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FEATURES AND APPLICATION OF MOBILE PHONES: A CONSUMER AWARENESS STUDY IN THE PARADIGM SHIFT OF THE UTILITY

Dr. Punit Kumar Dwivedi*

Tanushree Agrawal**

After Roti, Kapda and Makan; Connectivity is the basic necessity of a human being and mobile phones has revolutionized the telecommunication. No other invention has created an impact as this device. In India, fishermen call ahead to ports to see where they will get the best deal on their catch. Farmers check crop prices on a mobile service. Cell phones serve as a virtual office for carpenters, painters and other labours who post their numbers on handwritten signs advertising their skills. Indeed, mobile phones are now the primary form of telecommunication in developing countries and they play the same role fixed-line phone networks did in facilitating growth in the 20th century. In developing countries a generation of people have grown up without computers and their creative energies have instead been focused on using mobile phones for communications, information and, more recently, access to a range of services from m-Banking to m-Education and m-Governance. The transformation of society by mobile telephony, and especially mobile applications, is perhaps most profound. With the advent of technology, the mobile phones are becoming a rage among the common people and a necessity in everyday life of even disabled people. With the dynamics in the environment and to face the competition the mobiles are rigorously updated with the applications and features. This research study shows the various features, facilities and applications which are existing and upcoming in the mobile phones and its awareness among the consumers.

Key Words: Mobiles, Features, Applications, Consumer, Awareness.

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*Assistant Professor, Prestige Institute of Management and Research, Indore

*MBA Students, Prestige Institute of Management and Research, Indore

INTRODUCTION

Our communication has come a long way from the very humble "Namaste" to the very modern"Hello". The history of communication dates back to prehistory. Communication can range from very subtle processes of exchange, to full conversations and mass communication. Human communication was revolutionized with speech perhaps 200,000 years ago. Symbols were developed about 30,000 years ago, and writing about 7,000. On a much shorter scale, there have been major developments in the field of telecommunication in the past few centuries. The Telecommunications (hereafter Telecoms) Industry changed since the mid- 1980s when liberalization began in Japan, the UK and the US. In the days of the old telecoms industry, the conventional wisdom was that telecoms was an example of 'natural monopoly', that is due to increasing returns to scale telecoms services could only be provided efficiently by a monopoly provider.

The beginning of cell phones can be traced to the innovation in taxi cabs, police cars and other service vehicles where two way radios were used to communicate with one another or with a central base. Early cell phone communication technology could be even traced back to individuals with special radios that can patch into a phone line via live operator to make a phone call. The first official mobile phone was used in Sweden by the Swedish police in 1946. The technology was connected to the telephone network and was distinctive of two way radio technology. The phone was not very practical; it was only able to make 6 phone calls before the car's battery was drained. The technology of modern cell phones started with the creation of hexagonal cells for mobile phones by D.H. Ring from Bell Labs in 1947, later on another engineer from Bell Labs conceived of cell towers that would transmit and receive signals in three directions instead of normal bi directional antennas. However, although some technologies have been developed, electronics and other technologies would take decades to mature and to be developed. For instance, the electronics that were used in the first cell phones were first developed in the 1960's.

By 1967, mobile phone technology was available; however, the user had to stay within one cell area. In 1970, Amos Edward Joel, who also was an engineer at Bell Labs, developed the Call handoff system. This technology facilitated continuity of a phone call from one area to another without dropping the phone call.Now, the mobile phones are no longer used just to

make phone calls. Mobiles serve as watches and alarm clocks. Even with the limited free games that come with basic phones, they are already good for "time-pass". They can also function as calculators. In unfamiliar neighborhoods, they tell us where we are. The address book and contacts list on phones is our social interface. The calendar function on the mobile phones can help us track our lives. Phones can also function as radios. For some, the mobile phone also becomes a notepad send an SMS to oneself and make it a reminder service. Owners also have tended to customize phones, with their own ringtones, themes and wallpapers. This is just for starters the more advanced mobile phones are also having Digital camera, Audio recorder, Video recorder, Multimedia messaging, Email client, Web client, Gaming platform, Documents viewer, Computer adjunct, Music player, TV, Wallet, Bar-code readers, etc (for details see Table 1.1, 1.2 1.3) and the list is inexhaustible, and by the time we are busy in researching the consumer awareness of the existing and upcoming features and applications many new of them have been invented in due time.

