

An Empirical Exploration of Barriers to Growth Rate of M-Commerce in India

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Abstract— The world first witnessed the upsurge of E-commerce and then came mobiles and that too Smart Phones which saw the emergence of M-commerce. It provided the facility not only to use it to receive and make calls, set alarms, take photos, set alarms, send and receive sms but with advent of wireless internet it also offered features to download online shopping apps and use it to purchase goods and services which could also be ordered through computers earlier. Thus, it made it affordable to use a handy equipment to shop online. This is a new territory. The potential of M-Commerce is large.

Kanwalinder Singh, President of Qualcomm India and SAARC, stated that “M-commerce in India is limited largely to SMS-based communications between bank account holders and their banks for purposes such as checking one’s account balance. In fact, under current regulation, any type of m-commerce, including money transfer schemes such as M-PESA, must involve a bank”. But recently, mobile services seem to be winning with India’s newly plugged-in population with mobile commerce. M-commerce means any business activity directly or indirectly involving exchange of goods and services for money using mobile handsets. Mobile transaction, i.e., exchange of goods and services passes through the stages – (i) locating and ordering the goods and services then (ii) payment for goods and services and ultimately (iii) obtaining of goods and services ordered. Thus, M-commerce embraces all those companies that touch one or more of these above-mentioned stages of transaction through mobile devices.

With the growing importance and potential of M-commerce, the researcher tried to understand the barriers to m-Commerce and suggest measures to speed up M-commerce a success. An attempt was made to make use of both primary as well as secondary data to come to concrete conclusions and make proper recommendations.

Keywords— M-commerce, E-commerce, Mobile Wallets, Mobile Operating Systems, Mobile Apps

I. INTRODUCTION TO MOBILE COMMERCE

Starting initially with advent of 1990’s with a spur in teleshopping, PCs gave rise of E-commerce. Later M-commerce went a step ahead of E-commerce. While electronic commerce (E-commerce) continues to impact the global business environment profoundly, technologies and applications are beginning to focus more on mobile computing

and the wireless web. It could be appropriately called mobile e-commerce. All this is due to mobile phones becoming more savvy and tremendous growth of wireless technology in the last decade. Earlier mobiles were used for phone calls, sms, alarms, etc. But facility of internet connectivity has led to it being a device used for commerce related activities. The growth in mobile telecommunication services and ubiquitous availability of mobile phones are creating unexplored business opportunities not only for the mobile operators, but to a range of other industry participants. Thus, one of the most promising value-added services for mobile phones is M-commerce—the ability to make purchases or conduct financial transactions by using a mobile phone.

To sum up, it could be mathematically written as:

$$\text{M-Commerce} = \text{E-commerce} + \text{Wireless Web}$$

M-commerce is quite different from traditional E-commerce. Mobile phones impose very different constraints than desktop computers. But they also open the door to a slew of new applications and services. They follow you wherever you go, making it possible to look for a nearby restaurant, stay in touch with colleagues, or pay for items at a store. With M-commerce, one can order things out of vending machines from their smartphone, or customer can shop from their phone or tablet instead of from their PC.

Meaning of M-commerce

Mobile Commerce, or M-commerce, is about the explosion of applications and services that are becoming accessible from Internet-enabled mobile devices. It involves new technologies, services and business models. The phrase mobile commerce was originally coined in 1997 to mean "the delivery of electronic commerce capabilities directly into the consumer’s hand, anywhere, via wireless technology." M-commerce is defined as the exchange of goods, services, information and knowledge with the aid of mobile technology. It is business that is conducted on the internet using cell phones or other wireless, handheld electronic devices. Many choose to think of Mobile Commerce as meaning "a retail outlet in your customer’s pocket."

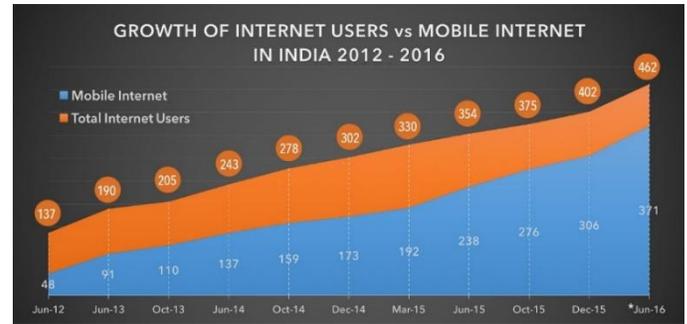
Products and Services Available through M-Commerce

M-commerce transactions involve buying a movie ticket, commercial downloadable ringtones, mobile phone enabled vending machines, money based banking, smart money, mobile parking payments, train ticketing, airline tickets, auctions, brokerage, advertising, etc.

