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Managing Technology and Innovation in Mobile Phone Handset Industry: A Literature Review

Satish Agarwal

Professor, Maharishi Dayanand Saraswati University, Ajmer, Rajasthan, India

Priyanka Bhagoliwal

Research Scholar, Maharishi Dayanand Saraswati University, Ajmer, India

Abstract:

Innovation is the key component of successful business operations. Why some products are more accepted than others? The reason is that they are different and better. Your products need to stand out. It has to be different. In this hypercompetitive climate where there are new products regularly entering the market, firms need to come out of their comfort zones and manufacture products which gives an entirely new experience to the customers and ultimately delight them. Technologically-oriented industries have unique features and challenges. If we talk about the mobile phone handset industry, this industry operates in an environment of rapid product innovation and obsolescence where the market is uncertain and highly competitive. The high technology industry is characterized by dynamism and complexity of product. Understanding the needs of the customers is not the key to become successful in hi-tech industry. To win the race, firms need to generate new ideas and then use logical thinking to turn these ideas into realistic thoughts. The high technology industry is characterized by unusually high levels of market and technological uncertainties which affects the marketing strategies and tactics. Hence management of technology and innovation has become one of the valued components of success for the organization. It became an essential study for companies and researchers. This article aims to identify different streams of thought that could guide future research. The objective of the study is to review the past studies to achieve a better understanding of the importance of management of technology and innovation with no specific intent to influence the technology and innovation management process.

1. Introduction

1.1. Smart Phone Handset Industry

Mobile phone handset industry comprises of leading mobile phone handset manufacturers, is dominating the market of India. This is one of the fastest growing industries in the world which is moving rapidly with emerging technologies and innovations. The cell phone industry has given so many facilities to the users on mobile phone and made people live so easier that they could not survive without a mobile phone now, as they can perform a variety of tasks on mobile phone (Dr. F. Zafar, A. zahra, A. khan). The cell phone industry is expected to continue its growth of 2006-2011 and reach an estimated \$334.8 billion in 2017 (research and markets). The market is flooded with a number of mobile phone brands carrying different features and functions. The mobile phone handset manufacturers have segmented the heterogeneous market into homogeneous markets and offering handsets for each segment of customers, from lower class to middle class to high class. As different customers have different needs and requirements, it is important to know the requirements of the buyers so as to form an effective segmentation and targeting. (Schejter et.al, 2010 Schejter, Amit M., Alexander Serenko, Ofir Turel, and Mehdi Zahaf. The firms which identified the needs of the customers and segmented the market were able to serve the market better and gain competitive advantage and profit in long run. (Wedel and Kamakura 2000, Wedel, Michel, and Wagner Kamakura). Smart phones have become popular for two reasons: advanced technology, and lower cost. The domestic handset firms such as Micromax, Karbonn, Lava and Intex have diverse product line, wide range of models with range targeting every segment, and launched handsets with low cost. As a result, they have increased their market share of the handset market. (India's mobile phone market).

Moreover, smartphones are one of the mass media as suggested by Tomi T Ahonen, in his book Mobile as 7th of the mass media. He also proposed seven unique benefits of smart phones as follows

1. It is a personal mass media channel
2. It is permanently carried
3. It is always on
4. Only cellphone provides a built in payment channel
5. Available at creative impulse, enabling user generated content
6. Most accurate customer information

7. Only the cellphone captures social context

The first mobile phone handset, Motorola DynaTAC 8000X was introduced by Motorola, in 1983. This handset offered 30 minutes of talk time, six hours standby and could store up to 30 phone numbers. It weighed around 1 kg and it took around 10 hours to charge. (News. Richard Goodwin,). After that the technology has been upgraded so much that now the companies came up with advanced, high technology feature phones and these are called the third generation mobile phones. This was the smart phone era with feature phones of very high internet speed, about 4 times quicker than the old 2G standards, strong Operating System, etc. With the advancement of technology and increased capacity of mobile data, smart phones are able to provide different functions and features to their users, such as social networking, information gathering, entertainment applications and many more.