LITERATURE REVIEW

The researchers have found following literature on related topics:

- Rajnish Tiwari, Stephan Buse and Cornelius Herstatt, in a research paper "**From electronic to mobile commerce Opportunities through technology convergence for business services**" have probed that the need for mobility is the basic reason behind mobile banking, mobile entertainment and mobile marketing, and is supported by increasing convergence of computers and mobile telecommunication devices. Which helps to increase the utility for both consumers and service-providers
- Marc Bourreau, Marianne Verdier, in a research paper "**Cooperation for Innovation in Payment Systems: The Case of Mobile Payments**" have studied the development of the Mobile payement feature in the develping countries, They have also introduce five cooperation models which has emerged or is emerging and could be use for payment methods.
- Gewei Ye, Johns Hopkins University, in a research paper "**Mobile Marketing Systems: Framework and Technology Enabler**" has traced the possibilities of reverce marketing with the help of hybrid network and an m-Commerce computer application to display interactive messages on computer-mediated billboards.

- Åke Grönlund, Annika Andersson, Mathias Hatakka, , in their research paper "**Mobile technologies for development – a comparative study on challenges**" research compares and analyzes the effective use of mobile technology by the developing countries in the field of education, medical and agriculture.

OBJECTIVE OF THE STUDY

The objective of the study is to explore consumer awareness of the existing and the emerging application and features of Mobile phones.

HYPOTHESIS

Customers are excessively aware of the application and features of the mobile phones.

RESEARCH METHODOLOGY

The research was an explanatory one. In this research paper, the researchers attempted to probe the consumer awareness of the various application and features of the mobile phones. An attempt is then made to propose a thorough study combining almost all the existing and upcoming applications and features of the mobile phones and trace their awareness among consumers.

The methodology which was used in order to carry out the present study is as under

Sample: - The sample comprised of the Mobile user of Indore city, the respondents were the mobile users of different ages. The random sampling technique was used for selecting the respondents. The sample size was 100.

Data collection and data analysis:- The data of the research was:

a) Primary data, collected via structured questionnaires with mobile user.

b) Archival and online data such as research papers, articles and a host of other sources.

After collection of the data it was analyzed by computing mean with respect to the responses for each existing and upcoming application of the mobile phone considered in the questioner. We also did a comparative analysis of each and every application and feature of mobile phone in terms of utility.

Table 1.1: Existing M-commerce services and applications

M-commerce applications	**Application Examples of services offered**	**Consumer Awareness Analysis on the basis of Graph 1.**
Mobile banking	Mobile accounting, Mobile brokerage, Mobile financial information etc	The usage is very low.
Mobile entertainment	Mobile gaming	The mobile phones are rigorously used for the purpose of entertainment and Mobile phone companies and allied companies providing mobile entertainment solution has ample opportunity for generating lucrative profits.
	Download of music and ring tones	
	Download of videos and digital images	
	Location-based entertainment services	
Mobile information services	Current affairs (financial, sport and other news)	Conventional source for these sort of information are still in progress and it is unexplored market which has recently not hit the impulse of the customer
	Travel information	
	Tracking services (persons and objects)	
	Mobile search engines and directories·	
Mobile marketing	Mobile couponing	Still the Bulk SMS are highly used for the M-Marketing and communication purpose. The market is still unexplored and needs to be utilized to the optimum level to generate unexpected results.
	Direct (context-sensitive) marketing	
	Organization of mobile events	
	Mobile newsletters	
	Bulk SMS	
Mobile shopping	Mobile purchasing of goods and services	It is emerging but with a slow pace due to lack of credibility

Mobile ticketing	Public transport Sports and cultural events Air and rail traffic	With the increase of sports, cultural and other social events, increase in the commutation due to various reasons may be health, education, business etc. the use of mobile ticketing in this section has to be harnessed well in future for the sustainability of environment and optimization of profit.
Telematics services	Remote diagnosis and maintenance of vehicles Navigation services Vehicle tracking and theft protection Emergency services	Except emergency services all the other areas are yet to be unexplored due to lack of the knowledge and credibility of services.
Stock Market Trading	Purchasing and selling of stocks through mobile phones	It is an emerging area and it will take a substantial amount of time for shifting from internet trading to mobile trading

