An Overview on Mobile Services Success/Failure and Similarities/Differences of Services **Designed by Mobile Network Operators or Interactively by Future Users**

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Abstract

Mobility is an area in which technology has had a fundamental impact on the everyday lives of people. Mobile cellular has been the most rapidly adopted technology in history. Mobile phones are the most popular and widespread personal technology on the planet, at the moment there are more than 4.6 billion mobile subscriptions globally.

With innovative technologies and high-speed data services, telecommunication industry and mobile communications continue to evolve. In many countries, mobile phones have overtaken fixed lines. In this dynamic context, mobile services are designed, developed and launched more and more everyday.

The perspective taken by this paper is the one which presents a number of mobile services designed and launched by Mobile Network Operators or third party software developers and have been successful. It, at the same time, discusses a number of mobile services which have been designed and launched interactively by future users or partly with them. Then, taxonomy will be built in order to try to find out what explains the success in both cases, what the similarities and what the differences are. Finally, number of hypotheses will be formulated to show the reasoning that builds the success or failure. It is noteworthy that, the services presented in this paper are in no particular priority order. However, the first 10 mobile services are being discussed in this report are ones which have been designed and launched by MNOs and third party software developers and the rest are designed and launched to the market by future users or interactively with them.

1. Short Messaging Service (SMS)

Short Message Service (SMS) is the most widely used communication service component of the GSM mobile communication system, it uses standardized communications protocols that allow the exchange of short text messages between mobile phone devices. Without a doubt SMS is proven to be an emerging mobile value-added service in mobile communication. SMS text messaging is the most widely used and most successful data application in the world and has been attracted attentions' of billions of mobile users.

SMS as being used on modern handsets was originally defined as part of the Global System for Mobile Communications (GSM) series of standards in 1985 as a means of sending messages of up to 160 characters, to and from GSM mobile handsets. Since then, other mobile technologies such as ANSI CDMA[1] networks as well as satellite and landline networks has expanded to support SMS.

According to "IntoMobile which is delivering breaking news, information, and analysis on the latest mobile phones[2]" the American sent a record number of SMS text messages in 2008, American sent over 1 trillion text messages in 2008. This can be

[1] Code division multiple access (CDMA) is a channel access method utilized by various radio communication technologies. http://en.wikipedia.org/wiki/SMS

[2] http://www.intomobile.com/2009/04/06/americans-sent-1-trillion-sms-text-messages-in-2008/

compared to 363 Billion text messages sent in the US during 2007; it is obviously clear that the mobile users in the US have seriously ramped up per-person use of text messages. Therefore, Mobile communication carriers are no doubt enjoying the messaging boom, as 2008 racked up more than $32 billion in data-services revenue. That makes for a 37% increase in year-on-year revenue.

In 2008 in UK 6.5 Billion text messages are exchanged across UK every month. It means more or less 60 million messages a day more than the figures the year before (2007)[3].

In order to understand better what makes SMS messaging so successful, the followings give just few examples related to the success of SMS.

- SMS Messages can be sent and read at anytime and anywhere. Nowadays, almost every person has a mobile phone and carries it most of the time. A mobile phone user can send and read SMS messages at anytime/anywhere regardless of the current person location.

- One of the advantages of SMS Messages is that, it can be sent to a mobile phone even if it is switched off. Unlike a phone call, one can send an SMS message to another mobile phone even when s/he has not switched on the mobile phone or when s/he is in a place where the network coverage (wireless signal) is temporarily unavailable. The SMS system of the mobile network operator will store the SMS message and later send to the receiver when his/her mobile phone is switched on.

- SMS Messages are supported by 100% GSM mobile phones nowadays and they can be easily exchanged between different wireless carriers or mobile communication networks worldwide.

- SMS is a suitable technology for Wireless Applications to build on. For example, SMS messaging is supported by 100% GSM mobile phones. Building wireless applications on top of the SMS technology can maximize the potential user base.
  SMS messages are capable of carrying binary data besides text. SMS messages can be used to exchange ringtones, pictures, operator logos, wallpapers, animations[4].

2. Mobile Music / Ringtones

Mobile Music Services are the music which can be either downloaded or streamed to mobile phones and played by mobile phones at anytime and anywhere. In general mobile phones play music as ringtones, but music phones generally allow users to stream music or download music files over the Internet via a WiFi or 3G cell phone connection. Music phones can also import/export audio files from/to PCs.

[3] http://gorumors.com/crunchies/how-many-sms-sent-per-month-in-uk/
[4] http://www.developershome.com

According to the Record Industry Association of Japan[5] has released its annual roundup of sales figures, statistics and trends for the year of 2009. The result reveals that CD sales continued to decrease for the ninth straight year. However, total recorded music sales are up for the third year running, this mainly is due to strong growth from the digital sector or more specifically from the mobile sector, which still accounts for the bulk of digital music sales in Japan with full-track downloads rising 91% over the previous year.

According to the latest Music Media Watch[6], total music sales for 2007 in Japan accounted to JPY 466 billion (US $4.66 billion). While CD/DVD sales declined 4% from the previous year, digital downloads increased up 41% to JPY 75.5 billion (US $755 million), comprising 16% of all music sold in Japan. Mobile downloads accounted for JPY 68 billion (US $680 million), more than 90% of the total figure for digital sales.

It is estimated that by the end of 2010 mobile users globally, the amount they spend on music received on mobile handsets will reach US$32.2 billion, according to new global forecasts from Gartner Inc (Moore 2007). This is despite competition from various digital music players and a host of challenges faced by telecommunications carriers in delivering these services.

Mobile music, which includes services from basic ringtones to more sophisticated full track downloads and streaming, has existed since 1998 when the first ringtones were commercialized. It is the second most popular mobile data service, although considerably behind short message service (SMS) in terms of use and generating revenue.