1.2. Studies on Mobile Phone Banking

One of the innovations launched by the banking services is mobile banking. "It includes enabling customers to make payments and request account balances, check balance and transactions in their accounts, pay invoices and transfer funds between accounts, monitor the use of credit cards, make, buy and sell orders for the stock exchange" (Tommi Laukkanen and Mika Pasanen). "The terms m-banking, m-payments, m-transfer and m-finance are collectively known as a set of applications that let people to use their mobile applications to operate their bank accounts, store value in an account linked to their handsets, transfer funds or even access credit or insurance products. Financial institutions, which had complications in providing profitable services through traditional channels to poor clients, see m-banking/m-payments as a form of "branches banking", which reduces the cost of offering services to low-income customers." (F.I. Anyasi and P.A. Otubu). Suoranta (2003) found that the average mobile banking user are married, 25 to 34 years old, having intermediate education and average income in clerical work. She found that age and education have a major influence on the use of the mobile phone in banking services. However, despite of so many attempts, made by Indian banks to expand the scope and usage of mobile channels, there are very few consumers who are actively using the facility. Some of the reasons contributing to this include the lack of adoption of mobile as a channel for banking, limitations of services on mobile banking, non-replication of mobile banking services in varied languages in India, etc. (Shamsher Singh)

2. Advantages of m-banking/ m-payments

2.1. To the Society and Economy

There can be indirect impacts of active use of m-banking/m-payments services, such as increased family savings rates, increased incomes, and flexibility to financial shocks. Other advantages as suggested by Donner, Jonathan and Tellez, Camilo. (2008).

- a) It could change the family dynamics concerning saving and sharing.
- b) The systems might reduce loss of money due to theft and could provide more security to the users in their communities.
- c) At a broader level, it could bring more money into the formal banking system, upgrade taxation system, and encourage reinvestment of money that is currently circulating in an ineffective manner.

2.3. To the Customers

Some of the advantages as suggested by Sunil Kumar Mishra and Durga Prasad Sahoo are as follows: -

- a) It is a 24*7 service where by a customer can save valuable time and travelling cost and avoid waiting in line at the bank counter for queries.
- b) Customers can pay their bills on time and save themselves from penalties since alerts are received on mobile from the bank.
- c) Cheque book request can be made sitting in their workplace.

2.4. Disadvantages

- a) There is a risk that mobile banking users may receive fake SMS and scams. Some banks don't offer the same level of security for cell phone banking that they do for online or in person transactions. (Renju Chandran)

2.5. Studies on Social Networking through Mobile Phones

Social networking is a web-based application which provides a platform for mobile phone users for social networking or social relation among individuals who share their interests or activities, likes and status, to interact via the internet or e-mail (T.D. Baruha). These social networks services include Facebook, Skype, Twitter, MySpace, LinkedIn, WhatsApp, 2go and so on. These services have now been migrated from the computer to the mobile phone where by network information and communication can be done into the public space (Humphreys). One study on the use of social networking revealed that Facebook remains the most widely used social media site among teens ages 13 to 17 with 71% of all teens using the site, even as half of teens i.e. 52% use Instagram and four-in-ten i.e. 41% use Snapchat (Amanda Lenhart) A survey by Pew Research Centre states that, Girls dominate the social media for sharing more than their male counterparts do. Boys are more likely to play video games.

2.6. Impact of Social Networking Sites

2.6.1. Advantages

- a) One of the benefits to the users engaged in social media is that it has increased social confidence, more social support and heightened media literacy and social media diversifies social skills, which help them cross through a technologically savvy society. (Rajeev M.M. and Jobilal)

2.6.2. Disadvantages

- a) A research study states that majority of students believe that mobile social networks impacted negatively on their school performance and MSNs divert their attention and concentration from learning activities there by creating room for failures. (Abba Almu and Buhari)
- b) “Teenage years are a period to grow and prosper, of reaching out for the possibilities, of meeting new people, of exploring the world. However, if the cell phone is being used to maintain existing relationships rather than to connect to new people, the world of the teenagers and their future possibilities may be declining instead of expanding”. (Mikiyasu Hakoama & Shotaro Hakoyama)

