preferences youth cluster analysis*

Introduction:

You probably hear the term "Smartphone" tossed around a lot. But if you've ever wondered exactly what a Smartphone is, well, you're not alone. How is a Smartphone different than a cell phone, and what makes it so smart?

In a nutshell, a Smartphone is a device that not only lets you make telephone calls, but also adds in features that, in the past, you would have found only on a personal digital assistant or a computer--such as the ability to send and receive e-mail and edit Office documents, for example.

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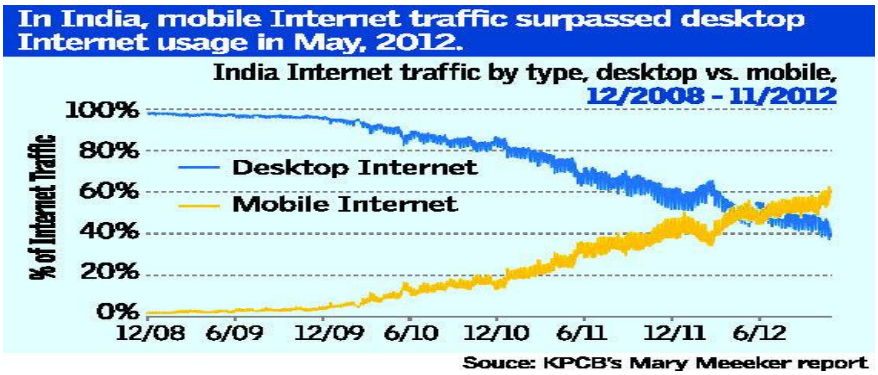
But, to really understand what a Smartphone is (and is not), we should start with a look into history. In the beginning, there were cell phones and personal digital assistants (or PDAs). Cell phones were used for making calls--and not much else--while PDAs, like the Palm Pilot, were used as personal, portable organizers. A PDA could store your contact info and a to-do list, and could sync with your computer.

Eventually, PDAs gained wireless connectivity and were able to send and receive e-mail. Cell phones, meanwhile, gained messaging capabilities, too. PDAs then added cellular phone features, while cell phones added more PDA-like (and even computer-like) features. The result was the smartphone.

The term "smartphone" was used for the first time by Ericsson in 1999 for Ericsson R380, which was capable of both voice and data usage. In 2002, Blackberry introduced 5810, which could send email and allowed surfing on the net. In 2008, Google introduced Android – an open source Smartphone operating system. Till then, OS like Symbian, iOS and Blackberry ruled the market. By 2013, android was the market leader with 78.6% smartphones running on it. According to the latest Nielsen – Informate mobile insight report titled "Smartphone Surge in India" continues, the urban smartphone market in India grew from 27 million users in 2012 to 51 million user in 2013, a Y-O-Y growth of 89%. The Indian handset market is in transition, moving from feature phones to smart phones, and in Q2 2013, India became the world's third largest smart phone market, with the domestic smart phone market growing by 129%. The segment is anticipated to continue its ride with a CAGR of 60% during 2011-2015, while the mobile handsets will register a CAGR of 13% in the same period.

The traditional way of accessing internet through a computer, essentially a desktop PC has been surpassed by mobile internet in May 2012. (Fig. 1)

Figure 1: Desktop v/s mobile internet usage in India



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48% of all users who access data through a smart phone are in the age group 18 – 24 years. (Fig. 2). The study also revealed that only 50% of the smartphone users have access to internet over their smartphones.