There are two distinct factors in mobile music, these two factors are then can be considered as driving factors behind the usage of mobile music. The first one is the personalization and the second one is the entertainment.

- The use of ringtones and ringback tones is part of the trend to personalize mobile phones as a form of self-expression. However, the mobile phone can now be used to play music, in some situations replacing portable music players like the popular iPod for entertainment.

- The mobile phone has become the device that people carry everywhere, in all circumstances and over-the-air downloads mean that people no longer have to be at a desk to plug in the device. Billing via a mobile phone is secure and easy, and for operators, it is easy to target customers with personalized content because one mobile phone SIM card is used by one person most of the time.

2.1 Ringtones

Another emerging SMS-based application is downloading ringtones. Ringtones are the tunes that the phone plays when someone calls it. With the same phone often sold with the same default tune, it is important for phone users to be able to change their ringtone to distinguish it from others. Mobile phones sold in the market generally come with a range of different ringtones built into the phone's memory that the users can choose from. However, it has become popular to download new ringtones from an

[5] http://www.riaj.or.jp
[6] http://wirelesswatch.jp

Internet site to the phone. These ringtones come from various sources and tend to be popular television or film theme tunes. One of the main reasons of the ringtones usage is by word of mouth, it is quite normal that often people hear someone else's phone ringing and then ask where they got that particular ringtone.

As mobile phone penetration increases and everyone has a mobile phone across the world, unique ringtones to help determine just whose phone is ringing will become increasingly popular (Istiyanto 2001).

Mobile Music Services are mostly used in China, the USA, Japan, India and South Korea in 2008. Other countries such as Germany, France, Italy and Brazil have ranked from 4th to 8th place in global market (Netsize 2008).

3. Multimedia Messaging Service (MMS)

Multimedia Messaging Service or MMS is a standard way to send messages that include multimedia content "such as photo" to and from mobile phones. MMS extends the core SMS (Short Message Service) capability which only allowed exchange of text messages up to 160 characters in length. The most popular use is to send photographs from camera-equipped handsets, although it is also popular as a method of delivering news and entertainment content including videos, pictures, text pages and ringtones.

MMS messages are delivered in a completely different way than SMS. The first step is to encode the multimedia content for the sending device in a fashion similar to sending a Multipurpose Internet Mail Extensions (MIME) e-mail (MIME content formats are defined in the MMS Message Encapsulation specification). The message is then forwarded to the carrier's MMS store and forward server, known as the MMSC. If the receiver is on another carrier, the relay forwards the message to the recipient's carrier using the Internet.

MMS promises a dramatic increase in messaging capabilities that will enrich user experience and create a major new source of revenue for network operators as well as content and service providers (Novak and Svensson 2001).

In 2009 Czechs sent more MMS messages than classic Christmas greeting cards. Almost 42 percent of people living in the Czech Republic planned to send MMS messages at Christmas, while only 38 percent planned to send classic greeting cards[7].

According to Portio Research Ltd which is an independent UK-based research company, focussing on providing high quality market studies[8], by 2007 MMS has passed the 10 Billion dollar annual revenue level. Portio Research was the first major analyst to give a public domain count of MMS revenues worldwide to pass that level, hitting 14.5 Billion dollars for 2006 (Portio 2007). From zero to 14 Billion dollars in four years, that is the fastest growth from zero to 10 Billion dollars ever. This is even far faster than SMS text messaging (SMS). Portio Research also forecasted that in 2010, MMS will be 31 Billion dollars; this is bigger than the music recording industry global revenue and also bigger than Hollywood movie box office income.

[7] www.cellular-news.com
[8] http://www.portioresearch.com/about_us.html

The largest market for MMS is inevitably in Asia, in 2008 over 48% of Asian mobile phone subscribers were using MMS and the revenue of MMS in Asia have already passed SMS revenue (Ahonen 2010).

Multimedia Messaging Service (MMS) differentiates itself from other messaging services on the following aspects:

3.1 Multimedia Capabilities

MMS integrates multimedia features, allowing message contents to be appeared on the screen of the receiving device. MMS photos typically allow the composition of message in the form of slideshow presentation composed of sounds, picture, text and video clips.

3.2 Electronic Mail and Phone Number addressing Modes

MMS supports several addressing models, including the Internet addressing mode and the phone number addressing mode. Consequently, a message can be addressed to a recipient using an email address or a phone number.

3.3 Efficient Transport Mechanisms

MMS relies on an efficient message retrieval mechanism. When a message is awaiting retrieval, it is stored temporarily on the network side. The network provides a short notification to the recipient mobile device, indicating that a message awaits retrieval. The mobile device can then automatically fetch the message and notify the user of the reception of a new message.

3.4 Charging Framework

Charging is of key importance for operators since it allows the generations of users' bill according to the billing model in place. MMS offers an extensive charging framework, which can feed any operator billing system.

3.5 Future-Proof Open Standards and Worldwide Acceptance

Last but not the least; MMS is the result of a collaborative work led by major market players from the mobile industry. MMS technical specifications are developed in open standardization forums with the continuous objective of designing a future-proof messaging service meeting the requirements of worldwide markets (Bodic 2003).

New opportunities, like MMS marketing, provide interesting opportunities for marketing communications. Multimedia Messaging Service (MMS) is a standard for telephony messaging systems that allows sending messages that include multimedia objects; for example, images, audio, video, rich text and not just text as in SMS.

From a marketing perspective, SMS and MMS can carry personal, targeted, and customized communication (Nysveen et al., 2005; Rettie et al., 2005) unlimited by time

and space as well as facilitate two-way communication with the customer (Karjaluoto et al., 2004; Davis and Yung, 2005).

