Masters Program in Geospatial Technologies

LOCATION-BASED MARKETING

The Academic Framework

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LOCATION-BASED MARKETING

The academic framework

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At the end I would like to dedicate this research to my parents. To my father who was a great professor of cartography and GIS, and to my mother who supports me in all life decidions.

LOCATION-BASED MARKETING

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ABSTRACT

Over the last several years one could observe revolution in location-based technologies and geospatial information. Location awareness of mobile devices resulted in development of Location-Based Services (LBS) that are realization of that revolution in the most personal and contextual way. The ability to reach consumers in the highly targeted manner based on spatio-temporal criteria, attracted marketers from the early beginning of LBS creating field called Location-Based Marketing. Today decreasing prices of smartphones and wireless internet, as well as integration of location-aware mobile solutions and social media is leading to new possibilities and opportunities.

The academic and professional interests of the author made him noticed that although the industry has challenged a significant development, there is lack of publications that would put an academic framework on that progress. The research has fulfilled this gap by extensive investigation of the current state of the art of Location-Based Marketing and its foundations - Location Based Services. The dissertation provides academic framework by comprehensive analysis of the Location-Based Marketing from LBS and marketing perspective. Further the thesis is addressing the issue of significant discrepancy between theoretical concepts of measurable Location-Based Social Media data and the actual data than can be legally accessed and used for marketing analysis purposes by investigation a case study of Location-Based Social Network - Foursqaure and Location-Based Analytics platform VenueLabs.

KEYWORDS

Location-Based Marketing

Location-Based Advertising

Location-Based Services

Location-Based Content

Location-Based Social Networks

Location-Based Social Media

ACRONYMS

A-GPS	– Assisted Global Positioning System
AOA	– Angle of Arrival
BTS	– Base Transceiver Station
IT	– Information Technology
GIS	– Geographic Information System
GPRS	– General Packet Radio Service
GPS	– Global Positioning System
GML	– Geography Markup Language
GSM	– Global System for Mobile Communications
RFID	– Radio-Frequency Identification
LAN	– Local Area Network
LBM	– Location-Based Marketing
LBS	– Location-Based Services
MLBG	– Mobile Location Based Gaming
MLBM	– Mobile Location Based Marketing
MMS	– Multimedia Message Service
NICT	– New Information and Communication Technology
NFC	– Near Field Communication
PDA	– Personal Digital Assistant
PND	– Personal Navigation Device
PSAP	– Public Safety Answering Point
SMS	– Short Message Service
TDOA	– Time Difference of Arrival
TOA	– Time of Arrival

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1. Introduction

During last several years, one could observe revolution in location-based technologies and geospatial information. Due to ubiquity of geographic layer in many everyday activities, people are getting more conscious about the spatial aspect of life. Popularity of personal navigation devices as well as mapping services for example Google Maps in both internet and mobile versions has made much part of society used to certain location-based ideas and their utilization. It seems as well that decreasing prices of modern mobile devices are pushing Information Society to go mobile. According to IDC research, fourth quarter of 2010 was the first time in the history when sales of smartphone devices was higher than Personal Computers (Llamas et al. 2011). Moreover, already 25% of users prefer using smartphones over a computer to browse the World Wide Web and the number is growing (Zickuhr et al.,2011). All those facts created opportunity for development and adoption of Location-Based Services (LBS), which are utilizing mobile devices, wireless networks and positing technologies in order to bring unique and broad value to users.

LBS have recently attracted significant attention due to their potential to transform mobile communications and the potential for a range of highly personalized and context-aware services (Dhar et al., 2011). Since early begging having its origins in E911 project in U.S. in late 1990's and the first location-tracking functionalities introduced in Japan in 2001 (Dhar et al.,2011) Location-Based Services have made considerable progress. Today new applications of LBS are limited only by the technology and creativity of service developers and it is growing on monthly bases.

Marketers are very quickly adopting new technologies in order to reach customers in the most efficient way and gain competitive advantage over market rivals. First the internet and then the convergence of the Web and mobile technologies has begun to change the assumptions companies have about their marketing strategies (Sultan, 2005). Now the development of social media and wireless mobile devices is challenging marketers again. In the times of intense competition, ubiquitous information, and web 2.0 where users create the content no business can afford to stay passive. In the past, advertising was primarily based on printed ads and television commercials. Afterwards the Internet as well as mobile devices created a new communication channels to engage with the customer in more targeted and contextual way. Today in the era of social media, marketing is about building community around product or service. Adding location dimension to this equation has a potential not only to link users opinions, emotions and needs to a particular physical position, but as well to reach them at the right time and place with a relevant content, to engage them to interact and share their experiences, which is the essence of advertising.

Integration of marketing, mobile devices and LBS created a new field called Location-Based Marketing. It utilizes location-awareness of mobile devices and wireless networks to create highly targeted marketing communication channel.

The marketing value of applying these new technologies is not limited to advertising. It brings a significant input to every part of marketing process starting from product/service concept development and finishing with monitoring of brand performance. Besides its promotional value, Location-Based Marketing consists as well of analytic tools that allow for aggregation and analysis of location information to identify trends that will enable new services and more effective advertising (Verrinder, 2011).

Location-Based Marketing is a fairly new field that did not yet achieve a major market acceptence, but its potential of growth is significant. According to Berg Insight report there are close to 6 billion active mobile subscriptions across the globe, which can be compared with about 2 billion Internet users. This underpins the vast potential of the mobile channel for advertising and marketing (Andersson, 2011). Additionally smartphones reached 27% of global adoption in 2011 (Vision Media, 2011), and 55% of US smartphone users are already using some sort of Location Based Services (Zickuhr et al., 2011). LBS market has taken much longer to materialize than many predicted a few years ago (Dhar, 2011). Due to several scandals of the location tracking in mobile devices, the technology was under constant intense scrutiny nonetheless it is achieving mainstream consumer acceptance, visible in the growing number of users and revenues. "It seems that for a large number of people, privacy concerns have not kept them from experimenting with and adopting this emerging technology" (Lindqvist et al.,2011). According to Pyramid Research "Location-Based Services: Market Forecast, 2011-2015" published in May 2011 "the global location-based services market is enjoying strong growth. Revenue is expected to reach $10.3bn in 2015, up from $2.8bn in 2010". Berg Insight's LBS Research Series published in January 2012 forecasts total LBS revenues in the European Union will grow to about € 435 million in 2016, from € 205 million in 2010. Although it is a significant growth, it is much slower than anticipated several years ago. The reason behind it is lack of profitable business models to monetize growing number of users within the industry (Malm, 2012). This is why marketing is expected to play more significant role in generating revenue growth over next years.

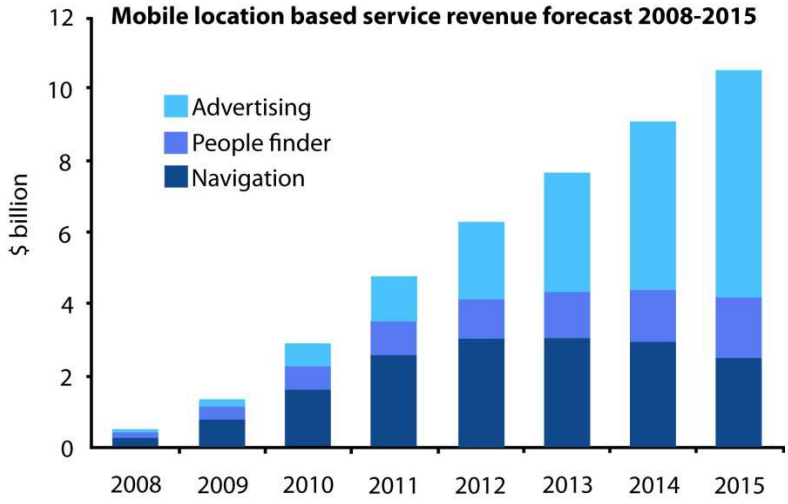

FIGURE 1. PYRAMID RESEARCH LBS REVENUE FORECAST (2011)

According to Pyramid Research report published in 2011 by 2015 advertising will stand for more than 55% of all LBS revenues (figure 1). According to ABI Research agency Location-Based Analytics market will grow to reach $9 billion in value by 2016 (Verrinder, 2011). Taking into consideration expected mobile marketing growth to €17.2 billion in 2016 from €2.61 billion in 2010 (Andersson, 2011) one can drive the conclusion that Location Based Marketing has a potential to become profitable and strong industry within next several years.

Before 2008, Location Based Service including Location-Based Advertising was based on feature phones and provided by text/multimedia messages or network services.
In 2008 Apple Inc. introduced the iPhone – one of the first Internet- and multimedia-enabled location aware smartphones with its unique business model. The device was only 'the tip of the iceberg' while big amount of revenues where provided by 'App Store' – the online electronic software distribution platform where users could buy applications for devices usually for fairly small amount of money or download them for free. This changed the way in which market operates and involved thousands programmers from all around the world. Within one year and spectacular success of that model, other mobile OS producers followed the same path. Today the vast majority of Location-Based Services and Location-Based Advertising revenue stream comes from smartphone applications. In 2011 several companies introduced their own online stores with applications (mostly for open Android platform) including Amazon and Adobe, which might as well have impact on the existing model.

The development of smartphones and decreasing prices of wireless internet access allowed integrating technologies that are shaping the landscape of Location-Based Marketing today – social media, mobile devices and Location-Based Services. By adding a location dimension, online social networks were brought back to the physical world and allowed people to share their real-life 'at-the-location' experiences in the virtual reality. In 2012 out of 800 mln active Facebook users, 350 mln access service through their mobile devices and 165 mln out of 300 mln Twitter users (Facebook Statistics, 2012; Twitter Statistics 2012). Twitter integrated location functionality to its mobile platform in 2009 and Facebook in 2010 launching Facebook Places. There are as well more than 100 dedicated Location-Based Social Networks with the leader – Foursquare which has over 15 mln users (Foursquare 1, 2012) and is growing on average 1 mln users per month (Lindqvist et al., 2011). This development allowed moving from the concept of Location-Based Advertising, which is linked with mobile promotional messages send based on user location to Location-Based Marketing that is adding value to all steps of marketing process.

2. Motivation and scope

Location-Based Marketing is a fast growing industry with a huge market potential that allows answering the most relevant marketing questions. The landscape of the industry is however very dynamic. Although the academic and non-academic literature on Location-Based Marketing is accumulating, the topic is still under development and the research is in its early stages hence is highly inconsistent and fragmented. My academic and professional interests in the topic made me noticed that although the industry has challenged some significant developments starting from 2008, there is a lack of publications that would put an academic framework on that progress. The last broad publication that is summarizing current state of the art of LBM was published by Bruner and Kumar in 2007.

This research will extensively focus on current state of the art of Location-Based Marketing and its foundations - Location Based Services in order to fulfill this gap. The goal and the contribution of the dissertation is to create the academic framework of Location-Based Marketing by defining and analyzing the concept, creating taxonomies and discussing the most relevant issues. The research will take in to consideration two perspectives on LBM: Location-Based Services perspective with its technological constraints and broad marketing perspective. Due to limited literature resources covering the topic, as well as its nature which is the convergence between business and science, the research will analyze academic and non-academic literature as well as number of case studies and real life examples.

The second part of the thesis focus on issues related to Social Media aspects of Location-Based Marketing. The personal and professional experience as well as literature review brought me to the conclusion that there is a significant discrepancy between concepts of measurable Location-Based Social Media data stated in the literature and the actual data than can be legally accessed and used for marketing purposes due to privacy issues and limitations of different platforms. The dissertation will address this issue and analyze how location-based content can be measured using two types of Location-Based Analytics platforms.

3. Location-Based Services

Foundations of Location-Based Marketing are inseparably joined with Location Based Services. Location-Based Marketing can be considered one of LBS applications. Defining and extensively investigating the concept, components and application of LBS it is crucial for further analysis and understanding of the topic.

3.1. Definition

Location Based Services are fairy new domain of science therefore there is neither officially accepted naming nor the definition of the concept. In the literature, it is possible to see different terms interchangeably used to describe the same service: location-based services, location-aware services, location-related services or location services (Küpper, 2005). Nonetheless, the term Location Based Service has been already used and acclaimed by most scientific and professional communities.

The concept labeled as Location Based Services has begun in the late 1990s. Using Ngram Viewer (figure 2) – tool that is searching a given phrase among Google Books database with more than 5 million records – one can observe that the term was mentioned first time in the literature around 1998.