Figure 2: Age-wise distribution of Mobile Users

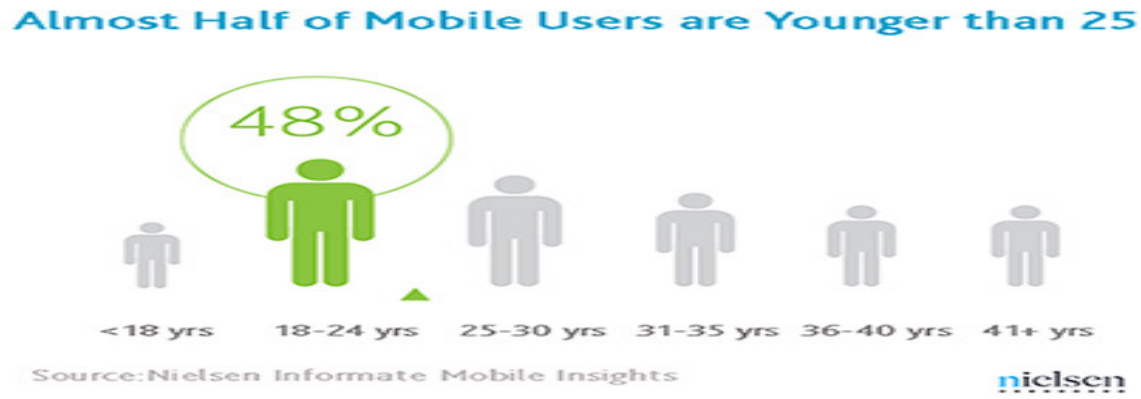
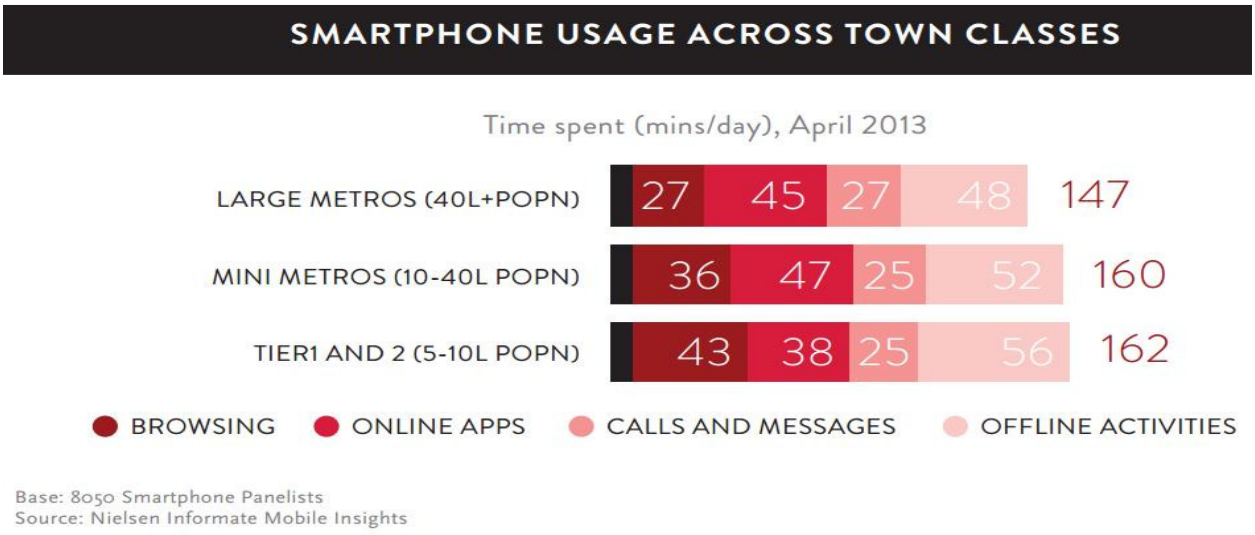


Figure 3: Smartphone usage across town classes in India



The Nielsen Informate Mobile Insights report also revealed the smartphone usage across different tiers of towns vis-à-vis the time spent (mins / day) for varied usages of the smartphone (Fig. 3). The largest amounts of mins/day were spent on offline activities across all the tiers of towns. However, a sizeable component of time per day was spent in accessing apps which went online. Browsing as a feature was accessed less by the large metros.