4. Mobile TV

Mobile TV includes contents delivered over cellular networks as well as over broadcast infrastructure. TV content is considered to be scheduled content. Any content that is requested on demand is considered to be video content. Currently Mobile TV service is popular in countries such as, Japan, South Korea and the USA. Italy, Germany, France and the UK are in the 4th to 7th place in global market according to revenue generated in 2008[9].

Mobile TV has been one of the most speculated mobile opportunities during the past years. It was predicted that Mobile TV will be the main driver for the market growth in mobile communication industry, but so far the market is still waiting for a commercial breakthrough. There are many different approaches towards mobile TV technology; however, none of these approaches has proven to be commercially successful so far.

5. Mobile Video

Unlike mobile TV, video content is content that is delivered to the user when requested, i.e. on-demand. Video content can either be downloaded and stored on the handset or streamed. Mobile video services are widely used in Japan, the USA, South Korea and China. According to "Netsize report in 2008", aforementioned countries have generated the highest revenue in 2008. Other countries such as; UK, Italy, Germany, France and Spain are in the 5th to 9th place in global market.

One of the reasons behind the slow adoption of mobile video in a global scale is the network bandwidth constraints. The challenge of obtaining the highest quality video delivery while using the lowest amount of network bandwidth is critical for mobile devices and has led to significant innovation. There has been a major improvement in video compression techniques which have been surpassed by the newer H.264 standard, which can improve compression 200% to 300%[10].

6. Mobile Internet/ Mobile Web

The Mobile Internet or Mobile Web refers to browser-based access to the Internet or web applications using a mobile device such as; a smartphone connected to a wireless network. In 2008 an important milestone in the transition from fixed to Mobile Web use was reached when mobile access to the Internet exceeded desktop computer-based access for the first time (International Telecommunications Union, 2009).

The fundamental problems in Mobile Web access can be viewed from two different perspective, interoperability and usability.

[9] www.netsize.com
[10] http://www.dialogic.com/products/docs/whitepapers/11296-mobile-video-wp.pdf

- Interoperability obstacles come from the platform fragmentation of mobile devices, mobile operating systems, and browsers.
- Usability obstacles come from the small physical size of the mobile phone, limited resolution screens and user input/operating limitations.

Mobile Internet is widely used across the world today and it is revolutionizing the entire framework of the communication technology. Mobile Internet can be considered basically as an extension of the Internet on mobile devices which allows the users to access the Internet while they are on a move. However, that is not the only function of the mobile Internet.

Mobile Internet is a lot more than that. It is an integration of telecommunication technologies and the Internet in such a way that it provides solutions to all types of the communication requirements. With the amount of progress which has been achieved in wireless technology, sophisticated software and hardware design, the way we communicate has changed in quite a major way.

In the last few years, the use of cell phones not only has increased in quite a dramatic way, but also the way that people prefer to communicate and stay in touch with the world has changed too. People today are always on the move, and for this reason, the best way to stay in touch with the others is through mobile Internet. Today, with high technology cell phones which support numerous Internet functions, people are using their favorite social networking sites like Facebook and Twitter while they are on the move.

In the next decade, the expansion of the Mobile Internet will likely be the fastest growing marketplace in the telecommunications industry[11].

Mobile Internet services are mostly used in the USA, Japan, China and Germany. Other countries such as UK, France, Italy and South Korea are in the 4th to 8th place in global market (Netsize 2008).

In line with the 3G implementation in China, China's mobile Internet sector has grown tremendously. But still faces serious challenges; for example, inferior mobile terminals and spotty wireless connection speeds will potentially hamper industry development. GSM, a 2G standard, is currently the most widely-used mobile network in China, but GSM Internet connection speeds are inferior to 3G connections. Although the 3G has grown rapidly, the total user base is still comparatively small[12].

There were 18.08 million 3G users in China, which accounted for 7.2 percent of total mobile Internet users in 2009 according to figures released by the Ministry of Industry and Information Technology (MIIT)[13].

China currently has more than 250 million mobile Internet users, compared to 2009 and according to Chinese Ministry of Industry and Information Technology figures, there were 155 million mobile Internet users in China.

[11] http://www.mobilenetx.com/
[12] www.wukong.com
[13] http://www.miit.gov.cn

7. Mobile Game

A Mobile Game is a video game played on a mobile phone, smartphone, PDA, handheld computer or portable media player. Mobile Game Services are distinctively different from the games played on handheld video game systems such as PlayStation Portable or Nintendo.

The first game that was pre-installed onto a mobile phone was Snake on selected Nokia models in 1997. Snake and its variants have since become the most-played video game on the planet, with over a billion people having played the game

Mobile Game Services are mostly used in the USA, Japan, China and South Korea in 2008. Other countries such as UK, Italy, Germany and Spain are in the 4th to 8th in global market (Netsize 2008).

8. Mobile Search Services

Mobile Search Services are used for information retrieval that is centered on the convergence of mobile platforms and mobile phones. Web search engine ability in a mobile form allows users to find mobile content on websites which are available to mobile devices on mobile networks.

Considering the amount of content available for mobile devices, it is clear that finding information by following hyperlinks only is not efficient. Specialized search engines for mobile content are also needed. Different mobile devices support different features of the HyperText Markup Language (HTML) or they use other markup languages; for example, most Wireless Application Protocol (WAP) phones use the Wireless Markup Language (WML).

Screen sizes of mobile devices vary a great deal and mobile phone's screen size are smaller than; for example, Pocket PC PDA. Therefore, the traditional search engines available on the Web today are not directly suited for mobile devices (Sonera MediaLab 2002).

Competition for the US mobile search market promises to be fierce, mainly due to the large US online ad market and strong pushes by portals. By 2011, mobile search will account for around $715 million, or almost 15% of a total mobile advertising market worth nearly $4.7 billion", according to a leading market research firm[14].