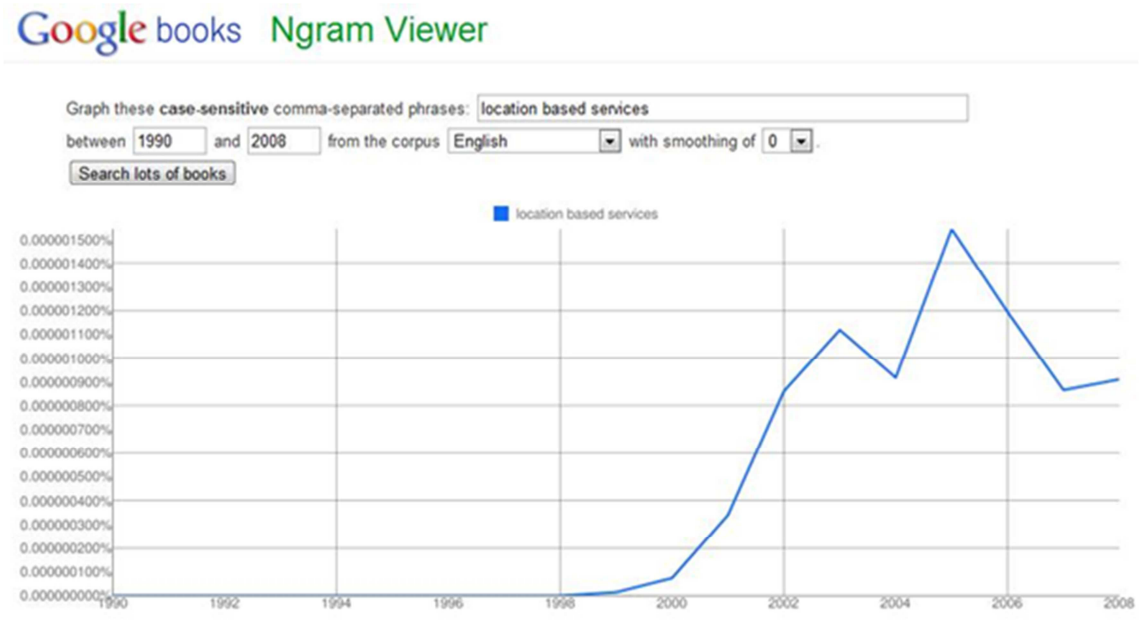

FIGURE 2. GOOGLE BOOKS NGRAM VIEWER SEARCH FOR 'LOCATION BASED SERVICES' TERM (OCTOBER, 2011).

There are several similar definitions to be found in the literature:

"Location Based Services 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." (Steiniger et al. 2004).

"Location-based services (LBS) are the delivery of data and information services where the content of those services is tailored to the current or some projected location and context of a mobile user." (Brimicombe et al. 2009).

"Location Based Services (LBS) is and information or entertainment service, accessible with mobile devices through the mobile network and utilizing the ability to make use of the geographical position of the mobile device." (Roebuck, 2011)

"Location-based Services are IT services for providing information that has been created, compiled, selected, or filtered taking into consideration the current locations of the users or those of other persons or mobile objects." (Küpper, 2005).

In essence LBSs are services that are using potential and capabilities of modern mobile devices, positioning technologies and mobile networks to deliver to the user value added information or service based on his location. The main value of LBS for users is that they do not have to enter location information manually but it is automatically collected (with positioning technologies) and used to generate personalized information (Küpper, 2005).

3.2. Concept

The concept of Location Based Services is based on years of development and convergence of different technologies as well as an evolution of information society where context and customization of information is one of the first priorities for users. Looking at the technological background of LBS it can presented as the intersection of several technologies: geographical information systems (GIS) and other spatial and positioning technologies, the Internet and the Web, and new information and communication technologies (NICTs) (Brimicombe, 2002).

The diagram (figure 3) presented by Brimicombe in 2002 seems to capture the essence of the technological development that happened over last decade and led to creation of the field of Location-Based Services.

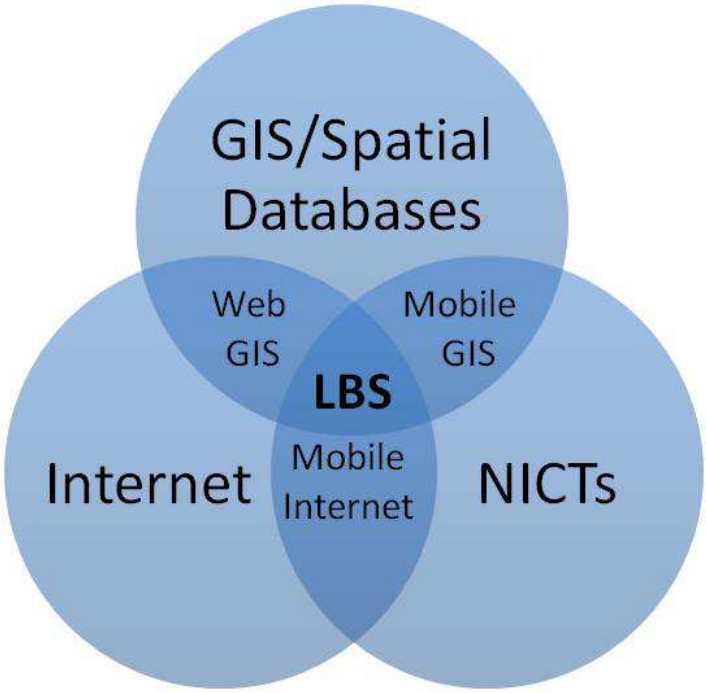

FIGURE 3. THE CONVERGENCE OF TECHNOLOGIES TOWARDS LBS (BASED ON BRIMICOMBE, 2002)

The 'Web GIS' reflects development of Web mapping services that started operating in the mid 1990's (e.g. Mapquest.com) and where widely popularized all over the world by Google Maps launched in 2005. This part reflects as well the evolution of many GIS Web based analytical tools including ArcGIS Online. The 'Mobile GIS' reflects the convergence of traditional GIS software and mobile devices (handheld computers, palmtops) that enabled field-based personnel to capture, store, update, manipulate, analyze, and display geographic information. Most of these solutions required downloading data to the mobile device. The 'mobile internet' presents the development of two technologies: wireless internet and modern mobile devices. The resultant of these technologies is LBS, which is utilizing all parts of this equation. Taking into consideration growing progress in all of those fields including increasing computing power of mobile devices, accuracy of positioning technologies, fast wireless internet connection and cloud computing, the LBS seems to have a potential to play a significant role among all of technologies stated by Brimicombe.

In research, LBSs are often considered a part of the context-aware services (figure 4). A system is context-aware if it uses context to provide relevant information and/or services to the user, where relevancy depends on the user's task (Dey, 2001). Information or service can be triggered with so-called context information - several parameters reflecting the context of the user's task. These parameters may be subdivided into personal, technical, spatial, social, and physical contexts (Küpper, 2005). The major problem linked with context aware services is modeling those parameters in quantifiable and computable way.

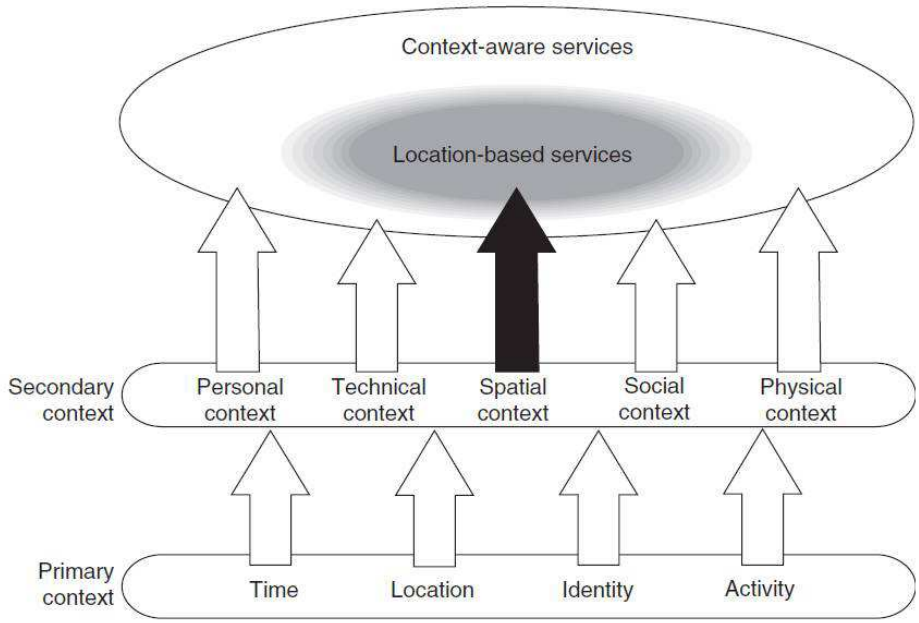

FIGURE 4. CONTEXT-AWARE SERVICES AND LOCATION-BASED SERVICES (KÜPPER, 2005).

The spatio-temporal information about the user is one of few parameters that are straightforward and fairly easy to measure and use. This is linked to the term to the term Location-Aware Services that might be defined as Context-Aware Services that utilize the location of the user to adapt the behavior of the service. Location-Based Services in a most general sense are services linked with location information; therefore Location-Aware Services are a special case of Location-Based Services (Kaasinen, 2003).

3.3.Compoments

Creating and developing Location Based Service is very a challenging task. There are many components, players, and factors involved. Creating and maintaining interoperability and cooperation of LBS components requires from service developers using several standards discussed in details in a following chapters. LBS architecture is only one of the challenges, the other one is providing a service, which will reflect user needs or create a demand for such a needs, and will allow service providers to make a return on their investment. Otherwise, the business is unlikely to be sustainable (Brimicombe et al. 2009). End user needs have to be given a significant attention during all stages of design process. In most of the literature user is considered the operator of the mobile device. As the driver of the development and monetization of location based services, the role of the user, cannot be diminished. Number and engagement of users reflects value of Location-Based Services and is one of the biggest assets of the LBS provider. It creates

marketing possibilities and opportunities that properly utilized bring value to customers and return on investment.

Engaging users into active usage or participation in the service community is one the most difficult tasks. The example of one of first location sharing LBS – Loopt – shows how seemingly small problem can cause the service to be unsuccessful project. Loopt has faced early adoption issues because of its methods of recruiting new users with SMS text messages. By signing up to the services users were unconsciously authorizing Loopt to send invitations to the service to everyone in the users address book via SMS (Salt, 2011). The public did not accept this method and Loopt received a lot of negative attention.

Most of Location Based Services require several components. In this approach, I have proposed "5+1" components of LBS - five technological and 1 human related:

1. **Positioning systems** – allow geographically localizing the mobile device both outdoor and indoor using: satellite-based systems, Cell-ID, RFID, Bluetooth, WiMax, Wireless LANs.

2. **Communication Network** - the wireless network that allows for transfer of data between user (thought mobile device) and server (service provider). Nowadays it is in most cases wireless internet (e.g. GPRS, 3G, 4G)

3. **Service and Application Provider** - the LBS provider, including the software (e.g. GIS) and other distributed services and components that are used to resolve the query and provide the tailored response to the user (Brimicombe et al. 2009).

4. **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) (Steiniger et al. 2004)

5. **Mobile Devices** – any portable device that has capabilities to utilize stated above components of LBS, for example: mobile phones (including smartphones), tablets, palmtops, personal navigation devices, laptops etc.

6. **User** – operator of the mobile device and the person that is utilizing potential of modern mobile device and infrastructures in order to get value added information or entertainment.

'Service and Application Provider' and 'Data and Content Provider' might be the same actor in the LBS architecture. For example in the LBS application 3D World Gaze, Nokia is provider of both the data and the application. The majority of smartphone LBS applications developed by use geographic data of one of mapping services e.g. Google Maps, Yahoo Maps, Bing Maps, Open Street Maps.

3.4. Taxonomy

While discussing the topic it is important to distinguish between different types of Location-Based Services. In general, one can distinguish two different kinds of location services considering if information is delivered to user based on his interaction or not (Steiniger et al. 2004):

- pull services
- push services

Pull services can be defined as services where user requests delivery of information. This concerns all services where user is searching for an information e.g. navigation, find nearest ATM etc. In push services, the information is delivered to the mobile terminal (user) automatically when certain event occurs. In other words fulfilling predefined set of conditions or parameters triggers the service to deliver information to the user.

One of the most important critiria that can be as well taken into concideration in taxonomy of LBS is with whom user is sharing location or what it the driver of this action (Tang et al.,2010):

- purpose driven (sharing location with service provider)
- social driven (sharing location with social network)

The action of user can be purpose driven - user can share his location with the service provider in order to get value-added personalized information or service. From the other side there are many Location Sharing Services or Location-Based Social Neworks, where user can broadcast his/her location publicaly or among social network. There is more than 100 such a networks and most of them gives a unique incentives to reveal personal location information to others. This topic will be discussed in detail further in the dissertation.

Location based services can be cathegorized as well taking into concideration nature of physical place they are use in:

- Outdoor
- Indoor

This division is important especially in context of recent Google anouncement (November 2011) about incorporating indoor Wi-Fi navigation within mobile Google Maps products. This is expected to have a siginificant implications for in-store Location-Based Marketing.

3.5. Applications

Taxonomy of applications of Location Based Services is not an easy task as many services are converging several concepts and innovations in order to provide more

attractive and engaging LBSs. Nonetheless capturing and describing current level of the development of the services is crucial as marketing is very quickly capturing and utilizing latest technological developments. A vast majority of Location-Based Services for smartphone platforms, even not directly related to marketing is expected to be funded advertising and many of presented below applications of LBS have been already used for some kind of marketing purposes. Currently LBS applications can be divided into several categories described below (Brimicombe et al.2009, Ahson et al. 2011, Kupper, 2005):

- Marketing
- Emergency
- Information Services
- Navigation
- Location Based Social Media
- Mobile Location-Based Gaming
- Sports
- Billing
- Geotagging
- Tracking
- Augmented Reality.

Marketing

Using Location Based Services for marketing purposes have been utilized for almost a decade in many different forms. This topic will be discussed extensively starting from chapter 5 of the dissertation.