There have been marked differences amongst gender vis-à-vis the usage of online apps. (Fig. 4)

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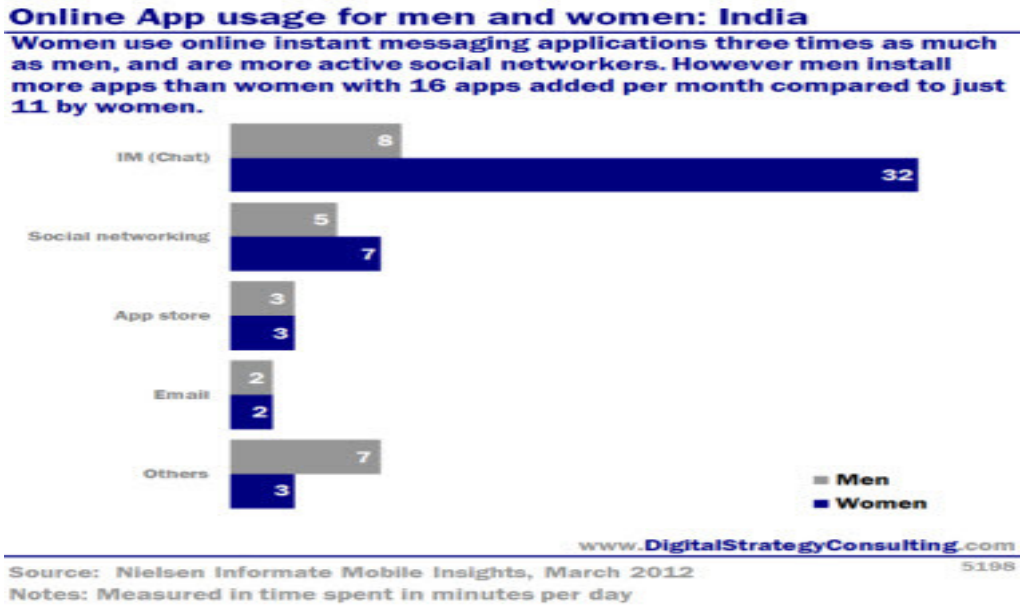
Figure 4: Gender wise usage of mobile apps in India



Thus, it is evident that smartphones shall herald the next generation of mobile technology. And the key market segment determining the future prospects of the smartphone shall be the youth. It would thus be of immense interest to the marketers of handsets and cellular services to understand the needs and desires of this vital market segment. This information would be most crucial in product designing on the part of the hardware manufacturers and creation of mobile-centric apps/software on the part of the software developers.

Problem Statement:

India is the third fastest growing market for cell-phones and the fastest growing market for smartphones in the world. For the first time, worldwide smartphones have finally outsold feature phones, says Gartner, Inc. in its latest market report. According to them, 968 million smartphone device units were sold to end users in 2013 out of a total of 1.8 billion mobiles sold. That is 53.6% of overall mobile phone sales for the year. What is most exciting for Indian startup ecosystem is that with a 166.8 percent increase in the fourth quarter of 2013, India exhibited the highest smartphone sales growth among the countries tracked by Gartner. In China, the sales grew by 86.3 percent in 2013. The fastest growing segment of consumers in India is the youth, specifically the 18 – 24 year age group segment. Thus, it is vital for marketers to have an understanding of this market segment as top priority for all decision making. This paper aims at identifying the comprehension that the youth has towards smartphones, It further

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goes on to identify the preferences for smartphones in general and apps in particular, as it has been clearly proved that smartphones are used for things much more than simple voice calls or texting messages. The paper shall also aim to identify patterns amongst the youth vis-à-vis their preferences for various aspects of the smartphone; and this shall be done through cluster analysis.

Review of Literature:

A significant focus area of this paper shall be to understand the preferences of the youth for various apps/ software on their Smartphone. Smartphone give users the choice of 'downloading' and 'installing' apps to suit individual needs. In other words, Smartphone enable the users to 'personalize' their phones as per their own context.

Through their research on the aspect of personalization of Smartphone, Tossell et al (2012) concluded three major outcomes of their work. Firstly, they stated that not every user makes an effort to personalize his / her Smartphone. Secondly, those users who did personalize their phones perceived them to be more usable. Thirdly, personalization could be measured which would have implications for designing Smartphone.

Gebaeur, Tang & Baimai (2008) carried out a content analysis of online user reviews which was followed by structural equation modeling. They found four factors which were significantly related with overall user evaluation: functionality, portability, performance and usability.