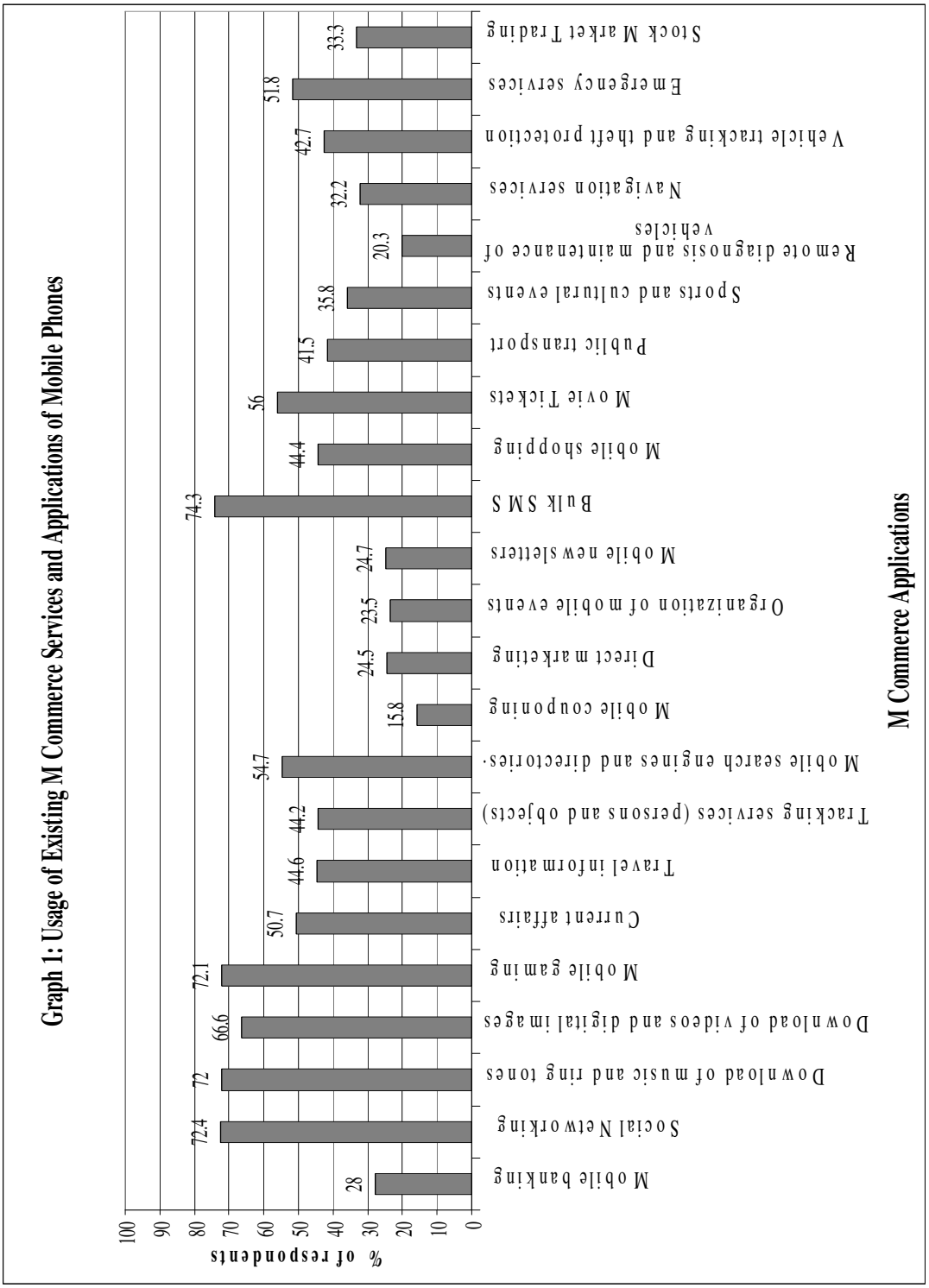

Graph 1: Usage of Existing M Commerce Services and Applications of Mobile Phones
% of respondents
0
10
20
30
40
50
60
70
80
90
100
M Commerce Applications
Mobile banking
Social Networking
Download of music and ring tones
Download of videos and digital images
Mobile gaming
Current affairs
Travel information
Tracking services (persons and objects)
Mobile search engines and directories
Mobile couponing
Direct marketing
Organization of mobile events
Mobile newsletters
Bulk SMS
Mobile shopping
Movie Tickets
Public transport
Sports and cultural events
Remote diagnosis and maintenance of vehicles
Navigation services
Vehicle tracking and theft protection
Emergency services
Stock Market Trading
28
72.4
72
66.6
72.1
50.7
44.6
44.2
54.7
15.8
24.5
23.5
24.7
74.3
44.4
56
41.5
35.8
20.3
32.2
42.7
51.8
33.3