Emergency

One of the fundamental application of LBS is utilizing the ability to locate an individual calling to emergency response agency (911 in US, 112 in EU) who is either unaware of his/her exact location or is not able to reveal it because of an emergency situation (Steiniger et al. 2004). Based on this spatial information emergency response agency (e.g. ambulance, police, firefighters) can provide help in a quick and efficient way.

In 1996, the US Congress passed the law issued by Federal Communication Commission requiring all US mobile operators to locate emergency caller dialing number 911. In the first phase of the project required all 911 calls to be routed to the nearest public safety answering point (PSAP) and provide the PSAP with the telephone number of the originator of a wireless call and the location of the cell site or base station transmitting the call. In the second phase (2001) the wireless carriers where obliged to increase the accuracy of the geographic position of the caller up to 50-300m.

European Union Commission has passed a similar regulation –" Commission Recommendation of 25 July 2003 on the processing of caller location information in electronic communication networks for the purpose of location-enhanced emergency call services" based on Directive 2002/22/EC . This article asks EU states

to develop national regulations for mobile operators enforcing the automatic positioning of emergency calls: "Member states shall ensure that undertakings which operator public telephone networks make a caller location information available to authorities handling emergencies, to the extent technically feasible, for all calls to the single European emergency call number 112 (Schiller et al. 2004). The difference between approaches in US and Europe is that EU in fact did not enforce mobile operators to increase the accuracy of caller's location. Especially in the USA initiative brought vast development of LBS technologies and infrastructure among mobile operators that allowed them to offer other services.

Data from Location Based Services can be used as well for disaster management. One of great examples is the Ushahidi platform - an open source project which allows users to crowd source crisis information that was sent via location-enabled mobile devices, but as well published in the Internet, local media etc. and visualize it on the map to get the 'real picture' of the problem and manage rescue services in the most efficient way. The platform was found to be a great help during Haiti earthquake in 2010.

Another emergency application of LBS was released in the city of Portland in 2010. The city created open source platform where citizens are able to report problems with the city infrastructure via iPhone and Android devices using dedicated application - PDX Reporter. It enables users to select the type of issue to report, take a photo, geotag it with GPS or interactive map, add comments, and send their report to the responsible bureau. Afterwards users can view issues they have submitted and check the status of the issue.

Information Services

Location-based information services refer mostly to the digital distribution of information based on device location, time specificity and user behavior (Steiniger et al. 2004). This is one of the most widespread and earliest implemented types of LBS utilizing both pull and/or push services.

Starting from 2001 the communication between mobile terminal and server was operated with SMS, than MMS. The user could query the server with simple questions concerning for example the address of the closest cinema or automated teller machines. The services were usually provided by wireless network operators. Nowadays the information is commonly delivered by external providers with wireless internet via application installed on a mobile terminal (e.g. Yelp[1], Yellow Pages[2], Gas Buddy[3]). The scope of data and information offered by service provider is very comprehensive and it include local street map, wide variety of points of interests (restaurants, gas stations, cafes, stores, pharmacies, hospitals, services, touristic attractions etc.), weather forecast, real-time traffic information etc.

[1] http://www.yelp.com/
[2] http://www.yellowpages.com/
[3] http://gasbuddy.com/

In the era of information society and social web, users are not only producing content of World Wide Web but also geographically localize it. LBSs can give users access to value-adding information published by other users of the Web in the geographical proximity, for example recommendations of restaurants or particular items from a menu of a restaurant, spontaneous public event etc. Location Based Social Networks (e.g. Foursqure, Facebook Places) or Location Referring Services (e.g. Google Place, Yelp, Yahoo Local) smartphone applications often offer this kind of functionality. There are as well several applications that are using mobile location based augmented reality technologies to provide information services (e.g. Enkin).

Navigation

Navigation services allow locating the exact geographical position of a mobile device using one of available positioning systems and get direction and/or navigate user to required location including vehicles, crafts, and pedestrians. This service is often linked with 'Information Services' described above (e.g. get direction to point of interest). However, according to LBS definition only those navigation products that are receiving the information from wireless networks can be considered a part of Location Based Services. The LBS approach to navigation gives particular advantage over mobile navigation software using data stored on the memory of a mobile device, because it potentially gives user the access to the real-time data. The limitation of large volumes of data needed to be transferred over wireless network is decreasing as many network operators offers unlimited or reasonably priced data transfer.

One of examples of LBS navigation is mobile application Google Maps that can be accessed via multiple mobile platforms (Android, BlackBerry, iPhone, Palm, Symbian S60, Windows Mobile). According to the study by market research company Nielsen made in July 2011, 74,6% of adult smartphone users operating on the Android OS in U.S. have used Google Maps during last 30 days (Nielsen Blog, 2011). From the results presented in the other report made by The Pew Research Center's Internet & American Life Project one can learn that 55% of adult smartphone users in United States uses their devices to "get location-based directions and recommendations". As a comment it needs to be stated that navigation refers not only to vehicles or crafts but in fact majority of smartphones users utilize this service for pedestrian way finding. Some LBS providers are using mixed model for example providing basic navigation road data saved on the memory of the device and providing real-time traffic information via mobile network e.g. TomTom HD Traffic.

Location Based Social Media

Social media have been widespread on the Internet and have become craved research topic. Social networks like Myspace, Facebook and Twitter changed the way how people communicate and maintain relations among friends, colleagues, peers or even a family. The development and ubiquity of location-aware mobile devices gave social media possibility to integrate location with content created users. There are different models that the networks are based on. What most of the networks have in common is 'checking-in' – the act of sharing one's location (verified by positioning system) with social network, public, or individuals and have

access to location broadcasted by their friends. Many LBSNs use elements of gamification to engage audiences and create incentives for users. Other ways to attract users are often coupons or discounts used in pull or push way.

Due to relevancy of the topic from marketing point of view it will be discussed in details further within the dissertation.

Mobile Location-Based Gaming

Mobile Location Based Gaming (MLBG) is a growing trend among LBS (Steen, 2011). MLBG is linking elements of traditional open-air field games (e.g. Hide-and-seek, Paper Chase) with new technologies available on mobile devices including positioning technologies, wireless fast speed internet, image recognition and augmented reality among others. Lonthoff and Ortner in 2007 defined MLBG as "a location-based game that can run on a mobile device. By using a communication channel the game can exchange information with a game server or other players".

In most of MLBG there are several scenarios and themes used:

- Treasure hunts (e.g. Geocaching, GeoSocial)
- Territory defense and claiming (e.g. Please Stay Calm, Shadow Cities, Fleck, MyTown, Geo Wars)
- Scavenger hunts (e.g. City Secrets for Amsterdam, Paris and Barcelona, Code Crackers)
- Role playing game (e.g. GeoHunters)
- Mixed themes (e.g. Parallel Kingdom)

One can divide MLBG as well considering the number of players in a game. There are single-player games and multi-player games, however it is possible to play multi-player games alone, if players are simulated (Lonthoff et al. 2007). Interactive advertising involves two-way promotional messages transmitted through communication channels that induce message recipients to participate actively in the promotional effort (Boone, et al 2011). Many games are available only for certain platforms e.g. City Secrets are available only for iPhone users.

Sports

The potential of LBS and modern mobile devices can be used as well to monitor sports activities. Location-based application including Nokia Sports Tracker and Endomondo has millions of users. Functionality of those applications allows user to automatically collect his/her workout data, such as location, distance, speed, duration, or burned calories and store them on the server. Endomondo allows to visualized real-time route of outdoor sport activity via smartphone using Google Maps and sharing that data with a social networks. Another application called Zombie Run is integrating jogging with a territory defense location based game.

Billing

Location based billing refers to ability to dynamically charge users of a particular service depending on their location when using or accessing the service (Steiniger et

al. 2004). Although the concept could be applied to many businesses, two major industries use this option.

The primary industry that is utilizing this application of LBS is cellular network. Location-based billing allows a mobile operator to charge different rates to mobile subscribers based on their physical location. It gives a mobile operators possibility to directly compete with wire line providers by charging clients at home or at work with rates comparable to wire line and with standard rate when they leave. This possibility is utilized only by a small percent of mobile operators.

Location-based billing is as well used in some countries for road tolling system. Systems in some countries allow to vehicles to be equipped with a special tolling device (e.g. On-Board Units - OBU) which exchanges data over the air with fixed control stations located along the roads or capture the data from the satellite positioning system (Küpper, 2005). Problem with this kind of systems is no standards therefore, systems of different countries are incompatible with each other.

Geotagging

Geotagging is defined as adding geospatial metadata to digital media such as photographs, videos, messages, blogs, web pages and GeoRSS (Holdener III, 2011). Significant amount of the social media content is created by users through location-aware mobiles devices.

Internet Service	Category	Year of adding mobile geotagging functionality
Flictr	Photographs	2006
Panoramio	Photographs	2007
Twitter	Short Text Messages	2009
Facebook	Micro blogs, Photographs	2010
Youtube	Videos	2007

TABLE 1. LBS GEOTAGGING FUNCTIONALITY IN MOBILE APPLICATIONS.

Geotagging allows browsing the content of the Web with geographic filtering. It is as well possible to visualize some of the content. Especially photo-sharing sites enabling geotagging are popular among users of LBS. There is an ongoing research about using geotagged images to determine location of touristic service points.

FIGURE 5. GEOTAGGED IMAGES IN THE PANORAMIO WEBSITE. VISUALIZATION OF TWEETS ABOUT 'THE ROYAL WEDDING' FROM 29TH OF APRIL 2011 IN GEOCOMMONS WEBSITE.

Tracking

Real-time tracking is one of the most useful applications of LBS. It can be used for people tracking: children, patients with dementia, prisoners with arrest ankle bracelets, employers to track their workers. LBS tracking solutions are used as well for animal tracking.

Vehicle tracking is another broad application of LBS. This can concern single vehicle tracking (e.g. car security systems) but as well control and coordination of entire fleets of vehicles (Küpper, 2005). UPS one of the World's biggest shipping companies uses own location-based systems for management and logistics thousands of tracks. With fleet over 60 000 vehicles, even one saved mile by every track per day means millions of dollars savings (Reid, 2007).

Using the same platform presented in the emergency applications of LBS, the city of Portland offers to citizens' real-time buses tracking. With iPhone or Android devices application, 'PDX Bus' users can view on a smartphone exact location of the bus to be sure about the schedule.

Augmented Reality

Augmented Reality is a growing trend in Location-Based Services. It combines real and virtual world by combining camera view with virtual overlaid augmented graphic or information. Due to its character it is interactive and registered in 3D. The location dimension is crucial in order to deliver relevant information to user.

4. Technologies

4.1. Mobile Devices

Mobile devices and technologies creates number of opportunities for advertisers. There is number the appealing features of mobile devices that create marketing value (Dhar et al., 2011):

- Portability - the devices are small and fit into the pocket.
- Personalization and Instant Access - the devices are associated with the identity of the user and the applications are personalized based on the user input. The mobile devices also receive instant access from their users most of the time.
- Mobility and Wireless Internet Connectivity - most of the mobile devices will have Internet connectivity via wireless links.
- Location-aware - most of the devices will have some built-in positioning systems e.g. GPS.
- Context-aware - many applications running on the devices are context-aware. For example, in case of search, the advertisements will be displayed based on user's preferences.

There is wide range of devices that are capable of utilizing Location-Based Services. Academic definitions of LBS state that the device needs to be able to utilize one of available positioning systems and wireless internet. Use cases suggest that in majority of cases the devices are portable:

- Feature phone
- Smartphone
- Tablet
- Personal Digital Assistant (PDA)
- Personal Navigation Device (PND)
- Laptop

As defined before Location-Based Marketing is a mobile marketing utilizing positioning technologies to deliver highly targeted communication channel. In the portfolio of possible types of LBM, the biggest and most important groups are feature phones and smartphones. During last 2 years, one could observe growing importance of tablets, which are due to the same platforms, close to smartphone market in LBM applications. There is as well a clearly visible declining sale of PNDs.

4.2. Positioning Technologies

Positioning is a crucial component with Location Based Services as it allows get information about the location of the mobile device. The development of satellite

systems (GPS, Galileo, Glonass) revolutionized the accuracy of location information, however for many LBS applications the GSM-positioning accuracy level is more than enough. From the marketing point of view the current popularization of the indoor mobile positioning applications seems to bring perspectives of a significant value especially for department stores, shopping malls, airports etc. The topic of positioning technologies has been already comprehensively researched. This chapter will summarize the technologies that are commercially used in Location Based Marketing applications (figure 6).