Commerce has thus come a long way with mobile phones delivering various products and services.

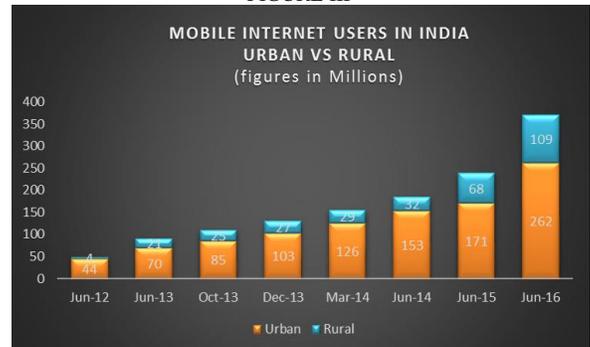
Growth of M-commerce in India

India witnessed the growth of M-commerce since 2012 with boom of smart phones in India which has created many a first-time user of the Internet directly on the mobile phone, rather than on the PC. As per the surveys undertaken by Statcounter and Morgan Stanley Research in 2014 65 % of internet traffic was by mobile phones and 41% of the online purchases made by Indians was via mobile phones. Such percent of online purchases was more than any other country like China and USA.



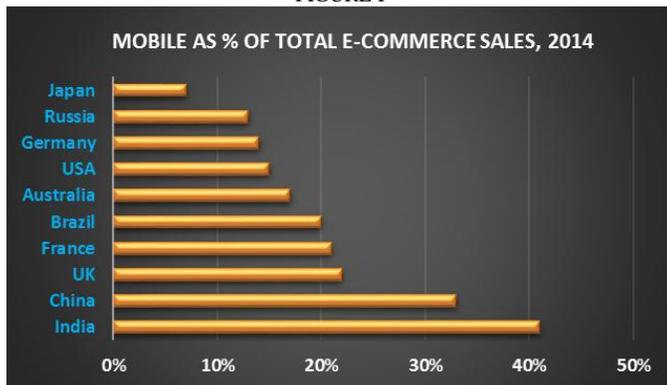
Source: Reference [18]

FIGURE III



Source: Reference [18]

FIGURE I



Source: Reference [5]

As 2016 begins, mobile commerce in India is undergoing an exciting transition. The country has seen an impressive rise in everyday commerce conducted via mobile devices. A market report released last year by consulting firm Zinnov estimated that India’s market for mobile commerce was worth \$2 billion in 2014 and is estimated to grow up to \$19 billion by 2019, i.e., there is 10 fold increase in a span of 5 years. In fact, India is now one of the top five regions (Asia Pacific, Europe, Middle East and Africa, Latin America and North America) for the Google Play store, as more of its 1.2+ billion people look to search, interact, and shop on the go via their smartphones and other mobile devices. The good news is that use of internet through mobile devices is increasing at a greater speed that increase in use of internet through PCs or laptops. Again, there is also an increasing trend in use of internet via mobiles in rural areas too. All this shows the potential of growth of M-commerce in India.

FIGURE II

II. OBJECTIVES OF THE STUDY

1. To identify the barriers to the success of M-commerce.
2. To suggest practical measures to overcome the barriers, if any.

III. HYPOTHESIS OF THE STUDY

- H0: There are no barriers in the success of M-commerce.
 H1: There are barriers in the success of M-commerce but through practical measures they could be overcome.

IV. RESEARCH METHODOLOGY

Data Collection

Primary data is used by the researcher for the study. Secondary data too is used to study other research work undertaken in this area to suggest practical measures.

Method of Collection of Primary Data

Research Area

The study was undertaken in Bhusawal city, which is a small town coming under semi-rural area.

Sampling Technique

The study employed random sampling technique.

Sample Size

1. 100 undergraduate and post graduate students of Commerce
 2. 100 working men and women.
- Respondents were from middle and high income group.

For additional information 5 major mobile dealers in the city were also interviewed to understand the complaints of

customers received by them relating to mobiles and especially M-commerce.

