Wifi Technology: Future Market Challenges And Opportunities

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Abstract- *Computer networks have played a major role in expanding the operational boundaries in organizations today. Until now traditional methods of networking, which involves computers, wired directly to a hub or switch are the norm. Recent advances in networking technology have made it possible for devices to communicate using various light and wave emitting technologies. WiFi is a perfect example of one of these emerging technologies, which has enabled computers to communicate with each other without the use of traditional cables. The implementation of WiFi with respect to future market opportunities in the Kingdom of Bahrain will be discussed in this study. Finally, an analysis of various demographics will be outlined with particular concentration on the acceptance of WiFi by society in the Kingdom of Bahrain. Some concerns along with recommendations, which need to be taken into account when using WiFi are also outlined.*

I. INTRODUCTION

The Internet plays a major role in today's communications, especially when its efficient and cost effective manner is considered. Unlike, other communication tools, Internet has been decentralized in such a way that any user can share, retrieve, sell or exchange goods and services with any other Internet user within seconds.

Earlier in the 1970s to the late 1980s, the Internet was owned and funded by the United States government and thus was mainly used for government communication and research activities, which was highly restricted to academic and military purposes. It was administrated by the National Science Foundation (NSF). By 1995, however the NSF stopped the administration of the Internet. The Internet was publicized and commercial use was permitted.

Bahrain Telecommunication Company (BATELCO) was one of the pioneers to adopt the Internet technology. This fact has strengthened BATELCO's position as a leading communication provider in the region.

Today the Internet has touched our life in a significant manner. It became part of our daily routine due to the huge benefits we gain. Most companies went online and used the Internet to apply e-commerce, which includes advertising, selling, buying, distributing products and providing customer services. In addition, companies use the Internet in business-to-business and business to consumer transactions. Individuals also use the Internet for communication, entertainment, sharing information, buying and selling goods and services.

Over the last couple of years, Wireless Fidelity or "WiFi" has quickly grown to become the dominant wireless LAN standard. Because it operates in unlicensed frequency bands, any one can set up a WiFi network and cover an area of typically 100-500 feet with high speed wireless access to a LAN and hence to the Internet. Unlike other wireless technologies like GSM or CDMA, WiFi has also become a universal standard. As a result, WiFi components are now on a rapid cost reduction curve as volumes increase. And it is widely distributed and used in many different parts of the world[4].

WiFi is the term used to describe a class of certified wireless networking products conforming to an industry standard designated by the Institute of Electrical and Electronics Engineers (IEEE) as "802.11b", it is a new technology that is preferred for wireless local area networking in both business and home environments.

Wireless local area networks enable network users with laptops or devices equipped with wireless network interface cards to remain constantly interconnected while roaming within the range of a base station. Fixed access points can also be interconnected with wide area networks, such as the Internet or intra-corporate local area networks. WiFi is being deployed in public places to create what is called hotspots, where WiFi capable users can obtain broadband Internet access[5].

WiFi could be a major future market opportunity. But, in order to take advantage of it, several key challenges

both business related and technical must be overcome. These challenges and solutions approaches are discussed in this study, with respect to BATELCO the dominant telecommunications company in Bahrain.

What is WiFi?: WiFi is the popular name for the wireless Ethernet 802.11b standard for WLANs and it refers to the technology surrounding the radio transmission of the Internet protocol data from an Internet connection wirelessly to a host computer. Most often the Internet connection is a higher speed one such as satellite, DSL or cable rather than slower dial-up connections. It is essentially a wireless connection between your computer and the Internet connection (E.g. DSL router or cable modem) in your house.

'Wireless Fidelity WiFi refers to an over-the-air connection with a wireless client and a base between two wireless clients. WiFi, is freedom: it allows you to connect without wires to the Internet from your couch at home, a bed in a hotel room or a conference room at work. WiFi is a wireless technology like a cell phone. WiFi enables computers to send and receive data indoors and outdoor; anywhere within the range of a base station. The best thing of all, it is fast. In fact, it's several times faster than the fastest cable modem connection.

The drivers and nature of today's WiFi:

Many drivers had evolved over the years that made online banking a must. This is the time for planning a trial of local WiFi service, at a major shopping mall and a number of hotel lobbies, as an alternative to rolling out a 3G network. The plan is based on urban layout and social behavior. In short, the people like to 'cluster' in public places such as shopping malls, coffee houses and hotels - prime locations for WiFi ennoblement. As in Bahrain, BATELCO's Head of Corporate Affairs, explained:

"Bahrainis do not need the kind of on-the-move service that 3G is designed to offer. The Kingdom has minimal public transport because it has a 'car culture' - so no

demand exists there for 3G. I don't see a need for 3G in the home because people will want to use larger- screen PCs to access the 'net. It's too hot here to sit on the beach and surf the 'net - so that leaves the shopping malls, coffee shops and hotel lobbies, which we can enable with faster WiFi technology. In addition, Bahrain has a high proportion of youngsters' technology users who will be eager to use this kind of service and Bahrain, is a real winner here".