Depending on a researcher's particular bias toward telecom, Web or technology factors, the published forecasts for global mobile search vary from $1.5 billion by 2011 (from Informa Telecoms & Media) to over $11 billion by 2008 (Jaffray 2007).

Mobile Search is important for the usability of mobile content for the same reasons as Internet search engines became important to the usability of Internet content. There is a similar situation developing in the mobile content industry. Given early adopter usage of mobile services, there has been a vast increase in the depth of content developed for mobile phones. There are now few large organizations that do not offer a mobile service of some sort. Most of the operators run their own portals that showcase the best available content. However, given the limitations of a mobile phones screen size

[14] http://www.emarketer.com

and general navigability, most of available content that has been written for mobile users is effectively invisible to users.

Providing an effective mobile search service is a difficult task given the unique characteristics of the mobile space. Small-screen devices with limited input and interaction capabilities do not make ideal search devices. In addition, mobile content, by its concise nature, offers limited indexing opportunities, which makes it difficult to build high-quality mobile search engines and indexes (Church & Smyth 2008).

9. Mobile Location-Based Service

Location Based-Services (LBSs) are information services accessible with mobile devices through the mobile network and utilizing the ability to make use of the location of the mobile device (Virrantaus et al. 2001).

Mobile Location-Based Services can be used in several different contexts, such as health, work place and personal life. LBS services can be used, for example, to identify a location of a person or object, such as discovering the nearest restaurant or banking cash. LBS services include personalized weather services and even location-based games.

9.1 Location-Based Service Components

Five different infrastructure elements (components) are needed for a Location-Based Service (LBS) to operate as efficient as possible; these five components are inter-connected to each other.

- **Mobile Devices:** A mobile user needs a mobile device to request the needed information. The results can be given by speech, using pictures and text.

- **Communication Network:** The second component is the mobile network which transfers the user data and service request from the mobile terminal to the service provider and then the requested information back to the user.

- **Positioning Component:** For the processing of a service usually the user's position has to be determined. The user's position can be obtained either by using the mobile communication network or by using the Global Positioning System (GPS).

- **Service and Application Provider:** The service provider offers a number of different services to the user and is responsible for the service request processing. Such services offer the calculation of the position, finding a route, searching yellow pages with respect to position or searching specific information on objects of user.

- **Data and Content Provider:** Service providers will usually not store and maintain all the information which can be requested by users. Therefore geographic base data and location information data will be usually requested from

the maintaining authority (e.g. mapping agencies) or business and industry partners (e.g. yellow pages, traffic companies).

10. Mobile Banking

Mobile banking is a way for the mobile consumers to perform banking actions on his or her cell phone or with the help of other mobile telecommunication devices. Mobile banking can also be referred to as M-banking or SMS banking. The amount of banking one is able to perform on their mobile devices for example; a cell phone varies depending on the banking institution a customer is using.

Mobile banking services are offered in various forms depending on the banking institution, some banks may offer only the option of text alerts, which are messages sent to the customer's cell phone that alert them to activity on their bank account such as deposits, withdrawals, and ATM or credit card use.

This is the most basic type of mobile banking. Mobile banking may include services such as; conducting bank and stock market transactions, to administer accounts, performing balance checks or to access customized information[15].

Mobile banking services are most often performed via SMS, the Mobile Internet or it can also be performed via special programs, called clients, downloaded to the mobile device.

Mobile Marketing Association (MMA)[16] and its research partner, Lightspeed Research[17], have recently published result of a survey conducted in the UK, Germany and France. The result showed that 14% of UK adult consumers and 9% of French and German adult consumers are already using mobile banking services. MMA and its partner also predict that usage will rise between 3% -11% within the next year (in 2011).

MMA report has also addressed number of insights which will improve market understanding of consumer behavior towards accessing banking services via their mobile device.

- In all three countries SMS is currently the most popular medium for the delivery of mobile banking services and information, followed by the mobile Internet.

- In line with the growth of smart phones and application stores, between 1 and 3% of consumers have used downloadable applications which allow for a more complete mobile banking service.

- Consumers in all three markets were most interested in viewing account balances on their mobile phone (38% in the UK, 37% in France and 32% in Germany.

- Young consumers are the most likely to use mobile banking, with 24% of 18-34 year olds in the UK, 20% of the same age range in Germany and 9.5% in France already engaging.

[15] http://www.wisegeek.com/what-is-mobile-banking.htm
[16] www.mmaglobal.com
[17] www.lightspeedresearch.com

Finland is considered as one of the forerunner countries in mobile service adoption. The financial services industry in the early 1990s set up internal information technology services in Finland that would allow advanced payment, security and verification procedures. This has enabled Finland to be among the first countries in the world to offer online and mobile services.

Among the other Scandinavian countries, Finland has been one of the most successful countries in technological development and employment of new technologies. The Scandinavian countries as a whole are among the most advanced in adapting to and using different new mobile and technological appliances (Statistics Finland 2002).

Finnish consumers have been relatively eager to try out new mobile applications such as SMS chatting, SMS dating and television voting (Pelkonen and Dholokia 2002). This has carried over into the banking sector, consumers have been provided with increasingly versatile means of using banking services and have been willing to use them (Suoranta 2003).

In some countries around the world, such as the Philippines, Brazil and Africa, mobile banking is already flourishing. But in the United States, only about 10 percent of consumers or about 1.7 million people are currently use their cell phones to conduct bank transactions. Mobile Banking usage is expected to grow to 35 million by 2010 (Pisani 2007).

10.1 Creating Value from Mobile Banking

Mobile phones are now more pervasive than the Internet. Mobile phones can be used anywhere or anytime and indeed this a powerful driving force behind the growth of mobility. Mobile phone users want to do more than simply talk on their mobile phones[18]. Mobile phone users are eager to use their mobile phones for new services (mobile banking and payments) and the potential in mobile banking is unlimited. There are several factors which positively affect the prospects for mobile banking; some of these factors are;

- Mobile banking service can be used on most phones, almost all cell-phones sold today can handle text-based mobile banking and over 80% are Web-enabled.
- Text messaging (SMS) is the most popular and used mobile service in the world.
- Regardless of some of the barriers applied to mobile services, mobile banking has a huge potential to be used across the world.