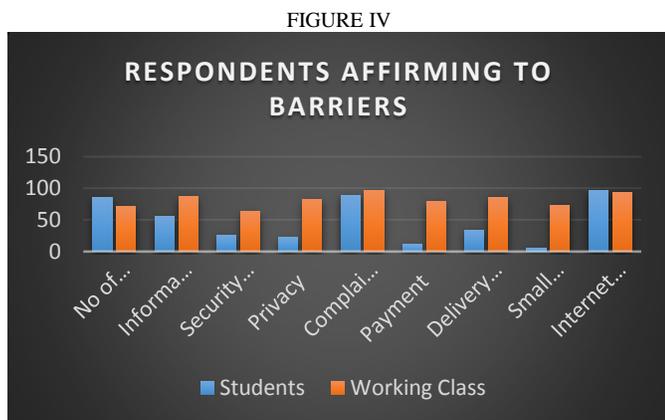
V. DATA ANALYSIS

The researcher tried to find out the various factors which act as hurdles to slow down the growth rate of M-commerce in India. These factors related to awareness of M-commerce, information provided by mobile device, security in using M-commerce especially for payment, privacy, handling of complaints, payment, delivery time, screen of mobile, internet connectivity, etc. The responses were then discussed with mobile dealers and secondary data too was browsed through to get better understanding of the hurdles and suggest practical measures. The responses received are shown in Table I as under:

TABLE I
RESPONSE TO QUESTIONNAIRE

S. No.	Barriers	Respondents			
		Students		Working Class	
		Yes	No	Yes	No
1	Awareness of M-commerce	86	14	71	29
2	Information Disclosure	56	44	87	13
3	Security Concerns	26	74	63	27
4	Privacy	22	68	83	17
5	Complaint Handling and Redress	89	11	97	03
6	Payment	11	89	79	21
7	Delivery Time	34	66	86	14
8	Small Screen	06	94	73	27
9	Internet Connectivity	96	07	94	06

From the data above table the number of respondents affirming to the barriers stated is shown in Figure IV below:



Barriers to Success of M-Commerce

Despite its potentiality and convenience, findings indicate certain barriers in M-commerce discussed as under:

1) *Awareness*: The survey of question relating to awareness of facility of purchasing through mobiles revealed that many mobile users above 45 were not aware about the facility especially using of the facility. Most women above 45

having smart phones were still stuck to mobile being used for calling, sending sms, setting alarms, clicking photos, etc. Many UG students were aware but did not use for purchasing goods except for booking tickets as per parents needs as purchasing goods were not allowed by the family without their permission.

2) *Information Disclosure*: To the query relating to satisfaction of information of product available on e-store, working class mobile users (87%) complained more than the students (56%) about the inadequate information disclosure of the product in mobile marketing. Though after further enquiry it was found that information is there but it is difficult for layman to browse through all the information given by the retailer as it is in small fonts.

3) *Security Concerns*: Security while making payment is a key enabling factor in M-commerce. For making payment there is option to pay either by cash on delivery or through debit/credit card. They are vulnerable to security mishaps such as eavesdropping and signal spoofing by modified phones. The study revealed that more male than female and more working class (63%) than students (26%) worry about the safety and reliability of conducting business over a wireless connection. Female generally go in for cash on delivery as small-town women generally do not have debit or credit cards. But many online retail players are wary of 'Cash on Delivery' system as it is manpower intensive, and requires time to collect the cash from the consumer's doorstep and thus either do not provide the facility of cash on delivery or some online retail stores do not offer 'cash on delivery' facility on certain products or in certain areas. Then the option available is to use debit card or credit card. There is apprehension in using debit/credit card as there have been cases of data leakage which increase the fear of mobile users.

GSM provides a relatively secure connection through the PIN (Personal Identification Number) when turning on the handset. But it is not enough to convince people who are sceptic. To get the confidence of critical mass of consumers, more is expected.

4) *Privacy*: Customers have to provide personal data to the vendor for purchasing the product. Many vendors made use of information available after personal data was provided. This intrusion is uncalled for. Many advertisements and redundant information through sms/email is not welcome by many consumers. Sms are received once the order is placed, then during the whole period every day and on delivery date and after deliver. And after delivery too for new offers and products sms/email keep pouring in. This was not welcome by any of the respondents. Here again youth were not much concerned than the working class which may be due to lack of responsibility and carefreeness of youth.