Malviya & Saluja (2013) studied the factors influencing consumers' purchase decisions towards Smartphone in Indore. They concluded that prices did not influence the purchase of Smartphone. Features like brand, social image, technology and durability played major roles.

Bowen & Pistilli (2012) studied the student preferences for mobile app usage at Purdue University. Students were asked to categorize their level of Smartphone usage. 85% students identified themselves as either intermediate or advanced users.

Karen, Han & Benjamin (2013) stated that the Smartphone purchase decision of Generation Y is influenced by brand concern, product feature concern and social influence concern.

Mokhlis & Yaakop (2011) in their study on consumer choice criteria in mobile phone selection stated that the three most important factors influencing consumer choice of mobile phones are: innovative features, recommendation and price.

Chun, Chung & Shin (2013) elaborated on the factors affecting consumers' satisfaction with the use of Smartphone apps. Consumers of a younger age and

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frequent users of apps and having more apps tend to be more satisfied with the use of Smartphone apps.

In a study on the trend of smartphone and its usage behavior in Malaysia, Osman et al (2012) found that the most attractive market for smartphones is consumers from younger age groups, and younger Smartphone users are often the consumers of media and entertainment applications. Since these usages require superior computing capabilities, the younger consumers will prioritize on the performance of the Smartphone.

Kim & Yoon (2013) stated that the antecedents affecting app usage among smartphone users were perceived informative and entertaining usefulness, perceived ease of use, and user review.

Research Methodology:

This research is basically an exploratory research, as the chief aim is to understand the youth's self-perception about the comprehension of smart phones and to identify the preferences for features and apps which the youth have, while purchasing a Smartphone. Primarily web articles, previous researches, journals, publications etc., were studied to find out the relevant information for building a conceptual base for conducting the research. Based on these concepts, the questionnaire was designed. Primary data were collected with convenient sampling of respondents in the age group of 18 – 24, management graduates, in the city of Surat. The structured questionnaire was filled up during the first and second week of April, 2014. The questionnaire was delivered online and the respondents filled up the questionnaires online. The sample of 135 respondents from mentioning strata was used. All the questionnaires were scrutinized and those with incomplete or unlikely responses were deleted, resulting in a sample size of 120.

The reliability and consistency of the data that has been extracted in the study was examined through reliability test with, Cronbach's (alpha) as a coefficient of internal consistency. It is commonly used as an estimate of the reliability of the data. The Cronbach α value for the given set of sample was found to be 0.805. As per the ranges provided by George and Mallery (2003), Cronbach's Alpha value greater than or equal to 0.5 is considered acceptable.

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Findings and Analysis:

Current Ownership & Usage:

The most basic question pertained to identifying the current ownership status of Smartphone amongst the youth. 88.3 % respondents possess a smart phone currently.

Table 1: Currently using a Smartphone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	106	88.3	88.3	88.3
	No	14	11.7	11.7	100.0
	Total	120	100.0	100.0	

Table 2: Excluding the phone you are using currently, how many cell phones have you used in the past? * Excluding the current phone that you are using, have you used a Smartphone in the past?

		Excluding the current phone that you are using, have you used a Smartphone in the past?		Total
		Yes	No	
Excluding the phone you are using currently, how many cell phones have you used in the past?	None	0	5	5
	1	4	13	17
	2	12	21	33
	3	7	12	19
	4	5	10	15
	5	7	2	9
	More than 5	15	7	22
Total		51	69	120

Out of all respondents (89, 74.1 %) whose current phone is the 5th phone (or less) that they have ever used, the number of respondents who have used a Smartphone in the past (28) is less than the no. of respondents who have not used a Smartphone in the past (61). This shows that a majority of the sample respondents have been using at the most 4 phones prior to owning their first Smartphone. Only 4 respondents have their first phone as a Smartphone. This indicates a market segment in transition phase from non-smart phones to smart phones.