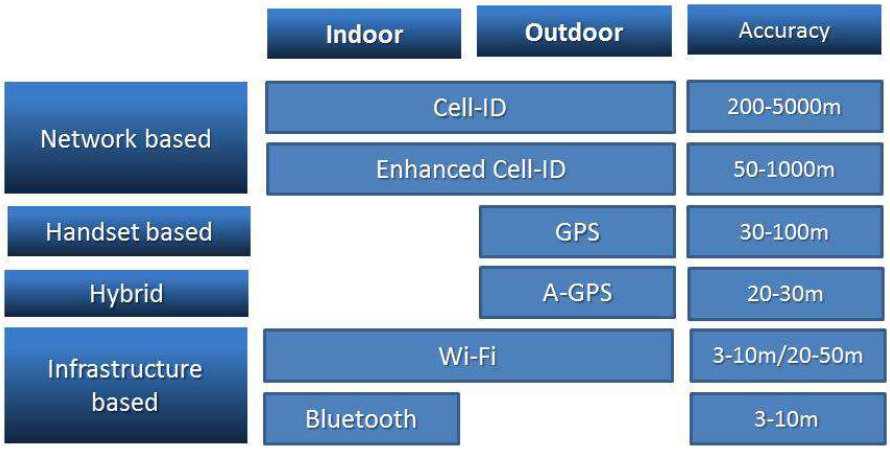

FIGURE 6. POSITIONING TECHNOLOGIES (ADAPTED FROM LIU ET AL., 2011; TREVISANI ET AL., 2004; LABRADOR ET AL., 2011)

Top OS and/or devices producers (including iPhone and Android devices) use hybrid positioning systems that involves combining several positioning technologies GPS, Cell ID, and/or Wi-Fi to deliver a reliable, accurate, cost-efficient location within a mobile application at all times (Labrador et al., 2011).

In November 2011 Google introduced the first version of mobile indoor Google Maps for Android platform. Soon other major players in the market including Nokia started to reveal plans of expansion in this area (Privat, 2011). This intense activity around indoor positioning is indicating development of indoor Location Based Marketing in the near future.

Cell ID

The Cell ID (or Cell-of- origin) is the simplest localization method available in cellular networks (Labrador et al., 2011). Mobile operator is identifying position of a mobile terminal through the id of the base transceiver station (BTS) that user connected at particular moment. Unless the capacity of BTS is not used, the user should be connected to the network via the nearest base station. "The accuracy of the Cell ID method therefore depends on the known range of the particular BTS serving the user at the time of the query. It can range from a few hundred meters in urban areas to several kilometers in rural areas" (Labrador et al., 2011).

"A very prominent user of Cell ID positioning technology on mobile devices is Google. Google's Maps for Mobile service uses the transmission from a single cell tower to provide the cell phone location" (Ferraro et al., 2011).

Enhanced Cell ID

Enhanced Cell ID refers to technologies that are using position of multiple BTS stations or additional parameters of BTS signal to enhance the accuracy of the mobile terminal. There are several methods that utilize time (distance) or/and angles of radio signals (Ferraro et al., 2011). The most known are: AOA(Angle of Arrival), TDOA (Time Difference of Arrival), TOA (Time of Arrival) (Trevisani et al., 2004). Methods that are being employed depend solely on the cellular networks operators, the accuracy of the system might be required by legislators.

Global Positioning System (GPS)

GPS is a satellite positioning system controlled by the US Department of Defense. It consists of a constellation of 31 satellites. Although there are other similar projects, including European GALILEO, Russian GLONASS, Chinese Beidou the only worldwide broadly used system is GPS. The system determines the position of a receiver by calculating differences in the times that take signals from different at least three satellites to reach the mobile device with GPS antenna (Trevisani et al., 2004). Afterwards the system uses the mathematical technique of trilateration to determine user position, speed, and elevation (Ferraro et al., 2011). Despite good accuracy, GPS has some disadvantages: accuracy depends on the number of visible satellites; set-up time can be quite long, many minutes in the worst case; power consumption can be high; GPS does not work indoor or when satellites are in shadow (Trevisani et al, 2004).

Assisted GPS (A-GPS)

A-GPS is linking satellite positioning with GSM operators positioning systems. A-GPS requires BTS stations to be equipped with GPS receivers. In this way BTSs can provide information about visible satellites, allowing the GPS installed on the mobile device to speed up its tracking phase (Trevisani et al, 2004). It addresses the key drawback of GPS technology – reduces power consumption and Time To First Fix (TTFF) that depending on a device, environment and sky visibility can take even a few minutes (Trevisani et al, 2004; Ferraro et al., 2011). Additionally A-GPS can provide better location accuracy than regular GPS because of use of differential GPS. This technique exploits the knowledge of both the actual BTS position and its GPS approximation to estimate GPS error and as a result, this error can be corrected applying a suitable correction factor (Trevisani et al, 2004).

In practice, there is a multitude of ways in which this technology can be deployed depending on the configuration of chipset manufacturers, local legislation, and operator policy resulting variation in its effectiveness compared to GPS (Ferraro et al., 2011).

Wi-Fi & Bluetooth

Ubiquity of Wi-Fi access points inside buildings and in urban areas made it possible to utilize this data for positioning purposes. The technology uses similar methods as cell-id and triangulation but it applies them to wireless internet hotspots. When a mobile device detects the Wi-Fi signal, preinstalled positioning software scans it and compare to reference database, than based on the strength of one or several signals, it calculates user's location. Bluetooth technology works in a similar way however, it requires to install a grid of antennas, as the technology is as popular as Wi-Fi. Private companies including Skyhook and Google are gathering data with special vehicles that have extra-sensitive GPS and Wi-Fi receivers. The technology has been widely used starting from Apple iPhone 2G and then adapted by other smartphone producers. Wi-Fi has been shown to achieve 3-10 meter indoor and 20-30m outdoor positioning accuracy (Gao et al., 2011; Ferraro et al., 2011). The achievable accuracy de-pends on two factors: access point density and the location-positioning algorithms employed (Gao et al., 2011).

Wi-Fi and Bluetooth technologies might be as well used in proximity marketing.

Near Field Communication

Within the concept of proximity marketing Near Field Communication (NFC) is gaining importance as major smartphone producers start to add this technology to the latest device models. NFC is a very short-range wireless connectivity technology designed for cell phones and credit cards. It establishes radio communication between to devices or a device and NFC chip by touching them together or bringing them into close proximity, usually no more than a few centimeters.

4.3. Geofencing

Geofencing is one of key technologies used in Location Based Marketing. It refers to a virtual boundary created around a specified physical location or point on a map. It is used to test whether presence inside the area is true or false in order to trigger some sort of predefined action (Ferraro et al., 2011), which in case of marketing refers to sending targeted message Geofence can be defined by a series of lat/long coordinates or radius of a particular distance around a specific point.

Three primary types of geofences (Maponics, 2011):

- Static: user's position relative to a fixed point or fixed area
- Dynamic: user's position relative to a changing data stream
- Peer-to-Peer: user's position relative to other users

Static geofencing can be used to send an special offer via text message to opt-in users as they enter a shopping district, dynamic geofencing to send a message about "open parking space" nearby mobile app users driving through particular

area, and peer-to-peer geofencing in a location based social network to notify user about friends nearby (Maponics, 2011).

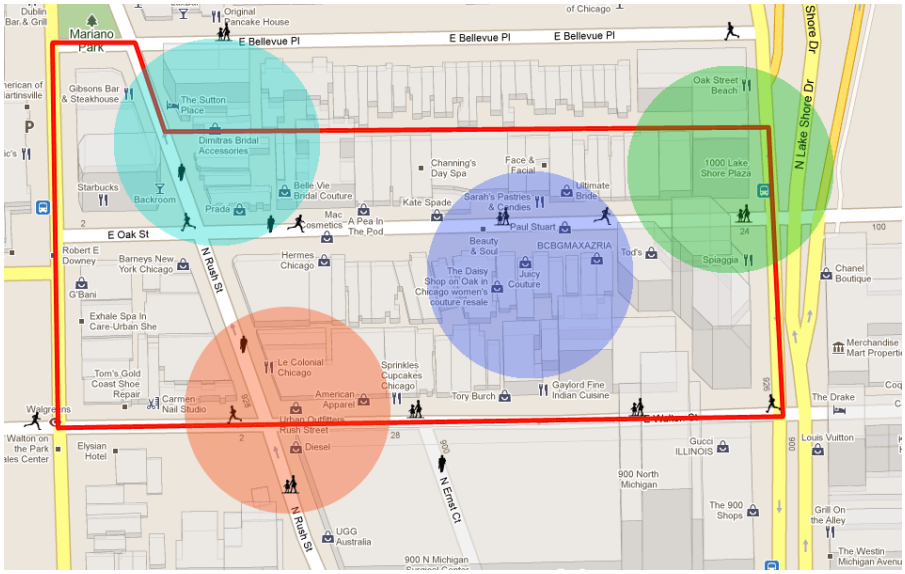

FIGURE 7. EXAMPLE OF GEOFENCE (MAPONICS, 2011).

In the corporate world, geofences are used to alert management when employees leave or enter pre-determined area (Ahson, 2011). On a personal level, a geofence can alert parents when your child arrives at school, via an application such as Neer (Strout et al., 2011). In Location Based Marketing geofences are used mostly to send messages to opt-in users when they enter particular area. Check-in applications are as well using geofencing to verify if users are within a particular distance from the venue they are checking in.

4.4.Standards

Standards are crucial for component of each especially technological industry. Location Based Services as concept as foundations of Location Based Marketing have its technological standards however not in all necessary areas. Location Based Service are a convergence of heterogeneous technologies, built from several separate components. In order to sustain operability, interoperability and reliability of all those systems, which highly important from user point of view the industry introduced several standards. Two organizations that plays crucial role in the development of LBS standards are the Open Mobile Alliance(OMA) and Open Geospatial Consortium (OGC).

The most important document issued by OMA is Mobile Location Protocol (MLP). "MLP enables LBS applications to interoperate with wireless network regardless of its interfaces (GSM, CDMA etc.) and positioning methods. MLP defines a common interface that facilitates exchange of location information between the LBS application and location servers in wireless networks. It also supports the privacy of

user providing access to location information only to those who are authorized users." (Dhar et al. 2011)

OGC has developed OpenLS Services that touches issue of the geospatial interoperability. OpenLS "specifies interfaces that enable companies in the Location Based Services (LBS) value chain to "hook up" and provide their pieces of applications such as emergency response (E-911, for example), personal navigator, traffic information service, proximity service, location recall, mobile field service, travel directions, restaurant finder, corporate asset locator, concierge, routing, vector map portrayal and interaction, friend finder, and geography voice-graphics" (http://www.opengeospatial.org/standards/ols). "Key services handled by OpenLS specification are coordinate transformation, Web Mapping, Geography Markup Language (GML), geoprocessing and Web integration. The OpenLS platform provides open interfaces to LBS core services such as route determination, directory, location utility (geocoder that obtains x, y co-ordinates from address, and reverse geocoder that obtains address from x,y co-ordinates), presentation (display showing map, point of interest), and gateway (find position of mobile terminal from the network) (Dhar et al. 2011). There are as well other standards relevant to the LBS including several ISO standards and OGC specifications.

There is however lack of established user privacy standards. In 2010 CTIA Wireless Association published "CTIA's Best Practices and Guidelines for Location Based Services" but the document is not legally valid. The guidelines emphasize user notice and consent since it is the LBS user whose privacy is at risk if location information is misused or disclosed without authorization. Due to the guidelines, LBS providers must inform mobile users on how their location data will be used, disclosed and protected for each user to decide whether to use the LBS service or authorize disclosure.

5. Location Based Marketing

Location-Based Marketing has been present on the market for almost a decade in a form of text or multimedia messages. The latest progress of location aware devices as well as location enabled social media give marketers new possibilities to interact with highly targeted customers. The development of new mobile media created new platforms of communication between business and customers that allows delivering not only the content, but also the direct feedback, or even performing final transactions. Location-Based Marketing allows targeting customers based on spatio-temporal criteria as well as other contexts that make it possible to deliver relevant value-adding marketing message to the user at the right time, place and situation. Finally LBM allows monitoring, aggregating and analyzing location-based data in order to identify trends that will enable new services and more effective product/service promotion. Wide range of LBM possibilities makes it possible to reach different target groups, with different level of interaction and engagement.

The existing academic framework of Location-Based Marketing requires to be updated in order to meet the needs of fast changing environment. The last broad publication that is summarizing current state of the art of LBM was published by Bruner and Kumar in 2007. Over last 5 years both: the technological development and user attitude towards this kind of marketing channel have changed in a significant way. Although the literature on Location-Based Marketing is accumulating, the topic is still under dynamic development and the research is in its early stages hence is highly inconsistent and fragmented.

The first major development in the segment was introduction of iPhone by Apple Inc. in 2008. It was one of the first location-aware, Internet- and multimedia enabling smartphone with the online electronic software distribution platform 'App Store´, where third-party applications could be published, easily browsed and installed on the device. This engaged thousands of companies and private developers to publish over 725 000 applications by February 2012 (Apple, 2012). Model created by Apple Inc. achieved broad market and public acceptance and was implemented by other major players in the smartphone and mobile operating systems industries including Android by Google Inc., BlackBerry App World by Research In Motion Ltd. and Windows Marketplace for Mobile by Microsoft Inc. among others. Many of applications published in mentioned software distribution platforms utilize concepts of location-awareness and positing technologies. In fact nowadays majority of Location-Based Services including Location-Based Marketing is based on the 'smartphone model'.

Development of sophisticated mobile, location-aware multimedia devices and opening them for third-party software as well as decreasing prices of wireless internet allowed for integration of social media and mobile technologies. Mobile users are now creating and sharing increasing amounts of media content (Multisilta et al. 2009) which can be linked with particular locations based on positing technologies. There are many dedicated Location-Based Social Media but as well all major ´traditional' social media players including Facebook and Twitter are integrating

location component to their mobile platforms. Adding geographic layer to mobile social media gives new opportunities for customer interaction and engagement. It links real life, at-the-location experiences with a virtual reality and connects social media content to physical places. It provides marketing opportunity to create an interactive customer experience, that is linking in-store activity with technology 'in the pocket' of visitors. It gives tools to create virtual community around a physical venue. Finally it allows getting unique customer insight, by analyzing social media 'voice of the client'.

