



Mobile Computing: A Dynamic Network Technology in today's Business world: Challenges for Marketing Managers

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Abstract— *Mobile computing, a dynamic networked computing technology is becoming increasingly important due to the rise in the number of portable computers and the desire to have continuous network connectivity to the Internet irrespective of the physical location of the node. Mobile computing is the discipline for creating an information management platform, which is free from spatial and temporal constraints. The freedom from these constraints allows its users to access and process desired information from anywhere in the space. The state of the user, static or mobile, does not affect the information management capability of the mobile platform. The main objectives of the paper are to study the meaning and concept of Mobile computing; to make the readers aware about the importance and advantages of Mobile Computing; to make the public aware about the challenges being faced by the Marketing Managers/Officers/Executives while on their job in the field; to get the suggestions to resolve the challenges of mobile computing being faced by Marketing Managers/Officers/Executives while on their job in the field; and to study the future of mobile computing. The study is purely based on primary data and secondary data. Secondary data has been collected using various sources including newspapers; journals; professional magazines; research papers; and even various websites. Primary data has also been used to give the paper an authentic look. Primary data has been collected with the help of survey and personal and telephonic interactions with Marketing Managers/Officers and other field force. IT Managers/Officers/Professionals were also contacted to get the suggestions so as to remove the challenges related to mobile computing being faced by Marketing people in the field.*

Keywords – Business, Information, Marketing Managers. Mobile Computing, Network, Technology

I. INTRODUCTION

□□ Computers are one of the major inventions of the world. The invention of computer has changed the world. During these days every field of life seems to be computerized. Later in the 21st century a new technology was introduced in the world known as mobile computing. Now-a-days computers are modified into mobile computers known as laptops. A small introduction of mobile computing is that you can do your work in motion. In simple words it means that you can do your work while sitting anywhere in the world. You do not have to sit at one place to do your work. The name MOBILE is derived from the first letter in each of the six categories that make up the framework. The six categories are: M the need for mobility; O the need to improve operations; B the need to break business barriers; I the need to improve information quality; L the need to decrease transaction lag; E the need to improve efficiency. Information at your fingertips anywhere anytime has been the driving vision of mobile computing for the past two decades. Through relentless pursuit of this vision, spurring innovations in wireless technology, energy-efficient portable hardware and adaptive software, we have now largely attained this goal. Ubiquitous email and Web access is a reality that is experienced by millions of users worldwide through their BlackBerries, iPhones, Windows Mobile, and other portable devices. Continuing on this road, mobile Web-based services and location-aware advertising opportunities have begun to appear, triggering large commercial investments. Mobile computing has arrived as a lucrative business proposition.

II. WHAT IS MOBILE COMPUTING

Mobile computing is the discipline for creating an information management platform, which is free from spatial and temporal constraints. The freedom from these constraints allows its users to access and process desired information from anywhere in the space. The state of the user, static or mobile, does not affect the information management capability of the mobile platform. A user can continue to access and manipulate desired data while travelling on plane, in car, on ship, etc. Thus, the discipline creates an illusion that the desired data and sufficient processing power are available on the spot, where as in reality they may be located far away.