11. TOOZLA - Mobile Content Delivery Platform

Toozla, the unique service which can deliver real time, location based content to travelers' mobile devices. There are many travelers who prefer to explore a city without groups or guides. There are many business travelers when get 1-2 free hours to visit a city

[18] http://www.clairmail.com

center in the evening. The universal access point for all information that tourists need is found in Toozla, Toozla is a mobile location-based service or a mobile application.

The location-based content is delivered to the user online when s/he is in close proximity to the sight. The information can be delivered either as a text or as an audio. Because of live nature of the service, users are able to post their voice notes for the locations directly from the point they are by using their mobile phones. These notes are available for all the other users whom using the same service. In most cases these guides are free for the users.

The Toozla service covers the whole Earth. Currently, it works in open air only (because of GPS technology), but it is expected to cover buildings as well through WiFi. Toozla services can be used by tourists, business travelers, social services (blind persons) and courier delivery.

Toozla is considered as a unique city and travel audio guide. Toozla is a mobile service that combines a global positioning system with audio tours and stories, user content, and local information, to provide to its consumers an all-in-one travel guide that the users can take with them everywhere. Toozla is a mobile service in which anyone can use it to learn more about the famous sights and great works of art when they are in an unfamiliar location or explore the city's hidden gems, independent restaurants, parks, unique shops, theatres and museum exhibits, for example.

Toozla enables mobile users to receive a wide variety of content, such as travel guides, weather forecasts, chat messages and much more[19]. To use the service, a user simply should download and launch Toozla's mobile application (built-in GPS mobile handset is required) and start using it. Toozla at the moment works with the variety of different mobile handsets such as, Noika, iPhone, SonyEricsson, LG, Motorola and Android.

12. FlightTrack

If you travel often for business, you want to spend as little time at the airport as possible. It's much better to wait out a flight delay from home or office than find out after you've arrived at the airport. FlightTrack[20] allows you to find flight schedules, track flights worldwide and get flight status alerts from the iPhone/Palm, BlackBerry or Android smartphone. It has really a wonderful mapping feature, which lets the service user to see the flight map and see weather conditions on the flight route, the maps are even available offline, too.

FlightTrack is an essential mobile service for frequent fliers; because it provides every aspect of the domestic and international flights with the real-time updates and zoomable maps feature. FlightTrack application can even update gates, delays and cancellations. FlightTrack covers more than 5000 airports and 1400 airlines around the world[21].

Flight Track Pro, costs $9.99 and for someone who files frequently is must have mobile application. Flight Track Pro provides the flights updates as accurate as possible

[19] http://www.toozla.com/toozla
[20] http://itunes.apple.com/app/id302325893?mt=8#
[21] http://www.mobiata.com/apps/flighttrack

and the added features like push notification would save plenty of the passengers' time. It is argued that Flight Track is best mobile application for flight tracking has ever designed and launched so far.

Get push alerts, real-time flight itinerary updates, automatic synching, Flight Tracker has also possibility to help the passenger to find alternate flights in case of flight cancellation. FlightTrack Pro looks amazing on the new iPhone 4 since it's optimized for the high-resolution and the following are some of the FlightTrack Pro features:

- Automatic synchronization of itineraries
- View zoomable, live flight tracking maps with weather radar
- Push alerts – Notifications pop up even when app isn't open
- Sync with your phone's calendar
- Fast switching between FlightTrack Pro and other apps
- Track incoming flight legs to predict if your departing flight will be on time
- Track all your flights on one screen (iPad version only)
- Find alternate flights at a tap
- Full international flight coverage with 1,400 airlines

13. TV4 Pop Idol Launches Idol Manager

TV4 in Sweden approached Golden Gekko about doing a mobile service with the Swedish version of Pop Idol. Golden Gekko suggested the development of a Tamagotchi-type game where viewers could compete with other fans in managing a virtual idol through the entire duration of the 12 week TV-show. Both TV4 and Fremantle liked the concept and final go ahead was given to the project with the launch planned in conjunction with the start of the TV-show.

Mobile Idol Manager is a mobile game service where the user selects their favorite among the 12 finalists in Idol and then manages the tamagotchi-type Idol during the duration of the show competing with all the other participants. To win the game a user have to make sure that her/his favorite Idol does enough activities including gets food, always looks great in terms of clothes and hairstyle, exercises regularly, practices singing and dancing, holds press conferences, attends social events and participates in the weekly semi-finals. The idol is measured through a combination of 3 parameters including health, stardom and skills. Every week the top scoring Idol Manager of the Idol that looses during that week wins a dinner date with the real Idol. The game is fun to play for anyone but the target audience is in the ages 14-24. The game was available both on the web and as a mobile application.

Idol Manger was first launched on October 2007 on the Swedish TV4 website. In the first 4 weeks Idol Manager had more than 25.000 downloads making it one of the most downloaded connected games ever launched in Sweden. Out of these about 50% of the users registered for the chance to win a date with an Idol and played the game at least twice[22].

[22] http://www.goldengekko.com/case-studies/89-tv4-popidol-tamagochi

14. Google Goggles

Google Goggle is a visual search application for Android phones. Until now, the only option for web search has been typing or speaking. But, with the Google Goggle application it is possible to search by taking a photo. For example, to search a book and get more information about the specific book, we can just open Google Goggle application and take a picture of an object (in this example a book). After, taking a picture of the book, the exact match of the book will be seen in the search result, without typing or saying a word. Another interesting aspect that has deserved considerable attention in Google Goggle is the use on a business card. Here a user of the service just needs to frame the text s/he is interested in, and then Google Goggle will recognize the text and return a result. By clicking on the search result, it is possible to call or add a person to the phone's contact list. It may also happen sometimes, a person is visiting a museum and get interested in a painting. To get more information about the title and the artist of the painting, take a photo and Google Goggle returns a result.