5) *Return of Goods and Redress*: 89% of youth and 97% of working class complained about return of good and redress when shopping online through mobile. M-commerce doesn't permit shoppers to touch products or have any social interaction. It is good for service providers like banks, insurance, railways, restaurants, etc. but not for goods requiring

physical inspection. Online stores have no geographical address. It is difficult to know whom to approach for returning goods, complaints, dispute resolution and claims. For instance, the product may not be what the consumer ordered or the product may not be satisfactory.

To rectify it, the consumers have to contact the online store, go to the post office to return the goods, pay charges of shipping it to the retailer and then again wait for a replacement or reimbursement. Also, for after sales service, whom to approach is another problem area. Thus, there is limited right to redress and remedies for faulty or undelivered digital content and problem approach for after sales service. This was a concern raised by all the respondents.

6) *Payment*: In many remote areas, people do not use debit/credit cards and thus do not keep them. As stated earlier at times retailers do not provide 'cash on delivery' option at all or only on certain products and certain areas which is a problem. At times customers themselves do not prefer cash on delivery or the product does not have the facility of 'cash on delivery' then the payments have to be made by typing one's 16-character credit/debit card number into a mobile phone which is not a happy experience. With tiny keyboard, there are more chances of errors taking place. This problem was faced more by respondents above 40. Students did not complain much as they did shopping on 'cash on delivery'. There is a lack of simple and standardized payment mechanism to provide an easy way to make payments via mobile phones.

7) *Delivery Time*: Online purchasing involves time to reach home unlike brick and mortar shops where you buy and it is in your hands. It takes more time to reach small towns. Maximum number of respondents agreed to the problem of time taken in delivery. The working class was more impatient (86%) than student class (34%) in getting goods as they are still those who are used to brick and mortar shops buying habits. India's poor logistics infrastructure creates a challenge for e-retailers to offer quick delivery services, which most of the respondents complained of. Many courier services are not available in remote areas.

8) *Small Screen*: Mobile devices differ from desktop and laptop as mobiles have smaller screen sizes and limited input capabilities. They display only a few lines of text and do not have traditional keyboards. This problem of smaller screen sizes was addressed mainly by respondents above 40.

9) *Internet Connectivity*: In response to question relating to being able to purchase whenever they like, mostly both categories of respondents (students 96%; working class 98%) stated that lack of high speed connections required for use of mobile for buying products acts as a hurdle. It dampens the initial enthusiasm of the buyer. 4G networks that will deliver higher speeds for mobile connections but not adaptable to all handsets and are not available in II Tier and III Tier cities. Many times, the connection may be down. The lack of stable telecommunications infrastructure across the country could also limit the pace of growth.

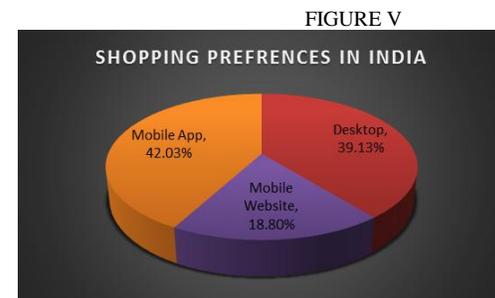
Taking a cue from responses of respondents and further discussion with mobile dealers and study of secondary data, the other barriers are as under:

10) *Network Traffic*: Mobile phone networks can handle just so much traffic, and overload. This is a problem in Tier II and III cities as the service providers are not keen on upgrading technology or band-width in these areas as business is less in these areas.

11) *Relations between Service Providers and Network Operators*: On the Internet, any provider who conforms to the Net's standards can put an application online without anyone's permission; on mobile networks, providers must work with private network operators like Airtel, Tata DoCoMo, Reliance, etc. and pay them charges. At present, there are many small service providers who must depend on a relatively few large mobile network operators to reach customers. Because of this imbalance, the operators are not able to capture the lion's share of the revenues generated by value-added services. In addition, service providers complain that it is difficult to negotiate deals and to arrange for prompt settlements from operators who are focused on attracting more subscribers rather than increasing the revenue per subscriber.