You will find as of now and the upcoming future, that more and more large businesses are using WiFi certified products. In stores throughout the mall, WiFi LAN technology is expanding its use with WiFi certified computers, employees can use for easy access in communicating with other employees online.

WiFi-industry growth: The President and CEO of CTIA has argued that wireless data is advancing at a particularly swift clip, as more companies introduce more features for consumers and business users alike.

From ring tones to picture phones, from text messaging to hi-speed wireless Web browsing, wireless data is making waves in both the consumer and business marketplaces. Total Service Revenues Rise Nearly 13%- U.S. Carriers earned service revenues of $41.4 Billion in the first six months of 2003, up from $36.7 billion in the first six months of 2002.

The future of WiFi: Another interesting aspect of WiFi maybe the question of what is the future of WiFi? Levkowetz has argued that in today's vast growing world of telecommunications many new products; software and hardware tools are being developed. Computer engineers are working around the clock just to come up with new ideas that may be accomplished. Until now, with wireless networking the simplicity of placing a computerized device within an access point will allow people to connect to the cyber world. Consequently, the development process is continuing until a certain standard is reached. Even though there is a wide acceptance regarding WiFi, people will still be concerned will things like security andcost.

Whenever, a new technology is being sold in the market several buyers thrive to purchase it regardless of its price. But, the problem arises when a certain defect might be seen within the product. That is why people are very demanding they do not want a flawless product to operate with and in situations like this, manufacturers will strive to produce a product that meets their needs. On the other hand, Lyman[10] has emphasized on the concern of security and complexity of WiFi. In response to concerns over complexity and security,

wireless industry experts promised new standards that should begin appearing in products throughout next year.

Advantages of WIFI: Another advantage of WiFi network is that the availability of WiFi products in the market has increased oven the last three years. Many companies strive to ensure that users get the most updated software and hardware equipment in order to allow them to access a WiFi network. Due to the wide availability of products in the market the issue of pricing plays a significant role here. Apparently market forces are a major determinant of the prices available on products today. Also, taking into account mobility is an advantageous aspect of a WiFi network. People will be able to move about the given hotspot without loosing the network connection ofWiFi.

Disadvantages of WIFI: Disadvantage or constraint is placement. When using a WiFi network the frequency specification used is 802.11b, which is the same frequency that many cellular phones, blue tooth, microwave ovens operate on. So it is in the hands of the WiFi users to choose an access point that is not close to the one of the devices mentioned, because an interruption will occur and this may cause a loss of

II. HYPOTHESIS AND METHODOLGY

The research hypothesis: A hypothesis can be defined as a logical supposition, a reasonable guess or an educated conjecture. Furthermore, it can provide a tentative explanation for a phenomenon under investigation and it could involve a prediction that may or may not be borne out in the data. It should be noticed that hypothesis never proved or disproved, either supported or not supported by the data and over time as particular hypothesis are supported by a growing body of data, they evolve into theories.

Hypothesis: Low connection speed will no longer be an issue with WiFi as there is a more dedicated speed withWiFi.

The research methodology: Both face-to-face interviews and questionnaire were used. Face-to-face interviews encourage potential participant and gain their co-operation thus yielding the highest response rate in a survey research. They also allow the respondent to ask about any ambiguous questions and in the same time allow the researcher to seek follow up information. Interviews were conducted with selected representatives.

The sources of data: In general, the sources of evidence used in this research are documents and direct questionnaire. The questionnaire audiences are residential end

users, business men and women, hotel and coffee shop management as well as some BATELCO staff. The data has been collected from documents, search engines, books and BATELCO's official website

III. RESULTS AND DISCUSSION

Analysis of customer perception: The majority of our samples were males representing 58.1%.

Table 1: Respondents Learned about WiFi

Where Did you Hear about WIFI	Sample
Internet	48.4%
Friends	7%
Newspaper & Magazines	7%
No Answer	18.6%
Other Resources	18.6%

Table 2: Usage of WiFi

Used WIFI	Sample
Yes	48.8%
No	32.6%
No Answer	18.6%

Table 3: Frequently use of WiFi

Frequently use of WIFI	Sample
Daily	11.6%
Weekly	7%
Monthly	7%
Occasionally	23.3%
Others	23.3%
Did not answer	48.8%

Table 4: Reasons people use WiFi

Reasons People use WIFI	Sample
Low Cost	16.4%
Stable Connectivity	7%
Higher Speed	2.3%
More Convenient	20.9%
Time Consuming	2.3%
Others	2.3%
Did Not Answer	48.8%

Table 5: Disadvantages of WiFi

	Sample
Lack of Awareness	46.5%
Security Issues	20.9%
Resistance to Change	11.6%
Service is not provided yet by ISP	8.15%
Service is not convenient yet all Place	8.15%
Others	4.7%

IV. CONCULSION

The minimal cost of implementing Wireless LAN will ensure that far more users will have wireless enabled laptops than previously envisaged.

Intel has already predicted that by the end of 2003 most of all new laptops will employ the new Banias chip and all new laptops will include wireless LAN. These figures may be high, but still anticipate a rapid growth of WiFi over the coming few months.

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