For local business information, Google Goggle does not even require to take a picture. In this case, we just have to point the phone at the store and using GPS and compass, Google Goggle will show the name. Then, just tapping the name to learn more about that store is needed. However, visual search is still in its infancy, it works best on things like already introduced above. Nonetheless, it does not work well yet on thing like food, cars, plants or animals. Google Goggle application developers are trying to add some more features to the application. The features which probably will be added soon to the service will be for example, suggesting a move in a chess game or taking a picture of a leaf to identify the plant.

The second aspect that deserves some attention is that, you might be wondering what happens to these pictures you are taking. Google Goggle has provided two options, either to discard the pictures as soon as the search is done or save them to the phone's search history to view them at any time. The only disadvantage of this application is that, it is only available for Android powered phone now at the moment and Google announced that the service will be available for other platforms soon. [23].

It has been very difficult for many decades for many travelers who are in another country, while it can be an amazing experience. Visiting another country can give a new perspective when someone has an opportunity to immerse her/himself in a different culture. However, it can be hard to fully enjoy the experience if the person does not understand the local language. For example, it can be an adventure to order a food from a menu when a person can not read the local language. Goggle translation which is an integrated mobile service into Google Goggle application can be a remedy for the above example[24].

15. Evernote

Evernote is a mobile application for Nokia/iPhone/BlackBerry/Android with the free/premium options. Evernote can be considered like the Swiss Army knife of note

[23] http://www.google.com/mobile/goggles/#text
[24] http://googlemobile.blogspot.com/2010/05/translate-real-world-with-google.html

taking. Evernote allows users to snap a photo, take a screenshot, type in text, or speak their note to capture information on the go. And once a note or photo is captured, Evernote helps the users to organize and find it by making all of the information in their photos or notes searchable. For example, if a user takes a photo of a book as a reminder that s/he wants to buy it later, Evernote will make all of the text on the book cover searchable. It's pretty neat to see it in action. Evernote enables its service users' to remember everything from their notable life using their PC, phone, and the web[25].

Evernote helps the users to capture and remember a text note, clip a web page, snap a photo and grab a screenshot. Evernote will keep it all safe. Everything that a user captures is automatically processed, indexed, and made searchable. It is also possible to add tags or organize notes into different notebooks. Evernote provides search functionality for notes by keywords, titles, and tags. Evernote makes printed and handwritten text inside the images searchable. Snap a photo of a business card with the phone number and have an easy way to store and access contacts. Evernote has other features including capturing plane tickets and confirmation numbers, hotel invoices and trip expense reports. With Evernote one can keep notes from her/his meetings all in one place. It is possible to take a picture of a whiteboard and be able to find it later or plan your next trip. By being subscribed to Evernote premium member, one can get more out of Evernote. Being premium enables the user a bigger monthly upload capacity, supports more file types and offers enhanced security. Premium members have also the ability to search within PDFs, faster image recognition without any advertising. The premium membership costs $45/year or $5/month[26].

16. Morpho QuickPanorama Pro

PhotoSolid[27] is an image stabilization technology that uses "SoftGyro", the world's first motion detection software based on image processing. When shooting with the mobile camera, movement is sensed in six different axes - horizontal, vertical, depth (forward/backward), horizontal rotation, vertical rotation, and rotation upon the light axis.

After a picture is taken the data corresponding to the movement is processed and the appropriate stabilization is applied to the image. In virtually any shooting situation whether it be sudden movement, macro shooting, telephoto or night shooting the resulting images are surprisingly clear, crisp and accurate.

Morpho QuickPanorama Pro lets the users to take panorama photos easily with one-button capture. The service supports VGA, SVGA and SXGA resolutions for larger panorama capture the free trial version. The users can also save photos directly to the N900 panoramic desktop. It also includes a special auto-exposure lighting control feature for the best quality results. For a limited time at special introduction price users can enjoy the new QuickPanorama Pro for easy-to-use high quality panorama photography on N900[28].

The application provides a useful function to easily take panoramic photographs by only moving the camera when the users photograph a rather wide landscape. The

[25] http://www.evernote.com/about/learn_more/
[26] http://www.evernote.com/about/trunk/?lang=en&layout=default#mobile
[27] http://www.morphoinc.com/en/products/PhotoSolid.html
[28] http://store.ovi.com/content/32678?clickSource=browse&contentArea=applications

application uses unique "SoftGyro" software, for the movement detection by image processing, the panoramic photographs will be high-quality under any circumstances. This will be used for a variety of situations where the scene is too wide for one shot such as landscapes during travel, group pictures, and whiteboards in trainings or lectures.

The panoramic photograph indicates a method for expressing a photograph which has a wider field angle than normal images such as 180°C and 360°C by one long and thin image. Users have always wanted to record grand scenery and hold good memories with friends on the panoramic photographs. However, in the past, they normally had to use a specific camera for taking the panoramic photographs, or the users needed to continuously take photos with a normal camera and then process the images again on their PCs. This was not quite convenient for the users of the panoramic photograph.

"QuickPanorama™" is revolutionary software which is able to create panoramic photographs fully automatically from the shot image, and it can completely solve such problems. "SoftGyro", the movement detection engine based on the Morpho's unique algorithm is also used in this software. The users are only required to move their cameras to an area to be panoramically photographed. All the complicated works such as positioning and image pasting are processed within the cameras or mobile devices. Further, as all the processing is performed in real time, the users can preview a panoramic image of a photo which is now being taken. This software will dramatically expand the number of users for panoramic photograph and increase their usages[29].