12) *Multiplicity of Operating Systems and Browsers* – Another challenge for service providers is that they must develop applications for multiple networks and a wide range of devices. Whereas there are only two major Web browsers for PCs, in the world of mobile phones there are multiple operating systems like Symbian, Android, Apple iOS, Blackberry OS, Windows OS, Palm OS to name a few with multiple browsers like Google Chrome, Firefox, Safari, Internet Explorer, Opera, Android, so the same application can look completely different on different screens. Without standardization, developing M-commerce applications can be prohibitively expensive.

13) *App and Mobile Sites*: Smartphone adoption has gone bizarre. It seems almost everyone has one. However, mass adoption leads to confusion, and for retailers this introduces problems. The classic dilemma is the app versus mobile site issue. Mobile apps are made as they are light. The study shows that online shopping is preferred by means of mobile apps than mobile website or computers.



Source: Reference [18]

Though mobile apps are preferred over other means of purchasing online, it at times create problems. For different mobile operating systems, different apps must be developed by same retailer, which is tedious.

14) *Customer Relations:* M-commerce stands in precarious relations with shoppers. Shopper psychology dictates that if shoppers have one bad experience with an M-commerce application, they will be hesitant to try that app or store again. Thwarted shoppers will not try to figure out what went wrong, and may never return. As in Reference [8], according to Berg, “a performance delay of 250 milliseconds is perceptible to a consumer and a delay of less than half a second will cause a consumer to select one M-commerce site over another. After three seconds, 40 percent of users will abandon a mobile site if it has not loaded. After 10 seconds, 60 percent of mobile users will not only abandon that site or app, but also never return to it again”.

VI. RECOMMENDATIONS

The issues addressed above are challenges of future M-commerce. They are not such that cannot be overcome. It requires efforts on the part of the government, online players, mobile manufacturers, banking sector and users to deal with the hurdles. From secondary sources, opinion of respondents, suggestions of mobile dealers, the following practical measures are suggested:

A. Awareness

For removing lack of awareness on use of various applications of mobile, its dealers should be given incentives to educate customers on how to download shopping apps or issue pamphlets to let them know how to shop online.

B. Information Disclosure

In a conventional retail store, clerks are generally available to answer questions. Mobile online retailers should also consider the possibility of running properly trained and fully informed call centers which could ensure that the customer gets a chance to formally interact with the other party before the actual purchase.

C. Security Concerns

Recent government policies are being supportive of developments in the mobile commerce space, particularly in paving the way for non-cash payments. They have offered more banking licenses. Given in Reference [9], “Recently, the Reserve Bank of India announced that it plans to grant licenses to 11 businesses such as U.K. telecommunications group Vodafone and India's Airtel to launch new so-called payments banks, which will allow transfers and deposits up to a limit of Rs. 100,000 predominantly via smartphones. Analysts have widely viewed this as a significant shake-up of the country's financial sector.” Consortium of mobile app providers warning users to keep changing password but with changing password every after 3 months becomes a headache.

D. Privacy

To maintain privacy, too many sms need not be sent as over-advertising is not considered good or profitable. An sms confirming delivery and tentative date, one informing the despatch and the day it arrives is sufficient.

E. Return of Goods and Redress

For complaints relating to return of items purchased, it should be made more convenient. For after sales service,

especially for electronic items, repair and replacement, it must be assured and taken care of by the online shopper by giving contact details of person to approach in as many cities as possible through tie ups. Physical address as to whom to approach in case of replacement or repair.

F. Payment

The antidote of payment hassle is mobile wallet. The concept involves parking one's money on mobile through use of debit/credit card or internet banking. Paytm, the leading mobile wallet, brings a sigh of relief to customers who are now getting comfortable with making payment for online purchases with just a finger touch. Several countries have already developed phone-based “mobile wallets,” and are using it with ease. In India, it is picking up as many were not aware or not comfortable using it as it is a new concept. But with Prime Minister Narendra Modi encouraging ‘cashless society’, the day will not be far when all are able to make use of mobile wallet. It will become the need of the hour.

G. Delivery Time

Time taken in delivering products to remote, rural or taluka areas must be reduced. Courier services must be with such guarantee for fast services.

H. Small screen

The solution lies in coming up with clearer and sharper concise messages, reduced size or miniature image and more pages to provide as much information as possible to the customers' satisfaction. Large screens and the use of colour can enhance usability but at the expense of battery life. The vendors are trying to bring in both feature in their designs, namely, large colour screens and longer battery life. Voice interfaces also show potential for use with mobile clients, but currently have limitations including the need to train devices to recognise a user's voice, the relative slowness of voice versus other input means and the exclusion of graphics or other visual information display.