Table 2: Existing inbuilt Features used in Mobile

Inbuilt Features	**Utility**	**Consumer Awareness Analysis on the basis of Graph 2**
3G	3G is the third generation of wireless technologies. Its major features are high speed mobile internet, advanced multimedia features etc. 3G in Mobile phones in India is mainly used to connect the phone to the Internet or other IP networks in order to make voice and video calls, to download and upload data and to surf the net.	The usage of the various features depends on the 1. Frequency of the necessity 2. The knowledge of a particular feature. 3. Availability of the free time 4. Urgency of the work To lure the customer for excessive use of the features customer need to be trained and educated for the excessive use.
Edge	Enhanced Data rates for GSM Evolution (EDGE) an advancement of GSM networks provides up to three times the data capacity of GPRS	
Bluetooth	Bluetooth technology provides wireless communication between various devices connected in a short range.	
Play 3D games	It is possible now to play 3D Games using your mobile phones with platform like Maui You just need GPRS/WAP enabled on your phone to get started.	
Mobile Phone TV	Now, one can watch the latest TV news directly from the GPRS based mobile phone.	

GPS Locations	GPS Mobile Phones offers excellent tools and softwares to track the current locations. The latest services includes, maps offered upto street levels and clear screen quality with location names.	
Streaming TV Content	Many telecom companies even provide streaming television, a feature like watching TV shows without a TV.	
Mobile Money Transfer	Telecom providers are offering services through which one can transfer money using mobile phones.. You just need a credit/debit card to get started with the whole list of M-Commerce solutions such as Mobile Money Transfer (MMT).	
Reading Mobile Newspapers	You don't need to carry a bulky newspaper while travelling to your office because you can now just do the same using your mobile phone by subscribing so the best newspaper website feed's for free of cost and getting access to the latest news 24/7. Another advantage is that you can access to any localized language version of any newspaper absolutely free of cost.	
Audio Recorders	The sound waves can be recorded through mobiles and can be saved	

	for future references	
Digital Camera	The best use of camera mobile phones is that one can point and click and instant capture photos which later can be saved shared and directly printed using phone. The latest mobile phones are featured with high end cameras of upto 8.1 Mp which can offer professional photography options.	
Document. Viewer	One can use mobile phone to view different documents in pdf or any word document format because latest mobile phones support different file formats.	
Scanning Documents	One can use mobile phones camera to take a scan of any important document or photo.	
FM Radio	One of the most common utility of mobile phone .Now no need to carry a different FM Radio device or any other product. Just connect to your mobile phone and get started listening to streaming radio with numerous channels.	
Shutdown PC with.SMS	Its possible to remote shutdown your computer running on Windows XP operating system with the help of just a text message. The process is very simple by creating a shutdown batch file and linking it to your outlook, when you send a	

	SMS from your cell phone to your email address, outlook searches for the specified query and runs the dos batch file which in turn shutdowns your computer	
Video Recording	The inbuilt camera can records video in a digital format to a SD memory card	
Internet Modem	Mobile phone as a modem connects PC to the internet. For getting this done one must need a internet service activated on mobile phone and a bluetooth feature to transmit all the data to your laptop. Bluetooth enabled mobile phones are the best ones for getting this connection activated and both devices should have bluetooth and pairing should be done to get started	
MMS	Multimedia Messaging Service, a system that enables cellular phones to send and receive pictures and sound clips as well as text message	