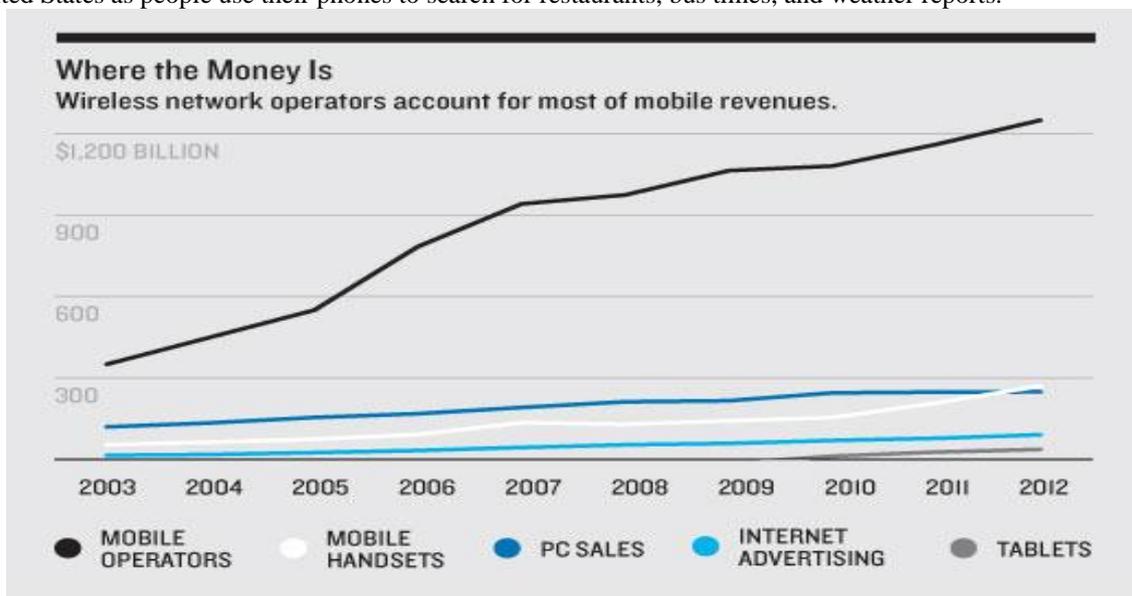
The term "Mobile computing" is used to describe the use of computing devices, which usually interact in some fashion with a central information system--while away from the normal, fixed workplace. Mobile computing technology enables the mobile worker to create, access, process, store and communicate information without being constrained to a single location. By extending the reach of an organization's fixed information system, mobile computing enables interaction with organizational personnel that were previously disconnected. In mobile computing platform information between processing units flows through wireless channels. The processing units (client in client/server paradigm) are free

from temporal and spatial constraints. That is, a processing unit (client) is free to move about in the space while being connected to the server. This temporal and spatial freedom provides a powerful facility allowing users to reach the data site (site where the desired data is stored) and the processing site (the geographical location where a processing must be performed) from anywhere. This capability allows organizations to set their offices at any location. The discipline of mobile computing has its origin in Personal Communications Services (PCS). PCS refers to a wide variety of wireless access and personal mobility services provided through a small terminal (e.g., cell phone), with the goal of enabling communications at any time, at any place.

III. IMPORTANCE OF MOBILE COMPUTING IN PRESENT BUSINESS SCENARIO

Mobile computing is becoming increasingly important due to the rise in the number of portable computers and the desire to have continuous network connectivity to the Internet irrespective of the physical location of the node. Mobile computing has fast become an important new paradigm in today's world of networked computing systems. Ranging from wireless laptops to cellular phones and WiFi/Bluetooth-enabled PDA's to wireless sensor networks; mobile computing has become ubiquitous in its impact on our daily lives. Mobile computers are spreading faster than any other consumer technology in history. In the United States, smartphones have even begun reaching the group of relative technophobes that consumer researchers call the "late majority." Wireless carriers make money at the greatest scale. Globally, 900 of them take in \$1.3 trillion in revenue each year, about four times the combined revenue of Google, Apple, Microsoft, and Intel. Yet individual device makers, notably Apple, capture more profit. Thus company's markets aren't restricted to one network. Its products, by bringing personal computing to phones, have sharply increased their capabilities and value.

In India, mobile Internet traffic exceeds desktop traffic. Even ordinary search—Google's great cash cow—is declining in the United States as people use their phones to search for restaurants, bus times, and weather reports.



Source: Benedict Evans, Enders Analysis

Worldwide demand for mobile computing is expected to increase dramatically over the next five years. The mobile computing market is expected to increase at a compound annual rate of 36.6 % and reach \$85.3 billion in sales worldwide. The mobile computing market includes notebook computers, pen or touch screen based personal digital assistants (PDAs), palmtops, electronic organizers, portable peripherals and remote access software. The proliferation of portable computers and the development of high and low bandwidth cordless networking technology will soon provide a foundation for mobile computing.

IV. OBJECTIVES OF THE STUDY

1. To study the meaning and concept of Mobile computing.
2. To make the readers aware about the importance and advantages of Mobile Computing.
3. To make the public aware about the challenges being faced by the Marketing Managers/Officers/Executives while on their job in the field.
4. To get the suggestions to resolve the challenges of mobile computing being faced by Marketing Managers/Officers/Executives while on their job in the field.
5. To study the future of mobile computing.