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Comprehensibility about Smart Phones: To have a self-assessment about the respondents' comprehensibility about smart phones, they were asked if they knew what a Smartphone was. The results are as under:

Table 3: Do you know what a Smartphone is?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Totally!	68	56.7	56.7	56.7
	Know a fair deal about Smartphone	44	36.7	36.7	93.3
	Heard it somewhere, not sure	8	6.7	6.7	100.0
	Total	120	100.0	100.0	

93% respondents affirmed that they have a reasonable or high 'knowledge' about Smartphone. It can be assumed that the 'confidence' of knowing everything about a product increases with the prolonged duration of using the product. To know whether the number of smart phones used ever has any influence on the self-assessment of the respondents' comprehensibility, Chi-square test was executed on both sets of categorical variables.

Table 4: Chi – square to identify the relation between no. of smart phones used and knowledge about a Smartphone

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.716[a]	14	.471
Likelihood Ratio	17.139	14	.249
Linear-by-Linear Association	7.752	1	.005
N of Valid Cases	120		

a. 17 cells (70.8%) have expected count less than 5. The minimum expected count is .07.

Table 5: How many smart phones have you used till now, including your current phone? * Do you know what a Smartphone is?

		Do you know what a Smartphone is?			Total
		Totally!	Know a fair deal about smart phones	Heard it somewhere, not sure	
How many smart phones have you used till now, including your current phone?	0	4	8	2	14
	1	27	21	3	51
	2	18	8	3	29
	3	7	4	0	11
	4	2	2	0	4
	5	5	0	0	5
	6	4	1	0	5
	7	1	0	0	1
Total		68	44	8	120

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A Chi-square value of 13.716 with a p value of .471 ($p > .05$) indicates that the knowledge that a respondents believes he / she has about a Smartphone is not significantly related to the number of smart phones the respondents has used till now.

To understand the worthiness of their assessment, some statements pertaining to technological aspects of a Smartphone were asked to them and the soundness of their understanding of a Smartphone was captured on the basis of their agreement / disagreement to each statement. Certain statements were not crucial, for e.g. a touch screen phone will necessarily be a smart phone. Certain statements were crucial in their capacity to discriminate between proper or improper comprehension. The agreement to these statements was cross tabulated with their self-assessment scores. The findings for some statements are as under:

Table 6: A smart phone can operate without an operating system * Do you know what a Smartphone is?

		Do you know what a Smartphone is?			Total
		Totally!	Know a fair deal about Smartphone	Heard it somewhere, not sure	
A smart phone can operate without an operating system	Agree	4	7	1	12
	Neutral	11	11	3	25
	Disagree	53	26	4	83
Total		68	44	8	120

It is interesting to note that out of 112 respondents who are confident of knowing everything or at least a good deal about Smartphone, 33 respondents (29%) are not aware that a SP cannot operate without an operating system.

Table 7: The operating system of a smart phone can be changed * Do you know what a Smartphone is?

Count					
		Do you know what a Smartphone is?			Total
		Totally!	Know a fair deal about smart phones	Heard it somewhere, not sure	
The operating system of a smart phone can be changed	Agree	21	10	1	32
	Neutral	16	18	5	39
	Disagree	31	16	2	49
Total		68	44	8	120

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An even more shocking finding emerges when we cross-tabulate the self-assessment of know-how about Smartphone with the statement "The operating system of a Smartphone can be changed". The fact is that the OS of a Smartphone cannot be changed. Thus, the correct response should have been "Disagree". The findings reveal that out of the 108 respondents who are confident of knowing everything or at least a good deal about Smartphone, a staggering 65 respondents (60%) are not aware that the operating system of a Smart phone cannot be changed.

Preferences for features while purchasing the Smartphone:

In order to understand the youth's buying behavior, they were asked about the features that they had preferred for, while purchasing the Smartphone. The respondents responded on a 5 point scale of preference.