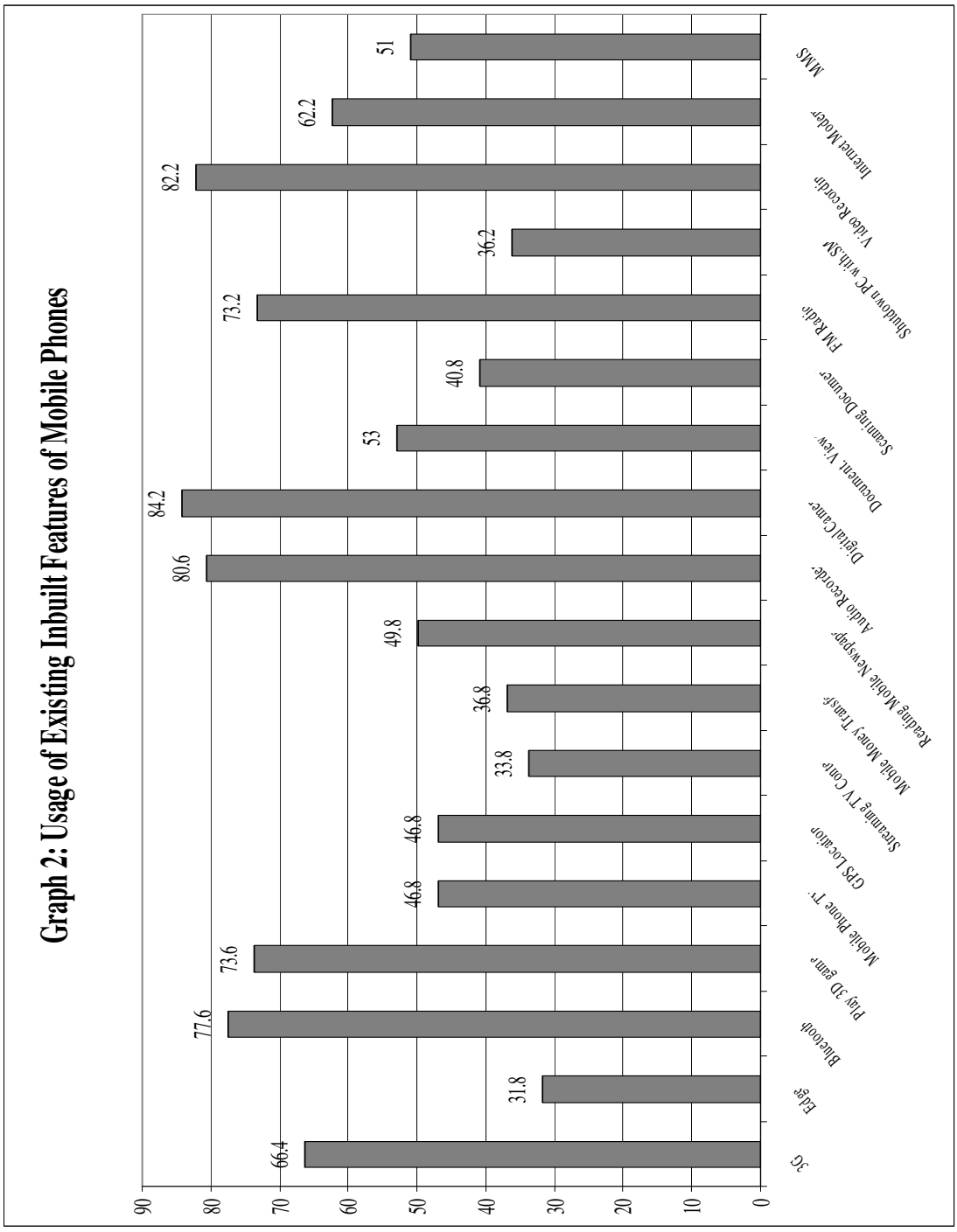

Graph 2: Usage of Existing Inbuilt Features of Mobile Phones
3G
Edge
Bluetooth
Play 3D game
Mobile Phone Tr.
GPS Location
Streaming TV Conn
Mobile Money Transfe
Reading Mobile Newspaper
Audio Recorder
Digital Camera
Document View
Scanning Document
FM Radio
Shutdown PC with SM
Video Recording
Internet Modem
MMS
66.4
31.8
77.6
73.6
46.8
46.8
33.8
36.8
49.8
80.6
84.2
53
40.8
73.2
36.2
82.2
62.2
51
0
10
20
30
40
50
60
70
80
90