V. RESEARCH METHODOLOGY

Keeping in mind the key objectives of the study, an effort has been made to complete the research purely based on primary data and secondary data. Secondary data has been collected using various sources including newspapers; journals; professional magazines; research papers; and even various websites. Primary data has also been used to give

the paper an authentic look. Primary data has been collected with the help of survey and personal and telephonic interactions with Marketing Managers/Officers and other field force. Some Area Sales Managers/Regional Sales Managers of pharmaceutical companies (Alkem, Lupin, Micro, Elder, British Biological, USVitamins) were interviewed personally by me. IT Managers/Officers/Professionals were also contacted to get the suggestions so as to remove the challenges related to mobile computing being faced by Marketing people in the field. For the purpose of survey semi structured questionnaire was used. There had been some problem in getting information from respondents as they had to be interviewed in a very short time and a few of them were quite busy to give proper thought to the questions. The indifferent or unsupportive attitude of some respondents while responding to the questions also affected the final findings and observations. Originality of this research paper lies in the real work done by conducting interviews and surveys in the real market.

VI. FINDINGS OF THE STUDY

In this research study we have studied the challenges faced by Marketing Managers/Officers/Executives in the area of mobile computing. Further we have also tried out to find – how to resolve those challenges. The main findings are as given below:

1. Most of the respondents responded that Mobile computing systems are limited in many important ways when compared to static systems (such as desktop PCs) but are not simply shortcomings of current technology.
2. 95% of the Marketing Managers responded that Mobile elements are resource poor relative to static elements.
3. 95% of the Marketing Persons responded that Mobile elements are more prone to loss, destruction, and theft than static elements.
4. More than 95% Marketing Managers commented that Mobile elements must be operated under a wider range of networking conditions.
5. 93% of the Marketing Managers/Officers/Executives responded that Engineers should pay close attention to portability, mobility, and communication issues when they design software for mobile computing devices because of the unique architecture of mobile devices. Data encryption schemes should also be included as a function of wireless networks to protect data.
6. 92% of the IT Managers/Officers suggested that Mobile computing systems will require the ability to access critical data regardless of location; they will also need to be robust when encountering network and remote site failures, which requires that clients be as autonomous as possible.
7. Most of the IT Managers/Officers responded that Engineers are also challenged by the low bandwidth and higher error rates of wireless networks.
8. Mostly the IT professionals suggested that Wireless applications require a communications infrastructure that needs to be built or accessed. Part of establishing the infrastructure is determining what is available and what needs to be built. Therefore, the need is to tread cautiously in implementing mobile computing systems.
9. IT Managers suggested that Engineers should focus on units that are light weight, rugged, and able to operate under a wide variety of environmental conditions
10. They further added that Software design for mobile devices should also include dynamic addressing to match users' changing network access points.

VII. FUTURE PROSPECTS OF MOBILE COMPUTING

With the rapid technological advancements in Artificial Intelligence, Integrated Circuitry and increases in Computer Processor speeds, the future of mobile computing looks increasingly exciting. With the emphasis increasingly on compact, small mobile computers, it may also be possible to have all the practicality of a mobile computer in the size of a hand held organizer or even smaller. Use of Artificial Intelligence may allow mobile units to be the ultimate in personal secretaries, which can receive emails and paging messages, understand what they are about, and change the individuals personal schedule according to the message. This can then be checked by the individual to plan his/her day. The working lifestyle will change, with the majority of people working from home, rather than commuting. This may be beneficial to the environment as less transportation will be utilized. This mobility aspect may be carried further in that, even in social spheres, people will interact via mobile stations, eliminating the need to venture outside of the house. This scary concept of a world full of inanimate zombies sitting, locked to their mobile stations, accessing every sphere of their lives via the computer screen becomes ever more real as technology, especially in the field of mobile data communications, rapidly improves and, as shown below, trends are very much towards ubiquitous or mobile computing. Indeed, technologies such as Interactive television and Video Image Compression already imply a certain degree of mobility in the home, i.e. home shopping etc. Using the mobile data communication technologies discussed, this mobility may be pushed to extreme. The future of Mobile Computing is very promising indeed, although technology may go too far, causing detriment to society.

VIII. CONCLUSIONS

Mobile computing offers significant benefits for organizations that choose to integrate the technology into their fixed organizational information system. Mobile computing is a versatile and potentially strategic technology that improves information quality and accessibility, increases operational efficiency of a particular business and also enhances management effectiveness. Major challenges include problem of network conditions; mobile elements are more prone to loss, destruction, and theft than static elements.

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