The most preferred and least preferred attributes are tabulated below:

Table 8: Preferences for features while purchasing the Smartphone

Most Preferred		Least Preferred		Neutral	
Attribute	% response	Attribute	% response	Attribute	% response
Processor Speed	48.7%	QWERTY Keypad	21.6%	Upgradability	30%
Brand	38%	Brand	10%	Screen Size	28.4%
Battery Life	32%	Storage memory	7%	QWERTY Keypad	27.6%
In-built memory	30.4%	3G	10.2 %	3G	46%

As is evident, the most preferred attribute amongst the youth is processor speed – 48.7 % respondents have rated it as the most preferred attribute. And when we add the no. of respondents who have rated 'processor speed' as the preferred attribute, the no. of respondents goes up to 92 (out of 115 valid responses) – a cumulative total of 80%. This clearly indicates that the younger generation of Smartphone consumers is keenly inclined towards the technological superiority of the phone as reflected by superior processing speed. The cumulative percentage responses for brand and battery life of the preferred and most preferred ratings are 68% and 65%. But the cumulative percent responses for 'in built memory' are as high as 71%. Thus, the high preference for processor speed, battery life and in-built memory clearly indicate an inclination towards the

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operational capabilities of the Smartphone. An underlying assumption can be the desire to use the Smartphone for multiple and complex tasks, many a times simultaneously.

The cumulative percentage of responses (Least preferred and less preferred) was the highest for QWERTY keypad (58%), followed by brand (16%) and storage memory (10.5%). The surprising finding is the low amount of preference for 3G (19.5%), meaning that a total of 20% respondents didn't have any preferences for a 3G enabled Smartphone. Combine that with a 46% response rating for 'Neutral' on 3G, the total percent responses not preferring 3G is as high as 46%. The primary target for all cellular service providers for 3G is the youth. Thus, it comes as a surprise that such a high proportion of the youth market does not prefer 3G so strongly.

Preferences for Apps/software in a Smartphone:

As noted above, the most preferred attribute / feature in a Smartphone was the processing speed capability of the phone. This may have a direct bearing on the consumer's desire to operate data – heavy complex application software. Thus, the respondents were asked about their preference for apps in a Smartphone. The preference was asked on a three point scale ranging from 'Don't need it at all' to 'Need it definitely'.

Table 9: Percent responses for apps rated 'Need it definitely'

App Software	% responses
Social Networking Apps	89%
Maps / GPRS	88.8%
New & Info	84.6%
Entertainment	84.3%
Office Organizer	76%
Internet browser	73.5%
Dedicated messenger	22.2%
Sports	34.2%

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It comes as no surprise that Social networking apps are something the young consumers definitely want in their Smartphone. Equally, the preference for a dedicated messenger as the most preferred app is the least.

Table 10: Percent responses for apps rated 'Don't need it at all'

Sports	25.6%
Dedicated messenger	24.8%
Ticket booking apps	13.3%
E commerce apps	12.0%

The gender-wise distribution of the respondents is as under:

Table 11: Gender of the respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	73	60.8	60.8	60.8
	Female	47	39.2	39.2	100.0
	Total	120	100.0	100.0	

Some studies have indicated an influence of gender on the preference for apps in a smart phone. Thus, ANOVA was carried out to identify a relationship between gender and preference for apps.

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Table 12: Influence of gender on preference for Apps

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Preference for internet browser	Between Groups	1.455	1	1.455	3.589	.061
	Within Groups	47.845	118	.405		
	Total	49.300	119			
Preference for Office Organizer	Between Groups	.420	1	.420	1.708	.194
	Within Groups	29.046	118	.246		
	Total	29.467	119			
Preference for dedicated messenger	Between Groups	.048	1	.048	.104	.748
	Within Groups	54.877	118	.465		
	Total	54.925	119			
Preference for Social Networking Apps	Between Groups	.216	1	.216	1.799	.182
	Within Groups	14.151	118	.120		
	Total	14.367	119			
Preference for Entertainment Apps	Between Groups	.052	1	.052	.266	.607
	Within Groups	23.273	118	.197		
	Total	23.325	119			
Preference for BFS Apps	Between Groups	.155	1	.155	.383	.537
	Within Groups	47.836	118	.405		
	Total	47.992	119			
Preference for ticket booking Apps	Between Groups	.329	1	.329	.631	.429
	Within Groups	61.538	118	.522		
	Total	61.867	119			
Preference for E commerce Apps	Between Groups	.020	1	.020	.040	.842
	Within Groups	59.572	118	.505		
	Total	59.592	119			
Preference for Maps / GPRS	Between Groups	.019	1	.019	.140	.709
	Within Groups	15.848	118	.134		
	Total	15.867	119			
Preference for Sports Apps	Between Groups	11.227	1	11.227	22.866	**.000**
	Within Groups	57.939	118	.491		
	Total	69.167	119			
Preference for news & Info Apps	Between Groups	.000	1	.000	.000	.997
	Within Groups	24.592	118	.208		
	Total	24.592	119			

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As is evident from the **ANOVA**, apart from the preference for SPORTS apps (p = .000), there is no significant influence of gender on preference of smartphone apps. This has major implications for marketers, as it gives evidence against stereotyping of gender based preferences for apps.