Table 3: Upcoming Mobile services and applications

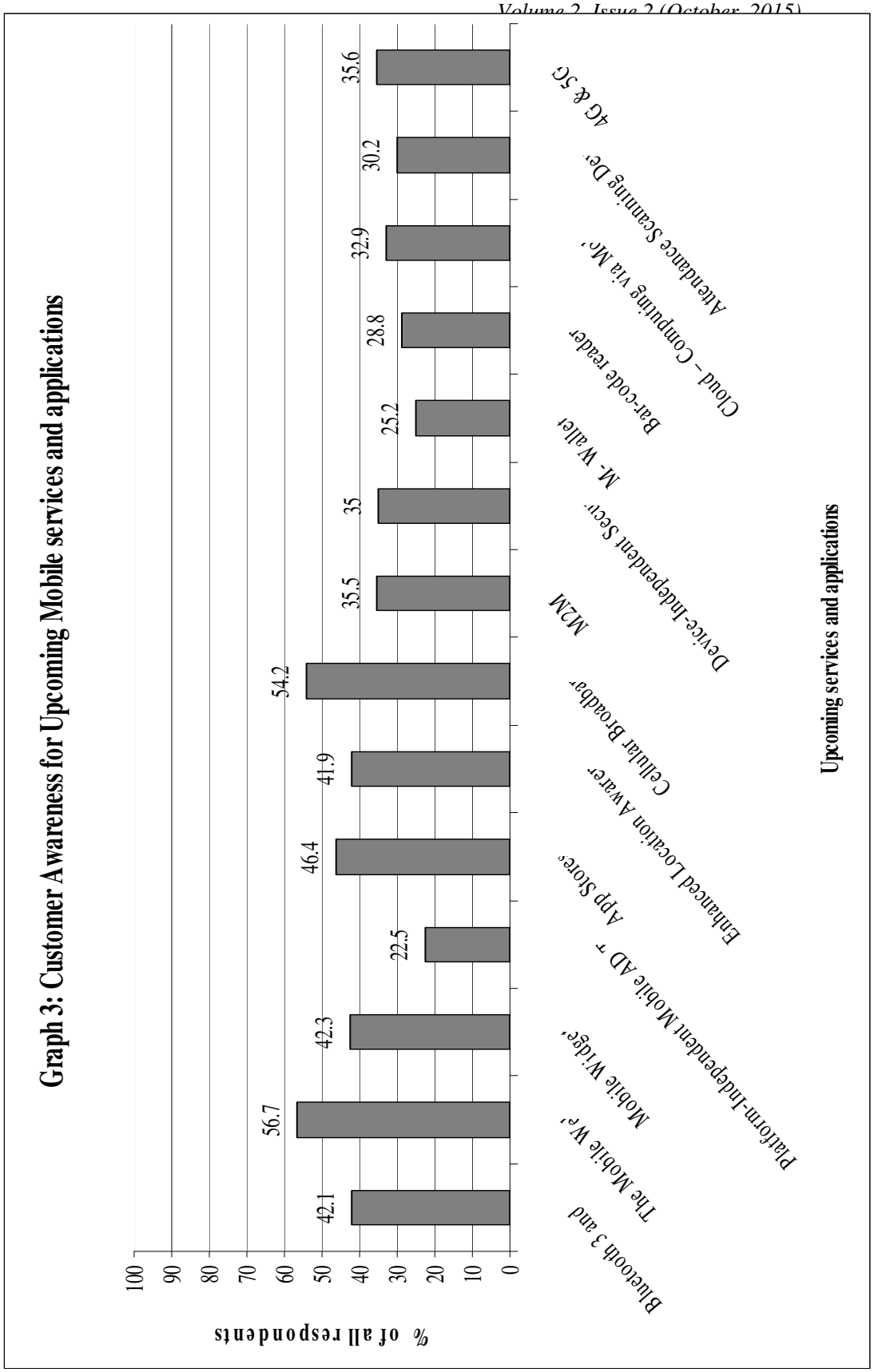
Inbuilt Features	Utility	Consumer Awareness Analysis on the basis of Graph 3
Bluetooth 3 and 4	By 2011, two new versions of Bluetooth will emerge. Bluetooth 3 will introduce 802.11 for faster data transmission, and Bluetooth 4 will introduce a low-energy mode that will enable communication with peripherals and sensors and makes it a fit for industries such as health care.	Cellular Broadband and The Mobile Web are among those upcoming features and applications to which customer are highly aware with. Such sort of consumer awareness for the future features and applications could be considered when comparing with the existing one. With the advent of knowledge and wisdom the awareness could be amplified with due course of time.
The Mobile Web	By 2011, more than 85 percent of the handsets shipped globally are expected to include a browser. In mature markets, the mobile Web and Web adaptation tools will encourage the use of business-to-consumer (B2C) mobile apps, should be part of every enterprise's B2C portfolio by 2012.	
Mobile Widgets	Widgets, installable Web applications that can run on a device's home screen, are simple to use, convenient and can offer a business a good, inexpensive first step toward assessing demand for an application. This Verizon Wireless widget shows the real-time view from a New York City	