The following chapter will provide the comprehensive academic framework including definitions, academic concepts and taxonomy of Location-Based Marketing based on academic research and examples of use cases.

5.1. Definition

To discuss the term Location-Based Marketing it is necessary to fully understand what is marketing itself. It can be defined as "the process by which companies create value for customers and build strong customer relationships in order to capture value from customers in return" (Kotler et al., 2011) in other words it is process through which goods and services move from concept to the customer. Marketing process includes several steps: market analysis, designing a marketing strategy, choosing so called marketing mix and managing customer relationship, implementation and control (figure 8) (Kotler et al., 2011).

FIGURE 8. MARKETING PROCESS (ADAPTED FROM KOTLER ET AL. 2011)

In the first step organizations try to understand the marketplace and customer needs and wants. Once the best opportunity to satisfy unfulfilled customer needs is identified, next step is designing a customer-driven marketing strategy. The next step is performed to construct an integrated marketing program that delivers superior value to the customer (marketing mix) and build profitable relationships with the customer. At the end all planed steps of the process should be implemented and control in order to capture value from customers to create profits and customer equity (Kotler et al., 2011).

It is crucial to differentiate between two terms: marketing and advertising. While marketing is the overall process, advertising is linked only with promotion of product or service through various communication channels intended to inform or persuade members of a particular audience (Boone et al.,2011). Advertising is a part of marketing mix within the marketing process. Marketing mix can be described as a set of tools by which marketers can influence the market. The most known concept

of marketing mix has been proposed by E. Jerome McCarthy in 1960 and it is known as 'Four Ps' that stands for: product, price, place and promotion (figure 9) (Kotler et al., 2011).

Mobile Marketing Association defines Location-Based Marketing as: "any application, service, or campaign that incorporates the use of geographic location to deliver or enhance marketing message/service" (Mobile Marketing Association, 2011). This definition is limiting LBM to be a part of Marketing Mix as one-way, enhanced communication channel used by marketers to reach customers based on their geographic position (figure 9).

FIGURE 9. PLACE OF LOCATION-BASED MARKETING IN THE MARKETING MIX - ADAPTED FROM NEEDHAM (1996) AND SCHMEISSER (2011).

This is the case of LBM based on SMS/MMS advertising model which will be described further in the dissertation. In fact the modern LBM as integration of mobile, social media and positioning technologies brings value to every step of a marketing process. It gives insight to consumer opinions, reviewes and preferences created at-the-location or/and about-the-location. It creates new segmentation and targeting strategies based on dynamic geographic position of consumers. It can provide two-way marketing communication channels allowing for rich consumer interaction, and finally it gives tools to monitor consumer in-store or/and general satisfaction about the product or servcie, consumer service quality ect. Effective Location-Based Marketing strategy not only delivers the marketing message or service to the customer but allows to gather consumer feedback. One of the most important functions of marketing is not only to communicate the value of a product or service but as well to monitor and control if the campaign target has been met and benchmarkting the results with competitors.

In the literature Location-Base Marketing is by some authors confused with the concept of geomarketing. Geomarketing is a set of tools and methods based on Geographic Information Systems (GIS) focusted mostly on three aspects: analysing spatial customer behavoir, retail location and spatial marketing management (Cliquet, 2006). Geomarketing methodology can be used to spatialy analyze and optimize elements of marketing process but it cannot be considered a part of marketing communication channel itself.

Knowing the differences between marketing and advertising it is possible to define the Location-Based Marketing as adding value through location-based technologies to particular steps of marketing process.

5.2.Concept

Location Based Marketing has been widely used by marketers for several years already but the topic has not been accademically investigated. In 2011 Shuguoli Li proposed that the concept can be described as convergence of three technologies: Location-Based Services, Mobile Marketing and Contextual Marketing (figure 10).

Mobile Marketing Assotiation defines mobile marketing as "a set of practices that enables organizations to communicate and engage with their audience in an interactive and relevant manner through any mobile device or network". Mobile marketing is the most personal form of web marketing (Krum, 2010).

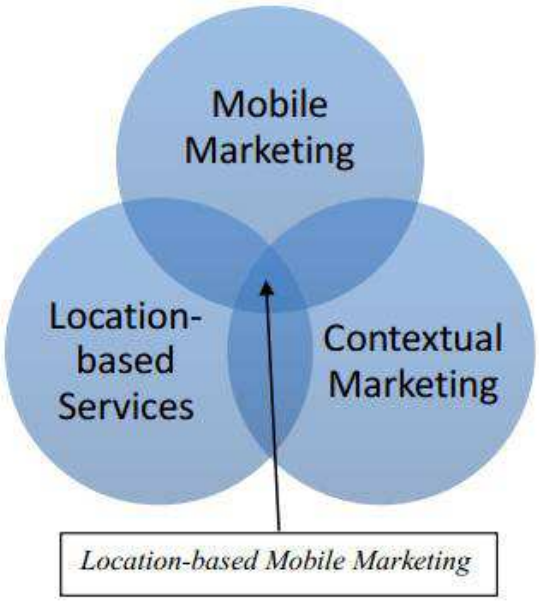

FIGURE 10. LOCATION-BASED MOBILE MARKETING (LI, 2011)

Contextual marketing as a form of targeted advertising that is using behavior or text content inputed by user to provide personalized marketing information with the Internet in real time (Kenny, 2000). In Location-Based Services as a part of Context-Aware Services the context refers to spatio-temporal data or metadata. Sultan and Rohm in 2005 presented however different approach to this concept. Knowing where and when the customer is, it is possible to discover why is he there, so the context of this visit. For example if a customer is at the futball stadium during the hour

of the match it is highly possible that he is there to support one of teams. This creates whole new way to target specific audience with a context-related information.

Within this model Location-Based Marketing could be defined as a mobile marketing utilizing positioning technologies to deliver targeted communication channel where one of the targeting variables (contexts) is user's geographic location, which again refers to advertising.

5.3.Types of Location-Based Marketing

Marketers have wide range of posibilities to location enable a campaign based on campaign strategy, objectives and budget. When preparing a marketing strategy companies usually perform several steps: market segmentation, selection of target groups, positioning the product within the target group and preparing a value proposition to the target group (Kotler et al. 2011). This process reveals whether some sort of the Location-Based Marketing is meeting the objectives of the marketing strategy of the organization. Starting from geographically targeted sms campaigns and finishing with sophisticated location-based loyalty programs - different types of Location-Based Marketing can low for different level of customer interaction and engagement.

When differentiating Location-Based Marketing from advertising one needs to highlight analytical value of LBM. Users of Location-Based Social Media like Facebook Places, Foursquare, Twitter or Flickr produce enormous number of social, spatial and temporal data which analyzed might anwser critical questions for marketers about the customers: Who? Where? When? Why? Providing this information is crucial for solving marketing intelligence issues: determining market opportunities, market penetration strategies, development metrics, investment risks and many others. Moreover some LBM tools allow to monitor LBM marketing campaigns e.g. Foursquare Merchant Dashboard. More advanced tools like Location-Based Analytics platform VenueLabs Connect give possibility to monitor geographic impact of general marketing and business activities.

In the most general way Location-Based Marketing as a part of over all marketing process can be devided into two interdependent groups: advetising and analytics (figure 11).

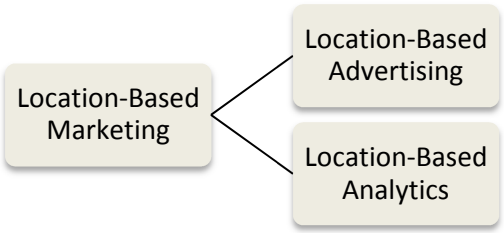

FIGURE 11. LOCATION-BASED MARKETING TAXONOMY

Location-Based Analytics platfroms can be devided into two major groups:

- Integrated (e.g. Foursquare Merchant Dashboard)
- Dedicated (e.g. VenueLabs Connect)

Integrated analytical tools are usually part of Location-Based Social Media or Location-Based Advertising platforms. Many Location-Based Social Networks like Foursquare gives business tools to monitor customers activity inside the venue. Due to privacy concerns the data is however very limited. Some of Location-Based Advertising platforms e.g. Shop Alerts by Placecast give some sort of simple monitoring tools.

Dedicated platforms are more advanced and they are utilizing potential of legally accessible location-based content from various social media services. One of the first dedicated services of this type ValueVine Connect (now VenueLabs Connect) has been launched in February 2011, threfore the industry can be concidered to be in its infancy. The platform is described in details in chapter 6.2.

From the other hand Location-Based Advertisng gives a broad spectrum of marketing possibilities. Depending on the needs of the organization there are several types of LBM bescribed below:

- Location Triggered Advertisment
- Location-Based Social Media
- Check-in Based Contests and Location-Based Games
- Local Search Advertising
- Branded LBS Application
- Proximity marketing
- Icons Embedded in LBS Applications

Location Triggered Advertisment

Location triggered advertisment is the first and most basic type of mobile LBM having its origins in the beggining of 2000s. It uses user location obtained by one of positioning technologies to provide messaging (text or multimedia message) or application alerts based on user preferences and opt-ins. These services usually require from users to opt-in or/and install and run application on a mobile device. Location Triggered Advertisment can run on both smartphones and feature phones. The most common technology used in this kind of mobile marketing is geofencing – setting up a virtual boundary around a phisical venue. Once opted-in, messages are delivered whenever a consumer enters inside the geofenced area. When applied to indoor LBM a distance to a venue can be at the level of several meters up to a few kilometers when used outdoor.

The advantage of text notifications is posibility to reach every mobile phone with access to cellular network. From the other hand the smartphone application alerts give oportunity for rich user interaction. The topic of location based text messages will be discussed in details in a separate chapter (chapter 5.4) due to its significan

potential of market coverage. Possibilities of consumer targetting in smartphone applications is also significant. Number of active users is one of the most important factors for marketers to choose a particular advertising platform therefore Location-Based Social Networks with number of users often exceeding one million are atractive in that matter.

One of example in this section is Location-Based Social Network - Loopt that allow users with smartphones to discover venues around them, braodcast their location to friends, and to 'save money' by displaying nearby promotions (Loopt, 2011). Company partnered with Groupon - internet service that features daily deals in a form of discounted gift certificates. Groupon deals are pushed in a form of alerts or notifications to opt-in users that are nearby a location of a deal. The application allows as well to purchase a coupon directly via mobile device (figure 12).

FIGURE 12. LOOPT - SERVICE DISPLAYING LOCATION-BASED GROUPON ALERTS (FROMMER, 2011)

Location-Based Social Media

Presence in Location-Based Social Media including services like Foursquare, Facebook Places or Twitter gives opportunity to build a community around particular Venue. It allow users to share their experiences: at-the-location or about-the-location with public or their social network and often gives possibility for two-way communication and direct dialog or feedback from the customer. It can provide for business oportunity to create an interactive experience in-store that leverages the technology in the pocket of their visitors—an experience that will convert them from browsers to buyers and from one-time customers to loyal fans who act as advocates in both the real and virtual worlds (Salt, 2011). Due to the importance of this topic for marketing it will be discussed in details further in the thesis (chapter 5.5).

Check-in Based Contests and Games

This type of Location-Based Marketing reward users with virtual or/and tangilbe prizes for visiting partucular locations and "checking in" or/and completing a particular tasks. Although many Location-Based Social Networks are using elements of gamification there are several dedicated platforms as well specially designed marketing campaigns.

There are two types of location-based contest and/or games used for marketing purposes:

- using existing location-based gaming platforms
- using one or multiple location based social media

Some organizations partner with location-based gaming platforms to engage customers. One of the most popular platforms is SCVNGR (figure 13). This plaftorm allow companies to create challenges for customers. Users have to perform a certain task e.g. take a picture or eat particular dish in order to earn points, which are redeemable for real-world rewards.

FIGURE 13. SCVNGR SERVICE PARTNERING WIHT BUFFALO WILD WINGS (2011)

There are as well several examples of successful location-based marketing campaigns that were utilizing potential of Location-Based Social Media to engage customers into active interaction with the brand. One of the most well know marketing campaigns of that type was organized in April 2010 in London by Jimmy Choo - fashion house specializing in luxury shoes, designer bags, and accessories. The campaign was a treasure hunt engaging users on multiple platforms: Twitter, Facebook and Foursqaure (figure 14).

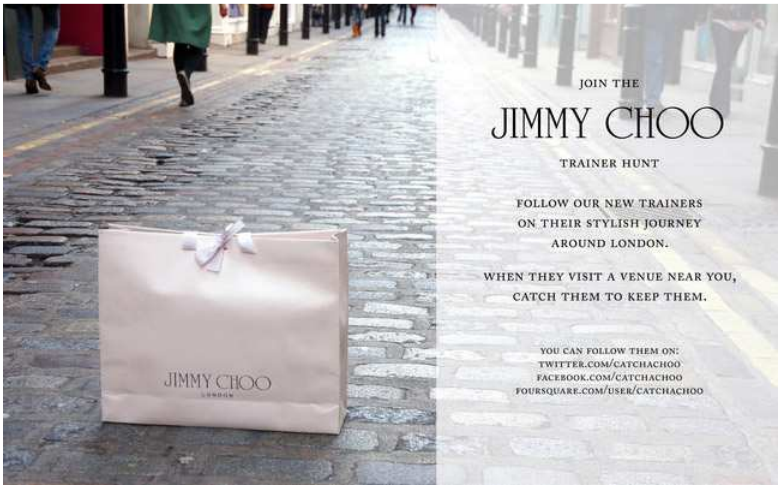

FIGURE 14. JIMMY CHOO "CATCH A CHOO" CAMPAIGN (SALT, 2011).