I. Internet Connectivity

There is a requirement of installation of many more servers for improving connectivity. Internet service providers should provide internet connectivity of optimum speed. Erratic service of internet coupled erratic power cuts must be considered. In terms of infrastructure, further expansion of the user base for mobile communication, particularly to India's underserved rural areas, will involve investing in expanding the reach of wireless networks. For creating a more secure and flexible M-commerce infrastructure so as to meet the new demands, one needs to leverage new network and service technologies like 4G/UMTS (Universal Mobile Telecommunications System), Bluetooth, EDGE (Enhanced Data Rates for Global Evolution) and at the same time utilise the older ones like WAP (Wireless Service Provider), GSM (Global System for Mobile Communication), HSCSD (High Speed Circuit Switched Data) and GPRS (General Packet Radio Service).

India's second-biggest e-commerce player Snapdeal has been proactively investing in solutions to overcome this problem. “Connectivity over telecom networks in India isn't that great. So what we are doing is investing massively in

building lighter apps [and] mobile sites that load up in three seconds even on a 2G network. It's a lot of tech investments that we have to make, but we are seeing fairly exponential growth from mobile commerce," co-founder and CEO Kunal Bahl told CNBC on November 18.

J. Network Traffic

To avoid mass migrations by promotion-driven customers, retailers can stagger their offers and promotional invitations so that flocks of customers do not descend simultaneously and inadvertently crash the system.

K. Relations between Service Providers and Network Operators

To overcome the tussle between service providers and network operators, it is suggested to have a proper agreement between the two. It should provide for flexibility as the bandwidth, category of products sold could keep changing. Example, Flipkart earlier sold only books but it went on to include many more categories. At such times, flexible agreements should keep in mind such changes. Amicable settlements should be encouraged.

L. Multiplicity of Operating Systems and Browsers and App and Mobile Sites

As different apps have to be developed for different operating systems, the best solution for it was recommended by Dave Smith, Managing Director, IMRG who argues strongly for mobile-ready sites over apps and he supports that approach (Reference [14]):

"It's a question of whether to create a mobile web site or go down the app route. If you go down the app route, that restricts you to the use of certain mobile devices for that app."

"I think the future for retail will be more in mobile-enabled websites rather than apps. As a retailer, you'll get lost in the sheer amount of apps there are out there and as a consumer, you don't want to spend your time trawling through those apps, it's better to surf in the same way that you surf the web using a PC."

But for this is required to change the preference from mobile apps to websites.

M. Customer Relations

Internet service providers should provide internet connectivity of optimum speed. Erratic service of internet coupled erratic power cuts must be considered.

N. Expanding m-Governance

Mobile users far exceed Internet users. Government services on mobiles can catalyse m-commerce growth. Adapt all e-government applications to run on mobile platform. Example: health and education services on mobile can drive mass adoption.

VII. CONCLUSIONS

M-commerce could be particularly important in India, where only a small fraction of the population currently has either a bank account or a credit card and yet the tremendous growth situation. It cannot be denied that mobile internet channel has opened possibilities that business once dreamed of. Who could think of OLA Cab, mobile banking, railway enquiry

via sms? Recently many cities are seeing the popping up of hyperlocal business apps too catering to provide services like freelance make-up artists, hair stylists and henna artists, household repair services to provide on-demand services in a local area. All this indicates the potential of M-commerce.

Obstacles that threaten to stump the growth potential of mobile commerce in India remain aplenty. But with cooperation and collaboration between operators, mobile handset manufacturers, internet service providers, online retailers, banks and government M-commerce is here to grow and become one's personal assistant. The study proves that H1: There are barriers in the success of M-commerce but through practical measures they could be overcome.

There is a big gap between what the technology can do today and what the consumer has been led to expect. The good news is that the sources of consumer frustrations like slow transmission speeds, difficult user interfaces and high costs – are being addressed by operators and equipment manufacturers. Despite the initial frustrations of the early users, it can be envisioned that once these glitches are worked out, mobile applications will become an integral part of their daily lives. And M-commerce will become a daily routine for one and all benefitting the vendors through revenue generation and consumer through speed and ease of purchase saving time and efforts.

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