	traffic camera.	
Platform-Independent Mobile AD Tools	Web technologies will be "insufficiently mature" through 2012, making tools that can "reduce the burden of delivering installable applications to several platforms" more attractive. Such tools include Flash, Silverlight and AIR, as well as multiplatform development tools such as Qt, Appcelerator and Java Micro Edition.	
App Stores	Application stores will become part of a broader ecosystem that includes services in the cloud and technical partnerships offering functionalities such as navigation, mapping, search and social networking.. It also expects app stores to take on the past tasks of mobile device management tools. Pictured here is Nokia's Ovi app store.	
Enhanced Location Awareness	By the end of 2011, it is expected more than 75 percent of the devices shipped to mature markets to include GPS. Enterprises, using services such as Twitter, are	

	expected to take advantage of consumer-aware apps. In January, Nokia began offering its Ovi Maps, which offers walking and driving directions, as well as landmark callouts, as a free download.	
Celluar Broadband	Multimegabit wireless broadband will grow through 2011, with 3.5G technologies increasing and leading the way to 4G LTE deployments. On March 25, Lenovo introduced the ThinkPad Edge 14 and 15 laptops with the option of a Qualcomm Gobi modem to access Sprint's 4G network.	
M2M	The increasing quality of cellular broadband is expected to accelerate the use of M2M (machine-to-machine) applications such as for video surveillance, meter reading, vending and point-of-sale solutions. In 2009, Motorola introduced the H24 wireless modem, for 3.5G connectivity, to its M2M solutions portfolio.	
Device-Independent Security	CIOs are being pressured to support new devices and form factors, particularly tablets, such as the Apple iPad, pictured here,	

	and e-readers. Consequently, device-independent security solutions will help to deliver applications that run on a range of devices, while reducing security risks.	
Wallet	The phone can also be used to pay for purchases like a credit or debit card. There is already a billing relationship that exists between the subscriber and the operator, and that can be used to make payments to merchants.	
Bar-code readers	Phones will also be able to read bar codes and that can have very interesting applications in commerce.	
Cloud – Computing via Mobile	Mobile cloud computing can give mobile device users a number of advantages. Company users are able to share resources and applications without a high level of capital expenditure on hardware and software resources. Due to the nature of cloud applications, users do not need to have highly technical hardware to use applications as complex computing operations are run within the cloud. This lessens the cost of mobile computing to the	

	client. End users will see a plethora of unique features enhancing their phones because of mobile cloud computing.	
Attendance Scanning Device	Upcoming mobile phones come with inbuilt attendance scanning device which help in tracking attendance of a person.	
4G and 5G	Subsequent generations of wireless technology. 4G is an evolution not only to move beyond the limitations and problems of 3G, but also to enhance the quality of services, to increase the bandwidth and to reduce the cost of the resource and 5G can be understood as completed wireless communication with almost no limitation; somehow people called it REAL wireless world.	


Graph 3: Customer Awareness for Upcoming Mobile services and applications
% of all respondents
100
90
80
70
60
50
40
30
20
10
0
42.1
56.7
42.3
22.5
46.4
41.9
54.2
35.5
35
25.2
28.8
32.9
30.2
35.6
Bluetooth 3 and
The Mobile W
Mobile Widge
Platform-Independent Mobile AD
App Stores
Enhanced Location Aware
Cellular Broadbar
M2M
Device-Independent Secur
M- Wallet
Bar-code reader
Cloud – Computing via Mo
Attendance Scanning De
4G & 5G
Upcoming services and applications

CONCLUSION

The consumer awareness ratios of the mobile phone features are higher when compared with the applications. This is because the of the following reasons

1. The features are easy to understand and are most of them are user friendly which is not the same with the applications.
2. The knowledge of the features are high because of frequency of the use.
3. The frequency of the usage is widely affected by cost of a particular application.
4. Consumer take interest in learning new application as it is making their work very easy.
5. Peer pressure aides in the interest to learn new application.

SUGGESTIONS

1. If mobile service provider and companies want to lure their profits with a phenomenal rate they can develop more user friendly and cost effective applications and features.
2. Educating and Training consumers through various means could increase the proper awareness among the desired consumers, which can serve as powerful tool to boast up the sales and provide a competitive advantage.

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