The concept was that a Jimmy Choo representative would place a pair of company's sneakers worth $500, take a picture, post it on the campaign twitter account, and finally braodcast the location using Foursquare. The person who found both the shoes and representative and appriached him/her with a particular phrase, won a pair of the sneakers. (Salt, 2011).

Local Search Advertising

Local Search Advertising is advertising for listings of local points of interest (merchant retailers, restuarants ect.) depending on a geographic position of a mobile device. There are many services that offer this kind of mobile service utilizing Location-Based Services including CitySearch, Dex, YellowPages, Google Places, Yahoo Local, AroundMe ect. (figure 15). Recommendation services Yelp or Locarion Based Social Networks like Foursquare have olso functionality of local search. Often sponsored listings may be also included in the listing.

FIGURE 15. CITYSEARCH APPLICATION.

Ususally this kind of applications have functionality to perform a local search based on different cathegories of venues as well as browsing venues on the map. The aim of marketers is to promote their venue within the service. These kind of solutions started to utilize the concept of augmented reality in order to be more atractive for users (figure 16).

FIGURE 16. LOCAL SEARCH AUGMENTED REALITY.

Branded LBS Application

The usage of LBS technology to enhance brand-owned mobile media services. Within this type of Location-Based Marketing there are two models used by organizations:

- general branded applications (e.g. the weather channel)
- customer value-adding branded applications (e.g. maijer hipermarket chain)

Media brands are the most ardent supporters of the first group of apps. One of the best examples here is Weather Channel App that has a functionality to display weather forecast at the location of the user (figure 17).

FIGURE 17. WEATHER CHANNEL APP.

The other group of applications are branded LBS services that are adding-value to customers of a particular brand. Meijer - American hypermarket chain (in cooperation with Point Inside Inc.) released the "The Meijer Find-it" application. The aim of the application is to pinpoint the items that customer is looking for on an in-store map and navigate user to this location. The application allows as well to activate discount coupons ect. (figure 18).

FIGURE 18. MEIJER FIND-IT APPLICATION.

Proximity marketing

Proximity marketing refers to localized wireless distribution of advertising content associated with a particular place. This kind of Location-Based Marketing is not linked with geographical coordinates but with a distance to shortrange wireless technologies including Bluetooth, WiFi, NFC (Meghanathan, 2011).

FIGURE 19. EXAMPLE OF BLUETOOTH MARKETING MESSAGE.

Due to several technological issues Bluetooth as well as WiFi proximity marketing although still used did not achieve a major market acceptance. The technology that seems to have a potential to be widely used is Near Field Communication. Interest in NFC has surged in 2011, primarily because Google recently joined a cadre of wireless carriers, banks, and credit card companies planninga number of ways to use the technology for mobile payments in the United States (Hopkins et al., 2011). NFC is a radio communication that is enabled when two devices or device and NFC chip are touching each other or are in a close proximity (usually no more than a few centimeters). This gives marketers a field to create completely new level of in-store interaction with a customer.

Icons Embedded in LBS Applications

Icons embedded in LBS applications is a sponsored embedded advertising. Sponsored embedded advertising that is displayed without a search in a form of icons or logos displayed in maps or augmented reality.

FIGURE 20.EMBEDDED ICON (MAPQUEST, GASBUDDY APPLICATIONS).

5.4. Location Triggered Advertisement

Advertising is linked with promotion of product or service through various communication channels. Location-Based Advertising can be considered promotional message send by text or multimedia message based on user geographic position.

Although the market share of smartphones is growing very fast the majority of mobile phone users still own feature phones. According to The Pew Research Center 2011 the 83% of adult Americans own a mobile phone and 35% of them own a smartphone. There are close to 6 billion active mobile subscriptions across the globe (Andersson, 2011) of which less than one third are smartphone owners, that is why the potential of SMS and/or MMS based mobile marketing accessible from every mobile phone, cannot be underestimated.

The study performed by Bruner and Kumar in 2006 showed that at this time attitude towards mobile advertising, including location-based advertising was rather negative. User did not differentiate between regular and location-based marketing messages. Receiving too many messages from marketers even if users have opted-in with, caused users to consider those messages as a spam. "Consumers saw mobile spam as having a negative impact on the brand image of the mobile network operator" (Bruner II et al., 2007), especially that in the United States, the user is financially responsible for the transmission and reception of messages (Fattah, 2003). The study done by Kelley et al. in 2009 published in 2011 showed that users' have strong privacy concerns towards this potentially invasive form of advertising however advanced privacy settings may help alleviate some of these concerns, making users more comfortable.

The company called Placecast has used the potential of such a solution. The organization provides services Shop Alerts. It is an opt-in marketing service via mobile devices designed to drive customers to specific physical venues. ShopAlerts is a white-label service that delivers location-triggered mobile messages when customers enter geofenced area. The service works automatically on any mobile phone and does not require installing additional applications. Users opt-in to a given brand's program and receive text messages on their phone with information, coupons and offers from places of interest around them.

In October 2010 Placecast collaborated with O2 the second-largest mobile operator in the United Kingdom owned by Telefónica. Two companies launched a six-month location-based marketing pilot in the UK, signing up Starbucks and L'Oréal as the first two brands to take part in the trial. The project invited consumers to opt in to the service to receive relevant messages dependent on their age, gender, interests and their location. In October 2011 according to Placecast they have reached 6 million subscribed customers (Placecast, 2011).

It is important that user receive only relevant messages. Besides promotional messages they could have as well situational context (time of day, weather, community routes) or emotional context (places that might connote use of or

relevance to the retailer such as sporting and event venues, recreation areas) (Placecast, 2011). O2 says that typically a user gets no more than one message per day, and only between four and six promotions per month. Messages sent as part of the service are free to users. It is as well clear how to opt-out from the service.

This solution gives opportunity to target wide number of mobile subscribers, however from the practical perspective it requires from the service provider to have an agreement with network operator and users to opt-in to receive promotional materials, which in cases of small brands and campaigns is not cost effective.

5.5.Location-Based Social Media

Social Media is a "group of Internet-based applications built on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content" (Kaplan, 2010). Business have been adding social media including Twitter and Facebook to their marketing mix from the early beginning of the phenomenon. In the beginning of 2012 Facebook had more than 800 million active users, from which 44% accessed the service through their mobile devices (Facebook, 2012). Twitter had over 300 million users from which 55% were mobile users (Twitter, 2012). In the next stage of development social media started to utilize the concept of location. First by Location-Referring Services e.g. venue social recommendation web services where users were publically sharing their opinion and experiences about particular restaurant or store. Further the intersection of social media and Location-Based Services resulted in the development of Location-Based Social Networks or Location Sharing Services, which can be defined as social media or networks that are accesible through a mobile device which allow to broadcast user's location or geotag created content. Location Based Social Media can be broadly devided taking into account how they are utilizing the concept of location:

- 'At-the-location'
- 'About-the-location'

'At-the-location' services can be defined as services where location-based content is created at the geographic location. 'About-the-location' services can be defined as services which are refereing to particular location but the content is not necessarily created in this particular physical place.

From the other hand Location-Based Social Media can be devided taking into consideration dedicated functionality of services:

- Location-Based Social Networks or Location Sharing Services (e.x. Foursquare, Facebook Places)
- Location-Referring Services (e.x. Yelp, Qype, Google Places)
- Social Media with geotagging functionality (e.x. Flickr, YouTube)

Within this three cathegories only the first group – Location-Based Social Networks is fully dependent on mobile devices , which means that users are able to use the core functionality only with the location-aware mobile device with installed specific application. The content of this type of Location-Based Social Media is assumed to be created at the location of the venue it refers to. Two other groups are web based services that are offering additional features with their mobile versions e.g. local search, automatic geotagging. Location-Referring Services content is not likely created at the location of the venue it is about the location. Social Media with geotagging functionality content can refer to anything (not necessarily the location that it was created at). Geotagging usually can be automatically done with a mobile device but in some cases it can as well be added later using camputer (e.g. Flickr). All of these services offers different privacy settings, so that particular information can be visible publicly, to venue owners, and to personal social networks.

From the marketing perspective all types of LBSM can bring value to marketing process however Location-Based Social Networks are receiving the biggest attention due to their interactive potential of building community around physical venues. Most popular LBSN can be devided into two major groups depending on whether the location is linked with the core functionality or it is a additional feature:

- Dedicated
- Integrated

Dedicated Location-Based Social Networks include such a media where the primary functionality is based on Location-Based Services (location of the mobile device and wireless internet). There are more than one hundred of dedicated LBSN but most of them did not achive any significant market recognition. The most popular service from this group is Foursquare with the community of 15 million users world wide (Foursquare 1, 2012) and growing around 1 million users per month (Lindqvist et al., 2011). The other services until now did not capture that significant number of active users however their unique functionality and specific user group can be of significant value to particular brands in their market segment. The industry can be consider to be in its infancy and it is struggling with several issues. The first problem is lack of profitable business models to monetize user base. The second issue is lower than anticipated user acceptance for location sharing services. Due to several scandals including iPhone by Apple Inc. in April 2011, the location tracking technology in mobile devices was under intense scrutiny. Nonetheless Location-Based Social Networks are gradually achieving mainstream market acceptance what is visible in the growing number of users.

Dedicated Location Based Social Networks	
Name	**Number of users (in December 2011)**
Foursqaure	15 mln
Loopt	5 mln
BrigthKite	3 mln * shut down in Dec 2011
SCVNGR	1 mln
Gowalla	1 mln * aquired by Facebook in Dec 2011

TABLE 2. LIST OF MAJOR DEDICATED LOCATION BASED SOCIAL NETWORKS.

From the other side Integrated Location-Based Social Networkd are those where location is an extra feature, not necessarily a core functionality. Two major players in this group are Facebook and Twitter, but as well other services including Flickr and You Tube that are utilizing location-awareness of mobile phones. Facebook added location-based functionality in August 2010 introducing Facebook Places and from that time it recorded more than 40 million users broadcasting their geographic location (Toy, 2011).

Most of Location Based Social Networks have in common so called 'checking-in' - the act of claiming one's location in a particular venue (verified by positioning system) and sharing it with one's social network, general public, or selected individuals. There are two types of 'check-ins': active and passive. Active is when user physically pushes a button on his location-aware mobile device to claim his presence in the venue. Passive is when user's device or an action (e.g. swiping a loyalty card) claims his presence in the venue without him physically doing it in a mobile device (Strout et al. 2011).

5.5.1. Location-Based Social Networks - Foursquare

Foursquare is the biggest and fastest growing Location-Based Social Network and its marketing value has been already acclaimed. Its characteristics represent in the most comprehensive way general attributes of LBSN.

Foursqaure was launched in March 2009. On the company's website one can read that it is a "mobile application that makes cities easier to use and more interesting to explore. It is a friend-finder, a social city guide and a game that challenges users to experience new things, and reward them for doing so. Foursquare lets users 'check in' to a place when they're there, tell friends where they are and track the history of where they've been and who they've been there with" (Foursquare 2, 2011).

Foursquare is a social network so it allows connecting with friends and keeping track of where they are and what are they doing. To engage more friends or/and followers from other social networks user can connect Foursquare account with his/her Facebook and Twitter profiles and broadcast the venue that he/she checked-in via those services. The other major funtionality is link with place discovery. Based on positioning system user can browse through venues that are phisically around him. Users can as well add a new place that was not present in the

service. What seems to be one of the most important aspects from user perspective is that Foursquare employs elements of gamification – particular features used traditionally is games in order "to improve user experience and user engagement in non-game services and applications" (Deterding et al. 2011). Foursquare uses elements including collecting points, badges and mayorships to motivate people to engage more with the service and while the service is not a game as such, it arguably features pervasive game elements using real places (Cramer et al.2011). "The game aspect of foursquare offers virtual and tangible re-wards for check-ins. Virtual rewards come in the forms of points, badges (figure 21), and mayorships visible in one's public pro-file. Badges are awarded for a variety of reasons, e.g. for starting to use the service, checking-in on a boat, checking-in with 50 people at the same time, or checking-in at a spe-cial event. Mayorships are awarded to a single individual for having the most check-ins in a given place in the past 60 days, where only one check-in per day is counted" (Lindqvist et al., 2011).

FIGURE 21. FOURSQUARE BADGES.

Foursquare is giving business several oportunities to utilized it's functionality. From the marketing point of view presence in a major social network is additional communication channel. If it fits into marketing strategy and budget than it should be utilized. When a customer checks-in to a particular venue he is a potencial client, who shared his visit with a social networks. The first reward for customer is that he is getting points, that might lead to gaining new budges of a mayorship. However from the marekting perspective a customer likes to be rewarded in a tangible way (Kotler et al., 2011). Foursqaure gives business as well posibility to reward custmers in a tangible way with a free of charge tool – Foursquare Specials (figure 22).