Preference for the price band for a new Smartphone:

Respondents were asked their preferred price range for a new Smartphone. The responses are tabulated below:

Table 13: How much are you willing to pay for the purchase of a new smart phone?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rs. 5,000 - 8,000	12	10.0	10.0	10.0
	Rs. 8,000 - 12,000	25	20.8	20.8	30.8
	Rs. 12,000 - 18,000	46	38.3	38.3	69.2
	Rs. 18,000 - 30,000	24	20.0	20.0	89.2
	Won't purchase a new smart phone	10	8.3	8.3	97.5
	Won't purchase a smart phone at all	3	2.5	2.5	100.0
	Total	120	100.0	100.0	

Around 58% of the respondents stated their preference in the range of Rs. 12000 – Rs. 30000 for a new Smartphone. The preference for the price band for a new Smartphone was then subjected to chi-square test for measuring the relationship with family monthly income.

Table 14: Kindly state your family income per month * How much are you willing to pay for the purchase of a new smart phone?

		How much are you willing to pay for the purchase of a new smart phone?						Total
		Rs. 5,000 - 8,000	Rs. 8,000 - 12,000	Rs. 12,000 - 18,000	Rs. 18,000 - 30,000	Won't purchase a new smart phone	Won't purchase a smart phone at all	
Kindly state your family income per month	Less than Rs. 15,000	3	5	3	1	0	0	12
	Rs. 15,000 - 30,000	9	10	15	6	4	1	45
	Rs. 30,000 - Rs. 50,000	0	5	16	8	0	1	30
	Rs. 50,000 - Rs. 1,00,000	0	3	10	8	3	1	25
	More than Rs. 1,00,000 p.m.	0	2	2	1	3	0	8
Total		12	25	46	24	10	3	120

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Table 15: Chi-Square Tests for measuring the relationship between family monthly income and preference for price of a new smartphone

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	37.712[a]	20	.010
Likelihood Ratio	41.911	20	.003
Linear-by-Linear Association	15.836	1	.000
N of Valid Cases	120		

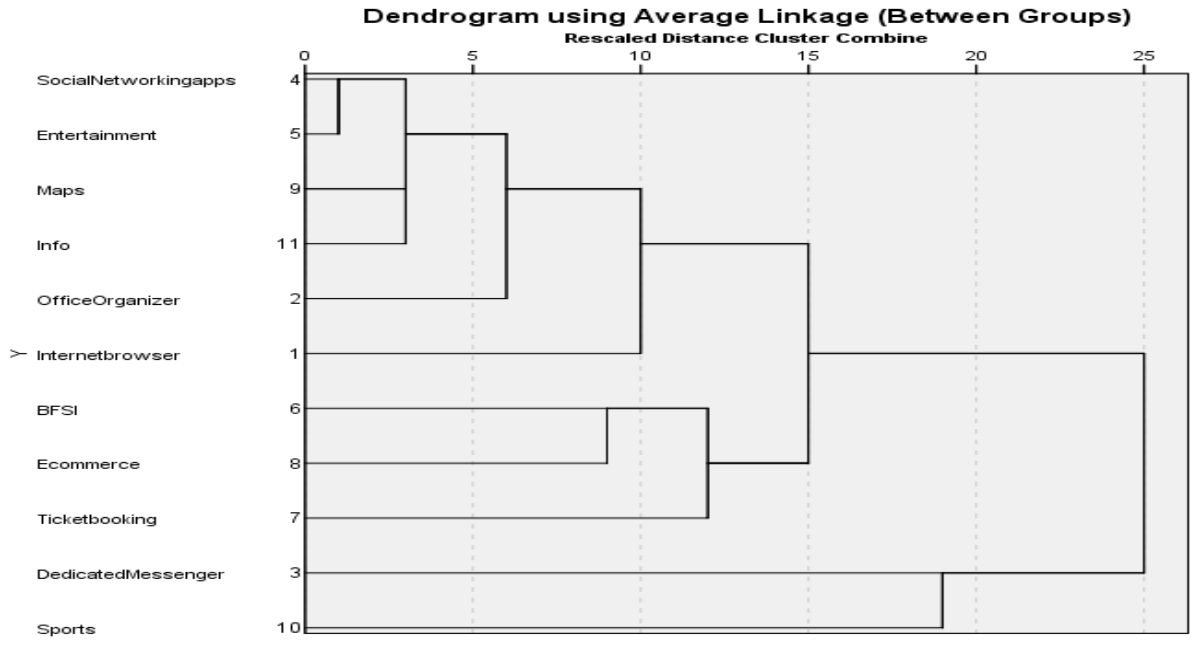
a. 21 cells (70.0%) have expected count less than 5. The minimum expected count is .20.