17. Facebook

Nielsen's[30] mobile application report found that Facebook was the most used application on the iPhone and iPod touch, Blackberry and across all other smartphones, other than devices running on the Android platform[31].

More than 4,200 people were surveyed who had all downloaded a mobile application in the last 30 days. 58% of all those polled who own an iPhone or iPod Touch, use the Facebook application on their device. This was closely followed by Google Maps, which 47% of iPhone users use the most after the Facebook app, and then the Weather Channel, a forecasting mobile application.

Facebook (51%) was also the most popular mobile application on the Blackberry platform, followed by Google Maps (34%) and Weather Channel (28%) of usage. The sports channel ESPN was the 4th most popular application, just ahead of Pandora, the music service.

The report also found that the average number of installed applications on a Blackberry device was 10, while this nearly quadrupled when it came to iPhone's average of 37, and doubled when comparing to Android's average of 22. 21% of American wireless subscribers have a smartphone, which has been increase 19% on the previous quarter (3rd quarter of 2009). 14% of mobile subscribers have downloaded an application

[29] http://www.morphoinc.com/en/products/QuickPanorama.html
[30] http://en-us.nielsen.com/
[31] http://mashable.com/2010/06/01/nielsen-mobile-app-june2010/

in the last 30 days. Social networking, maps, weather and music were the most popular app genres across all platforms[32].

18. Cisco WebEx Meeting Center

With Cisco WebEx, one can redefine what s/he can do with an iPhone. Pass across the physical barriers to collaborate in real time without a computer. Attend and participate in Cisco WebEx meetings on the iPhone. The service enables a user to join WebEx meetings from an email invitation or iPhone calendar entry. A user can also enter the meeting number into the WebEx for iPhone application to connect to the meeting immediately.

Cisco WebEx provides to see a list of attendees and participate in the meeting in real time. It is possible to zoom and rotate the image to ensure that one can get the best seat in the meeting. Shake the iPhone to reload the meeting list. (You'll need a WebEx account to see the meeting list within the application.) It is also possible to stay connected to the meeting, even if the cellular connection temporarily is lost. See who's in the meeting and chat privately with individuals or with the whole group. With WebEx, it is really easy to transfer the WebEx meeting from the iPhone to the computer seamlessly[33].

When you are on move, meeting face-to-face is not an option. With WebEx everyone sees the same thing on their mobile phones at the same time, presentation, documents, drawings and even application. Whether you are sharing information or brainstorming, Cisco WebEx would help to do it better. It is all about interacting in real-time to get more done and faster than ever before and it can change the way we do business. With Cisco WebEx we can bring people together at anytime from wherever they are. Make sales calls and deliver training and work together like you do in person without a costs and hassles of travel. Share, edit and enhance files live or develop and refine ideas on the fly. Cisco WebEx is very easy to use, it requires only a single click on your mobile phone to launch a session or schedule a session head of time.

Participants can join just as easily from anywhere on any platform including Windows, Mac, Solaris, Linux and Unix and more importantly 3G enabled smart phones, participants are required to have Cisco WebEx subscription, they just have to click a link, enter the password and connect to the phone conference and they are in the meeting.

It is that fast and easy. If someone can not make meeting, the session can be recorded and review later. Cisco WebEx Meeting Center is an iPhone application which can be used for collaborative meeting, sales presentation, live online training, marketing webinars and consulting anytime you need to get together to share ideas.

Best of all, WebEx is simple, secure and very affordable. You can get together as often as you need using WebEx. Because is web based service, you can access it from wherever and whenever you need[34].

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[32] http://www.telegraph.co.uk/technology/facebook/7797193/Facebook-is-top-mobile-service-for-smartphone-users.html

[33] http://www.webex.com/?PHPSESSID=a669e10d127ccd6389105abc2efe9431

[34] http://static.webex.com/apple/Cisco_WebEx_iphone.pdf

Taxonomy of the Mobile Services' Success "Similarities and Differences"

Mobile technologies are all the technologies involved on the process of rendering services to users through portable devices with relative independence of the physical location of the user. For example, technologies such as GSM, UMTS, mobile services, mobile phones.

Mobile phones are primarily designed to provide an easy and an accessible communicating ability for their users. In a word, they are designed to let people "be in touch" with anyone, anytime, anywhere.

Considering that, the main reason for a mobile service to be called a success is to satisfy this condition in an intelligent, efficient, useful and easy way. A mobile phone user should feel that he is carrying all the people and services he is in need of, with him all the time and in anywhere.

In order to understand better what makes mobile communication services successful, the followings give just few examples related to the success of SMS/MMS.

SMS messages can be sent and received at anytime and anywhere. It can be sent to a mobile phone even if it is switched off. Another interesting aspect that has deserved considerable attention is that, SMS messages are supported by 100% GSM mobile phones and they can be easily exchanged between different wireless carriers. The second aspect that deserves some attention in mobile communication services' category is that, MMS is a standard way to send messages that include multimedia contents such as photos and videos. MMS extends the core capability of SMS which only allowed exchanged of text messages up to 160 characters in length.

American sent a record number of SMS text messages in 2008; they sent over 1 trillion text messages. In another research, the result revealed that in 2009 Czechs sent more MMS messages than classic Christmas greeting cards, almost 42% of people living in the Czech Republic sent MMS messages in Christmas time.

Satisfying the core criteria of a mobile phone, the device also needs to give some colors to one's life. Here, is the place that the mobile entertainment services are introduced, the services which work as time killers when the mobile user is on the move. These services also should be able to provide social enhancement status to some extent, but yet these are not the only conditions necessary to make an entertainment service successful. Developers of such services have to keep in mind that a service is not successful if its functionality disturbs the main role of a mobile device which is communication, in the other words, a value added service, as promising as one can be, will not blossom if it tries to play the first role in a mobile revenue.