FIGURE 22. FOURSQUARE SPECIALS

Foursquare Specials are rewarding customers with a tangible reward depending on a goal of promotion (Foursquare 3 , 2012):

- **Newbie Special** - unlocks on a user's first time visitng your venue. This is the most direct way to drive new traffic to your venue.
- **Friends Special** – a number of foursquare friends need to check-in with to unlock a special.
- **Flash Special** – limited daily quantity of goods sold with a special offer.
- **Swarm Special** – a number of foursquare users need to check-in within a 3-hour window in order to unlock a special.
- **Check-in Special** - every check-in gives predefied reward
- **Loyalty Special** – rewards for retaining customers
- **Mayor Special** – reward for a mayor - the most frequent visitor over the last 60 days.

User see on the mobile device which venue offers a Special. Venues can olso order a customized badge for its customers from Foursqaure. This tool requires however some financial investments.

Foursquare has currently clients for the following mobile operating systems: iOS, Android OS, Windows Mobile OS, BlackBerry OS, Palm OS, and the Android platform (Foursquare 1, 2012).

5.5.2. Foursquare privacy policy from marketing perspective

Foursquare is very strict about the privacy matters and it does not allow venue managers to overuse any personal data for business purposes. On the company's website one can read the follow privacy policy concering data sharing with venue owners. Additionally user can opt-out from every information sharing settings.

"Check-ins:

- Verified venue owners can see the users who have checked into their venue within the last 3 hours
- Verified venue owners can see the time you checked into their venue and the total number of your check-ins at that venue if you are one of the 10 most recent check-ins
- Verified venue owners can see the number of your check-ins at their venue if you're one of the top 10 most frequent visitors

Contact Information:

If user has checked into a venue within the last 3 hours, are is one of the 10 most recent visitors or one of the top 10 most frequent visitors, verified venue owners can see:

- Name: Just first name, last name initial
- Email and phone: No
- Photo, with link to your Profile: Yes

Mayorship and Badges:

- Verified venue owners can see who is the Mayor of that venue

Linked Account:

If user has checked into a venue within the last 3 hours, is one of the 10 most recent visitors or one of the top 10 most frequent visitors and user has linked his Twitter account to foursquare account, verified venue owners can see user's Twitter ID."

This policy is significantly limiting posibilities how marketers and/or venue managers can use Foursqaure data. It however gives however the important signal for users that their privacy is one of a major priorities for the service.

5.5.3. Foursquare users motivations and behavioral patterns

In order to investigate the value of Location Based Social Networks for marketing purposes one need to understand what is the user's motivation for location sharing. In the paper published in 2011 "I'm the mayor of my house: examining why people use foursquare - a social-driven location sharing application" Janne Lindqvist et al. have investigated in quantitative and qualitative the research question. The quantitative survey with 219 participants revealed several motivators for participants that can be of significant value for marketers:

- **Gaming, fun, badges** – the most perceived value seems to be linked with the element of gaming, collecting points and badges contributes to the perceived fun of Foursquare.
- **Social connection** – interacting with friends seems to have a big value for users. The most important aspects are: knowing where the friends are and keeping in touch with them and checking-in to the same places and the same time. The social aspect of Foursquare is very important here, majority of participants claim that Foursquare is fun because their friends are using it.
- **Place discovery** – majority of users have discovered a new places or where motivated to go to new places because of Foursquare. Most participants where pleased with tips about venues that they have seen on the service. The discounts offered by venues were not that important for users – less than half of them addressed it as a motivation.

The other significant issue is linked with the question: where when and how often do people check-in? The same research displays on a figure 23 frequency of check-ins for various places.

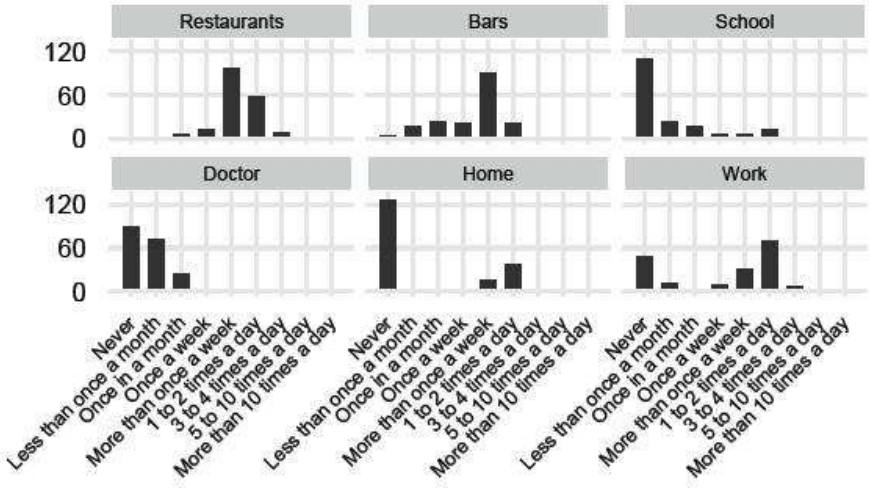

FIGURE 23. DISTRIBUTION OF HOW OFTEN USERS CHECK IN TO A NUMBER OF SPE-CIFIC LOCATIONS. "HOME" AND "WORK" EXHIBIT A BI-MODAL DISTRIBUTION (LINDQVIST ET AL., 2011)

From the bar charts one can observe that restaurants and bars are the most popular places to check-in at even several times a week, which seems to prove the social and place discovery usage model of Foursquare. From the other hand participants hardly ever check-in at schools and homes, which might be caused by privacy concerns. There is a small group of users that are willing to share their home location and a bigger one that share work location even more than once a day. The survey showed that there are people who are interested in gaining as many points, badges, and mayorships as possible, and check-in everywhere (Lindqvist et al., 2011)

The other reseach by Cheng et al. 2011 investigated patterns from more than 22 million check-ins globally. Generated from the data tag cloud of the most popular venues that users check-in shows

FIGURE 24. VENUE CLOUD FOR CHECKINS (CHENG ET AL. 2011)

that the most popular places are restaurants, coffee shops, stores, airports, and other venues reflecting daily activity (e.g. fitness, pubs, church). The result seems to prove several points from the Lindqvist et al. 2011 paper presented above. Cheng et al. researched as well the temporal distribution of check-ins in the World (figure 25).

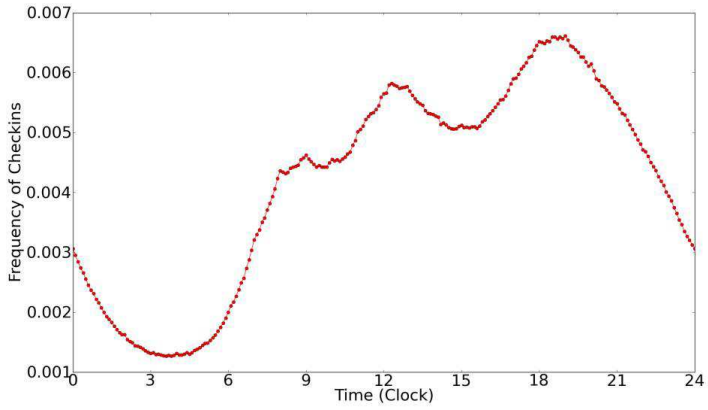

FIGURE 25. THE WORLD MEAN DAILY CHECKIN PATTERN (CHENG ET AL. 2011)

This pattern provides a glimpse into the global daily activity intensity. One can observe there three major peaks: one around 9am, one around 12pm, and one around 6pm.

6. Location-Based Analytics

Location Based Social Media gives new possibilities to marketers. They are not only a new communication channel but they allow engaging customers, interacting with them, getting a direct feedback or even talking to them (Salt, 2011). When users 'check-in' they broadcast their location to the public, their social network and as well share certain information with venue managers. Although it is significantly limited it gives business some possibilities to find out who their customers are, who are their friends, what do they do etc. This kind of information in such a scale was previously difficult to obtain.

From the perspective of retail and service organizations Location-Based Marketing in Social Media is a new channel and value of it seems be recognized however not necesserily understood and measured (Ray, 2010). Although companies have been investing in social media marketing for several years already and those expenditures are growning year by year, marketers continue to struggle with the methodologies for validating these investments (Ray, 2010). Inability to measure the Return on Investment was named by marketers as one of the most significant barriers to the adoption of social media tactics by organizations (Fisher, 2009). Potential benefits from implementing social media marketing have been broadly discussed in the litrature (table 3). Eventhough there some established Key Performance Indicators (KPIs) to measure those benefit, their direct impact on the organizations financial performance has still not been measured and many marketers claim that non-financial character of social media insight should not be turned into financial measurement (Fisher, 2009).

Benefits	Measurement
Generating awareness of a brand	Unique page views, fan/follower counts
Increasing engagement with a brand	Facebook, blog ect. comments, re-Tweets, time spent on the Web site
Increasing brand's influence	Third-party mentions and links
Motivating specific actions (purchases, leads, etc)	Conversions/sign-ups rates
Social reach	Presence on a different platforms
Increased traffic/subscribers	Increase in % of generated traffic
Improved search ranking	Linear increase in search ranking
Reduced marketing expenses	% saved expenditures
Increased Sales	% of net sales increase

TABLE 3. BENEFITS/MEASUREMENT OF SOCIAL MEDIA MARKETING (ADAPTED FROM SKERIK, 2011; MURDOUGH, 2009)

A customer's value is not equal to how much they spend at a store, businesses need to take into consideration future purchases and the influence they may have through social media (Skerik, 2011). Universal McCann's Social Media Research Wave 3 research report (published in Spring 2008) looked at 17 000 Internet users in 29 countries. According to this study, social media can have a dramatic impact on

brands reputation: 34% post opinions about products and brands on their blog and 36% think more positively about companies that have blogs.

Marketing in mobile Location-Based Social Media gives from the other hand different oportunities. It connects virtual social media with physical world via location-aware mobile device, which mean that a customer can not only interact with a brand in front of the computer but as well being in a physical nearness from point of sales. It provides marketing opportunity to create an interactive customer experience, that is linking in-store activity with technology 'in the pocket' of visitors.

Location-Based Social Media provide as well different value to organizations. It gives new opportunities to monitor social media not only by brand in general but as well by particular locations of a brand. This new possibilities need a well a new approach. There is a significant discrepancy between theoretical concepts of measurable value of Location-Based Social Media data for marketing and the actual data than can be legally accessed and used in the most popular LBSM due to privacy issues and limitations of different platforms. The following section will review what kind of data can be accessed using two Location-Based Analytics plafroms: integrated - Foursquare Merchant Dashboard, and dedicated – VenueLabs Connect. Further, it will compare content of two types of Location-Based Social Media: 'at-the-location' and 'about-the-location' based on Frankie's Sports Bar & Grill case study.

6.1. Foursquare Merchant Dashboard – integrated Location-Based Analytics

Foursquare gives to business mangers a tool to monitor their venues - Foursquare Merchant Dashboard (figure 26 and 27). It gives access to the following real time data:

- Total daily check-ins over time
- Most recent visitors
- Most frequent visitors
- Gender breakdown of customers
- Daily temporal breakdown of check-ins
- Portion of venue's Foursquare check-ins that are broadcast to Twitter and Facebook

As stated in the section reviewing Foursquare privacy policy (5.5.2) there are strong limitations on accessible data, to ensure that verified venue owners will not overuse any personal information for business purposes. Verified venue owners have access to data concerning: users who have checked into the venue within the last 3 hours, number of user check-ins if he/she is one of the 10 most recent check-ins, number of user check-ins at the venue if he/she is one of the top 10 most frequent visitors, (photo, first name and first letter of the second name)twitter ID if not limited by user in a customized way.

FIGURE 26. FOURSQUARE MERCHANT DASHBOARD - STATISTICS (FOURSQUARE PRIVACY SETTINGS, JAN 2012).

FIGURE 27.FOURSQUARE MERCHANT DASHBOARD – USERS (FOURSQUARE PRIVACY SETTINGS, JAN 2012)

6.2. VenueLabs – dedicated Location-Based Analytics

Although there are several platforms that allow to monitor social media e.g. Radian6, MicroStrategy Social Intelligence, only few of them utilize the potential of location-based social data. Currently the only social media analytics company that is entirely built around location-based content is VenueLabs.

VenueLabs is a Seattle based company funded in 2009 as ValueVine offering social media promotion software (Appendix I). In Feburary 2011 the company launched ValueVine Connect – the first platform described by founders as 'Local Storefront Analytics' – that tracked and measured consumer activity by location. The platfrom was targeted to franchise companies with multiple branches. After releasing that product ValueVine experienced a significat interest and growth in this area and in October 2011 the founders decided to rebrand the company to VenueLabs and focus particulary on the niche of Location-Based Analytics.

While the single location retail store or restaurant is able to manage multiple sources of location, social content the large chain companies are facing a challenge in this area. VenueLabs Connect platform addresses these challenges by using source-based search engines versus keyword-based search engines used by most of web monitoring platforms (e.g. Radian 6). Keyword engines are searching and indexing websites to find 'a keyword' about particular organizations or/and brands while VenueLabs identifies the Location-Based Social Media websites and reports to clients information accumulated from each of those web services.