2.7. Studies on Entertainment Applications in Mobile Phone

Mobile apps are internet applications designed to run on smart phones and other mobile devices (Daniel Walter). Most young adults would not be able to live without mobile phones, though most of them use mobile phones for entertainment rather than business and education- purpose. Consequently, young adults are very much in to functions of the mobile phone such as listening to music and messaging with WhatsApp, Facebook and the like. (Albert Akanlisikum Akanferi, Lawrence Kwami Aziiale, Isaac Asampana). Mobile phones have become a source of unlimited entertainment. The things which we never thought of in a mobile phone are now possible. Smart phones have come into existence which not only help you making calls but also help you to stay entertained by providing apps which may allow you to play games, listen to music and do lots of other stuff. (www.myessaypoint.com). Mohd Azam Osman, Abdullah Zawawi Talib, Zainal Abidin Sanusi, Tan Shiang-Yen, Abdullah Sani Alwi conducted a survey on the trends of smartphone and its usage in Malaysia, with a sample size of 1814 respondents, of which majority of respondents use smartphone for entertainment. According to the data analysis, entertainment is one of the major type of smartphone usage. It refers to the usage of music player, watching videos and movies, and games. Hence, the finding suggests that other than as a means of communication, smartphone as perceived by consumers, is a source of entertainment or media. As suggested by (Md. Rashedul Islam, Md. Rofiqul Islam, Tahidul Arafhin Mazumder) Application for entertainment in mobile phone includes

- Communication such as Internet Browsing, email IM client, Games: Puzzle
- Multimedia Apps: Graphics /Image viewer, Presentations viewers, Video Players, Audio players
- Productivity Apps: Calendars, Calculators, Diary, Notepad /Memo/Word Processors, Spreadsheets
- Travel Apps: City guide, Currency converter, Translators, GPS/Maps, Itineraries / Schedules, Weather
- Utilities: Profile manager, Idle screen/Screen saver, Address book, Task manager, Call manager, File manager

2.8. Impact of Entertainment Applications

2.8.1. Advantages

- a) Playing games is a cognitive process as it requires the use of logic, memory, problem solving and critical thinking skills, visualization and discovery. Play enhances early development by at least 33%” as suggested by Matthias Rauterberg.
- b) Apart from cognitive benefits, Video games seem to be related with enhanced creativity. Evidence have emerged that playing any kind of video game, regardless of whether or not it is violent, enhances children’s creative capacities. (Isabela Granic, Adam Lobel, and Rutger C, M. E. Engels)

2.8.2. Disadvantages

- a) A study by Lusekelo Kibona and Juma Mdimu Rugina concludes that most of the female students are busy taking selfies and pictures through mobile phone so that they can upload them on their social network accounts, hence, making them vulnerable to time management as they use most of the time taking pictures and sharing.

2.9. Studies on Mobile Cloud Computing

Cloud computing through mobile devices is the latest technological up gradation introduced by the Hi- Tech industry and very well opted by the mobile phone sector. It is a new paradigm for hosting and delivering services over internet (Qi Zhang, Lu Cheng, Raouf Boutaba). “Cloud” computing is built on vast research in virtualization, computing, and, more recently, networking, web and software services. It is a service-oriented formation, reduced IT overhead for the end-user, great flexibility, and reduced cost of ownership, on demand services and many other things (Mladen A. Vouk). Niroshinie Fernando, Seng W. Loke, Wenny Rahayu, defined mobile cloud computing as a means to run an application such as Google’s Gmail, Facebook’s location awareness service, Twitter for mobile, mobile weather etc., for Mobile on a remote resource server, while the mobile device acts like a thin connecting device over to the remote server through 3G.

2.9.1. Advantages

- a) As the mobile data is stored in cloud the users can retrieve information from multiple repositories anytime and every time and it is user centric as well as task centric (Michael Miller).
- b) This technology reduces the cost effectiveness for the implementation of the Hardware, software and License for all.

2.9.2. Disadvantages

- a) Security is one of the objections to cloud computing, Cloud users face insecurity both from outside and inside the cloud (Michael Armbrust, Armando Fox, Rean Griffith, Anthony D. Joseph, Randy Katz, Andy Konwinski, Gunho Lee, David Patterson, Ariel Rabkin, Ion Stoica, and Matei Zaharia)
- b) There are uncertainties in cloud computing. Uncertainty leads to fear which may lead to inertia (Barrie Sosinsky)

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