Thus, the p-value for the Pearson Chi-Square is .010 which is less than the significant value of .05, indicating that the family income has a significant influence on the preference for the price of a smartphone.

Cluster Analysis:

One of the primary objectives of this research paper was to identify clusters of apps preferred by the respondents. The underlying motive behind this objective was the understanding that all apps would not enjoy the same intensity of being preferred by the target group in question. Certain apps would be perceived closer to each other based on functionality, purpose or context; than some other apps in the minds of the consumers. Thus, viewing the respondents as a homogenous group (youth), clustering was carried out not for the cases, but for the variables – in this case – the various apps on which respondents had rated their preferences. The dendogram for the cluster analysis is depicted below:

Figure 5: Cluster Analysis



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The dendogram clearly distinguishes amongst the 'clusters' of apps based on the absolute preferences for each app. As we can see, the apps most closely clsutered together are 'social networking' and 'entertainment'. 'BFSI' (Banking, Financial Services & Insurance) apps are closer to 'E commerce' and this cluster is closer to 'ticket booking'. Thus, apps facilitating financial transactions and/or activities of a predominant financial nature are clustered together. The apps most distant from the remaining apps are 'Dedicated Messenger' and 'Sports'. Thus, the Cluster Analysis gives a clear insight as to the category of apps which are perceived closer to each other.

Conclusion:

This research paper has revealed some vital insights into the buying behavior and buying preferences of the youth pertaining to smart phones. 93% respondents stated that they had a reasonable knowledge about smart phones, thus indicating that the young users of smart phones consider themselves as possessing reasonable comprehension about smart phones. This self-assessment of comprehension was not related to the number of smart phones they have used till now. The surprising finding was that despite the young consumers believing themselves to be reasonable knowledgeable, they erred on common statements related to the facts about smart phones. A significant percentage of respondents didn't know that a Smart phone cannot operate without an operating system. An even higher number of respondents wrongly stated that the OS of a smart phone can be changed. These findings clearly revealed that the self-assessed familiarity and comprehensibility of the youth about smart phones is ill-placed.

The paper then proceeded to identify the preference for some significant features of the youth, for a smart phone. The most preferred feature was 'processor speed' followed by 'brand', 'battery life' and 'in-built memory'. Barring the preference for 'brand' of the phone, the preference for the other three features clearly indicate the youth's desire for the superior performance of the smart phone. The least preferred features were upgradability, screen size and QWERTY keypad. The low preference for upgradability might be due to the 'use and dispose' behavior towards cell phones in general, which can be further researched upon.

The strongest preference amongst the respondents was for social networking apps, followed by maps / GPRS apps and news / info apps. The weakest preference was for dedicated messenger and sports apps.

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Thus, this study provides vital insights into the way the youth approaches a dynamically innovative product such as a smart phone. The insight into the preferences for features and apps has major implications for marketers of Smart phones as well as marketers of practically any consumer market offering who would wish to create an 'app' for reaching out to the younger generation.

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