Nonetheless, services such as, mobile music, mobile ringtone, mobile game, and mobile Facebook can be considered as being successful services to the some extent.

The aforementioned services are in the mobile entertainment service category, despite of being a pure mobile service, these service were also capable of providing value or enhance their users' social status to some point. These services are not comparable to the success of mobile communication services such as SMS, however, are the most used mobile entertainment service world wide. Mobile music has generated of $4.66 billion revenue in 2007 in Japan or 58% of the Americans are using Mobile Facebook application by their smartphones in the first quarter of 2010.

There are two distinct factors in mobile entertainment services, these two factors are then can be considered as driving factors behind the usage of mobile entertainment services. The first one is the personalization and the second one is the entertainment.

- The use of mobile music/ringtone/game and ringback tone is a part of the trend to personalize mobile phones as a form of self-expression. However, the mobile phone can now be used to play music, play game and also being in touch with others in social communities such as mobile Facebook.

- The mobile phone has become the device that people carry everywhere, in all circumstances and over-the-air downloads mean that people no longer have to be at a desk to plug in the device. Keeping update of one's status in social communities such Facebook or Twitter are not limited to the physical barriers anymore. The social media users can be easily in touch with their friends by using their mobile devices; it is therefore, gaining value and being entertained.

It is also important to note that, a service should be compatible with the mobile phone capabilities. There have been many well developed ideas and innovations which have failed only because they were not fully functional on a mobile device although they could be wonderfully successful in some other electronic devices.

As an example, it is noteworthy to mention here that, mobile TV service and mobile video were generally predicted and expected to become the main revenue streams. But, due to some limitations that for example, mobile TV had, the service did not become a successful mobile service, since mobile phones could not fulfill the traditional requirements needed for watching TV like the small screen size of mobile handhelds, network bandwidth constraints and the usage price. All in all, mobile TV can not be considered as a success, because it did not add sufficient expected value to its consumers. Our first hypothesis is:

H1: Designing a mobile service based on the device capabilities has a direct effect on the service's success.

A mobile phone user, besides being able to communicate and being entertained, also has another important demand, which is to be able to get the necessary information needed wherever he is and in whatever time of the day. Therefore, the mobile information services play an essential role in mobile industry.

The successful mobile information service needs to be accessible, reasonably cheap and easy to work with. The information services which are accessible for a certain group of people or in certain areas, the services which easily can be replaced by a cheaper one with relatively the same quality and the ones which need too much training or too much technical background knowledge are the most probable ones in the danger of failure. For instance, satisfying all the mentioned characteristics for a successful mobile information service, mobile banking proved to be a relatively successful service.

It is generally agreed by the market analysts and technology watchers alike that mobile information services (services accessible via mobile devices) will increasingly

become more personal and more context-aware. In some specific contexts, such as being a tourist, it is generally expected that users are more likely to use personalized services (opposed to standard services that show the same features for all users.

Mobile services such as, mobile Internet, mobile search, mobile location-based service, Toozla (a mobile content delivery platform), mobile Flight Track service, mobile Google Goggle, introduced in this report are among the mobile information service category.

It is interesting to note that, there are two mobile services which are undoubtedly successful world wide, SMS and mobile Facebook, and there are also two widely known unsuccessful mobile services, mobile TV and TV4 Pop Idol Launches Idol Manger which is a mobile game application. This is regardless of their designer, developers and providers (Mobile Network Operators or/and Third party software developer or designed by future users or interactively by them). There are thousands of mobile applications which have been designed future users or interactively by them and are available in mobile application stores such as Nokia Ovi or Apple Application store. However, services including the Evernote application, Morpho QuickPanaroma Pro and Cisco Webex meeting center are considered as services which have attracted many users.

Along the all characteristics of each special type of the services have to satisfy, there is also a crucial qualification they all need to guarantee, to supply what is the real demand of the consumers. The most successful services are those which have been designed and developed to answer what customers demanded. Based on the discussion aforementioned the following hypotheses can be formulated:

H2: Designing a mobile service with taking into consideration the consumers' demands has a direct effect on the service's success.

H3: A mobile service provider has no direct effect on the service's success.

Conclusion

In this paper a number of mobile services have been introduced, their success, failure, similarities and differences, regardless of their designers or providers, have been discussed. The main focus of the paper was to distinguish the success or failure factors of the services which have been designed either by Mobile Network Operators and third party software developers or designed interactively by future users.

Mobile services such as SMS, mobile Internet and mobile music are adopted worldwide and have been in use since they were launched in the mobile service market in the daily basis. In contradistinction, mobile services which have been designed by future users or partly with them it may seems to be successful in a regional scale but they could not attract consumers in a global scale.

Services such as, Toozla (a mobile content delivery platform) and TV4 Pop Idol Manager (a mobile game application) are just few examples of these types of services.

However, it is essential to mention here that, Mobile Facebook is one the exceptional mobile service which have not been designed by Mobile Network Operators and have been successful in a global scale.

The result indicates that the services which have been designed and developed by Mobile Network Operators or third party software developers are relatively more successful than the services which have been designed interactively by future users. It seems that it is mainly due to the fact that these types of services are capable of providing value and fulfill its consumers' demands. But yet, this question remains unanswered whether this failure or success is only because of the provider or simply because the way these two groups of providers took different paths towards designing and developing their services. In the other words, it is needed to be discussed that, if the non-MNOs had started designing their services after analyzing the mobile consumers true demands, could not they have become as successful as MNOs.

Probably it is fair to state that it does not matter who provides the service, if both parties take into consideration all success elements discussed throughout the paper, they both have the potential to achieve the ultimate success. This statement is still open to be evaluated.

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