Essentially the company monitors, agregates and analyse location-based and location-referring social media data including: check-ins, tweets, likes, reviews, shares, comments, mentions, follows from relevant resources and presents them in a form of a dashboard (figure 28). All the data used by the company are openly available on the internet. VenueLabs reports that there is a significant 'blind spot' in the local information acquired through keyword-based search. The 'blind spot' can be defined as the gap between the information refering to particular location but not listed as relevant due to the search technology. VenueLabs reports that this gap can reach 70%.

VenueLabs company have kindly granted me the access to their Location-Based Analytics platfrom for the research purposes. Due to privacy issues granted access is limited and cannot utilize all the features of the service. The aim of the reseach is to analyze quantitative and qualitative, non-financial measures that can be relevant to determine potential benefits coming from Location-Based Marketing. The aim of the research is not to test quality of the performance of the service.

FIGURE 28.VENUELABS PLATFORM DASHBOARD

Presented on the figure 28 VenueLabs platform dashboard shows several metrics used by the company to measure performance of its clients brands:

1) Performance of the brand (aggregated from all location):
   - Persentage of positive consumer sentiment (vs. negative sentiment)
   - Number of check-ins over different platforms
   - Number of Facebook fans
   - Number of Twitter followers
   - Number of reviews over different platforms
   - Sentiment trends (positive and negative over time)
2) Comparison of brand's locations over time:
   - Activity
   - Sentiment
   - Reach
3) Performance of particular location (on the right panel map)
4) Qualitative Information:
   - Recent Active Channels
   - Biggest Fans
   - Biggest Critics

- Loudest Voices

The most crucial quantitative information presented on the pannel is consumer sentiment. It is measured as aggregated over last 10 weeks from all resourses percentage of positive opinions in all aggragated positive and negative opinions. The number is generated by adding together all positive opinions and negative opinions in a linear way, without applying any weights. Neutral or not qualified messages are not taken into concideration. The sentiment is identified by keyword recognition algorithm. The analysis performed further within the dissertation shows that algorithm works well for short messages/opinions/reviews of customers however relatively long messages are often mistakenly assigned to wrong cathegory changing the result. Nonetheless the value of the sentiment information can be measured and assign to:

- A brand in general
- To specific locations or group of locations
- Temporal variations of sentiment of a brand and of specific locations

The activity comparison shows overall consumer activity at the brand locations. Activity is defined as checkins, mentions, comments, and likes. Reach comparison shows how widely content for each location has grown over time.

VanueLabs show as well the most active online channels for a brand in the last 60 days. The dashboard allows to view users that are considerted to be the biggest fans and biggest critics. They are selected based on previous sentiment identification and again keyword search engine to identify the best/the worst opinions/reviews. The loudest voices represent those consumers that are most engaged with a brand. They might represent every kind of sentiment but they are the most active online.

The other product of VenueLabs company is called VenueRank (figure 29) and was relesed in November 2011. It is a single score in the range of 0-100 that allows VenueLabs clients to compare storefronts within a brand, across brands with competitors, and groups of stores within and across brands. The score examins four different dimentions:

- consumer sentiment
- community engagement
- community size
- reach

FIGURE 29. VENUERANK SCORE EXAMPLE.

Community engagement stands for online activity on the monitor social websites refering to particular location. Community size refers to number of followers across platforms. Online reach refers to presense across multiple platforms. The algorithm of weighting the components of the score is a trade secret of the company and could not be obtain.

6.3. Analysis of content in 'at-the-location' and 'about-the-location' Location-Based Social Media

This section will analyze and compare content of two types of Location-Based Social Media: 'at-the-location' and 'about-the-location' based on VenueLabs Connect technology and Frankie's Sports Bar & Grill case study. 'At-the-location' services will be represented by Location-Based Social Network – Foursquare and 'about-the-location' services by Location-Referring Service – Yelp[4]. In the first case content is usually produced at or near the point of sales via mobile device. In the second case customers are stating their opinion after visiting the venue usually using computers. This spatial and temporal differences in the way that customers are stating their reviews (Yelp) and tips (Foursquare) has not yet been academically discussed. This study will investigate those differences and content of both services in quantitative and qualitative way.

The analysis was performed based on the open data available on the internet. Analyzed venue has been selected based on several criteria linked with VenueLabs conflict of interests and feasibility of the analisys:

- The venue cannot be the present or past client of the VenueLabs company

[4] http://www.yelp.com/ – Yelp – social networking, user review, and local search web service.

- The venue needs to have between 3 and 10 locations
- The venue needs to actively use social media marketing.
- The venue needs to have an active Foursqaure Specials promotion during investigated period of time.

Taken into concideration above criteria I have proposed to VenueLabs consequent venue: "Frankie's Sports Bar & Grill" which was accepted by VenueLabs company. The venue is a sports bar and restaurant that has in total three locations in the state of Texas in the U.S. and actively uses social media. Further information about the venue and online resources used to aggregate data can be found in the Appendix II.

The data from both services Foursquare and Yelp has been aggregated and analyzed during the following period 1 Jan 2010 – 26 Jan 2012. The analysis has been devided into quantitative and qualitative parts. Quantitative part investigated the difference of consumer sentiment and average word counts. The qualitative analyzed the content stated on each platform.

The quantitative study investigated consumer sentiment in different services. After performing pre-study tests it was revealed that the VenueLabs technology of sentiment assesment is might be unreliable, therefore all the reviews and tips have been evaluated manualy. Although this method is subjective it provides more trustworthy results. The results have been cathegorized into positive, negative and neutral. All the observations that could not be unambiguously assigned to a particular group were evaluated as neutral and excluded from the result.

There were in total 145 observations reviewed, 82 from Location-Referring Service – Yelp, and 63 for Location Based Social Network – Foursquare. 27 of all observation were qualified as neutral or ambiguous (figure 30).

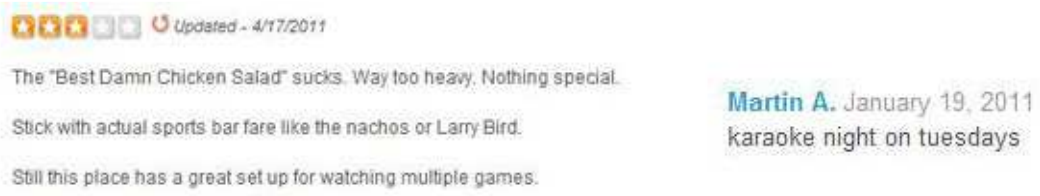

FIGURE 30.AMBIGUOUS AND NEUTRAL CUSTOMER REVIEWS ON YELP AND FOURSQUARE SERVICES.

From the total qualifield as positive and negative messages reviewed from both services (table 4) one can observe that in both types of services users are expresing negative opinions using more words than positive. Relatively high standard deviation of number of words used in stating every kind of opinions using Yelp suggests that although the number of words exceeds 100 there is no consistency in that matter. Customers sharing their tips on Foursquare using mobile device are typing around ten times less words than users via computers, which is the expected result taking into concideration small screens and convenience of typing.

	Lewisville			Fort Worth			Dallas			Total		
Yelp												
	P	**N**	**NT**	**P**	**N**	**NT**	**P**	**N**	**NT**	**P**	**N**	**NT**
Reviews Count	11	6	4	11	2	3	26	10	9	48	18	16
Words Mean	129,6	144,2	83,3	131,7	61,5	251,3	88,9	172,0	97,4	108,0	150,4	122,8
Words Median	79,0	113,5	96,5	97,0	61,5	63,0	79,0	134,5	72,0	84,0	103,5	81
Words St Dev	96,4	93,5	28,4	92,8	29,5	274,9	60,6	144,5	67,8	80,8	125,6	144,2
Satisfaction	65%	35%		85%	15%		72%	28%		73%	27%	
Foursquare												
Reviews Count	10	1	5	3	12	2	20	6	4	33	19	11
Words Mean	10,4	10,0	8,2	7,7	18,9	0,0	9,4	16,7	7,3	9,5	17,7	7,4
Words Median	9,0	10,0	9,0	8,0	14,0	5,5	7,0	14,5	5,0	8,0	14,0	5,0
Words St Dev	4,6	0,0	3,2	4,5	10,9	1,5	5,8	11,5	3,9	5,4	11,0	3,4
Satisfaction	91%	9%		20%	80%		77%	23%		63%	37%	
Total Satisfact.	75%	25%		50%	50%		74%	26%		69%	31%	

TABLE 4. LOCATION-BASED CONTENT QUANTITATIVE ANALYSIS (SAMPLE SIZE – 145; P – POSITIVE, N – NEGATIVE, NT – NEUTRAL OR AMBIGUOUS).

One can observe that 37% of emotional customer opinions that have been written via location-aware mobile device phically inside the venue are negative against 27% negative opinions written by customers outside the venue. This would suggests that customers in the physical location of the venue are more likely to express and share their negative experiences in social networks. The result is however strongly biased by Fort Worth venue where customer in-store experience expresed using Foursquare is highly negative. Excluding this venue for analysis would have change the results significantly.

Qualitative investigation of the results might reveal some issues that could explain such quantitative patterns. Qualitative research will be performed through content analysis which is research method for sociology to study written communication (Anandarajan et al. 2010). Following Anandarajan (2010) one of the most basic however effective tools to perform content analysis are tag clouds. Tag clouds, originated from social media, are highly effective in summarizing large amounts of text in an easily readable and understandable, visual manner (Berry et al. 2010). The relative size and weight of the font of each tag corresponds to the relative frequency of its use (Hearst ,2008). Color was introduced to increase legibility. This method has been proposed as well due to its practical value – it could be relatively easy implemented in the VenueLabs Connect functionality.

Knowing the context and results of quantitative analysis one can draw some conclusions (subjective) based on the following visualizations. The visualizations were made in the online tag cloud generator www.wordle.net with the limitation to 20 most frequent words, due to visibility reasons. Each tag cloud represents positive or negative consumer sentiment for particular Location-Based Social Media platform and each venue.

	Lewisville	Fort Worth	Dallas
Positive			
Negative			

TABLE 5. YELP CONTENT TAGS CLOUD BY SENTIMENT AND LOCATION.

	Lewisville	Fort Worth	Dallas
Positive			
Negative			

TABLE 6. FOURSQUARE CONTENT TAGS CLOUD BY SENTIMENT AND LOCATION.

Visualy analyzing above tag clouds one can find several impresions about the brand and about particular venues. In four out of six negative tag clouds one can observe words: 'service' in two out of six 'waitress' – this suggests that consumer service is one of the things that consumer complein in the social media. In Lewisville location three out of twenty words mentions smoking: "smoke', "smoking", "cigars", which showes negative customer attitude. The word 'Wings' could suggest that clients are pleased with this menu item in that location. Fort Worth which is the venue with negative sentiment of 80% on Foursqaure owe this result to slow service that are two most frequent words. No very strong visual accents on positive side seems that customers have not enough incentives to share their hapiness. In Dallas location 'Tuesday free pizza' promotion seems to actract a lot of attention.

Case study of 'Frankie's Sports Bar & Grill' analyzed based on VenueLabs technology could not unambiguously show that there is difference between consumer sentiment broadcasted at the location and outside the venue. Excluding the outlier venue - Fort Worth from total results would give the result: Yelp – positive 70% , negative 30% and Foursqaure – positive 74% , negative 26%, which sie not a relevant difference. The analysis has to be performed on the sample size consisting of higher number of venues. It was however observed that unsatisfied customers are willing to write around 50% longer reviews/tips but it does not depend whether published in Location-Based Social Networks or Location-Referring Services. As expected the

length of statements produced via mobile device is much shorter than the one produced on the computer.

Content analysis using tag clouds did not bring any result that could suggest qualitative differences in reviews and tips based and the place of broadcasting. It however proved that this method can reveal several issues e.g. poor customer service, as well as customer preferences e.g. daily promotions. It can be as well observed that content analysis should be applied to investigate all marketing activities of businesses. Within all tag clouds, only one (Dallas) had indication stating consumer attitude towards Foursquare specials.

6.4. Conclusions

Previous sections of this chapter discussed how marketing performance of the organization/brand can be measured with Location-Based Social Media data. Measuring and managing return on marketing investments—has become an important part of strategic marketing decision-making (Kotler et al., 2011). Marketing managers must ensure that their marketing dollars are being well spent, therefore setting up campaign Key Performance Indicators and searching for industry benchmarks is crucial part of marketing process (Sponder, 2011). Due to fact that there is a significant discrepancy between theoretical concepts of value of location-based data for marketing and the actual data than can be accessed and used, it was important to investigate which of location-based content can be actually legally accessed and measured.

Two types of Location-Based Social Media platforms have been reviewed and investigated in terms of approach and accessible data:

- Integrated – Foursquare Merchant Dashboard
- Dedicated – VenueLabs Connect

Based on the analyses one can state that those two kind of analyzed platforms have different purpose. The first one is platform dependent and it gives indications about performance of a venue in particular Location-Based Social Media. This solution can be used for monitoring, measuring, and analyzing specific marketing campaign. The review of Foursquare Merchant Dashboard as well as Foursquare privacy policy revealed that number of accessible data is significantly limited. It gives however key information about the performance of a campaign - customer temporal activity patterns (check-ins). Depending on percentage number of check-ins in total number of customer transactions, as well as target customer group of a particular venue the information provided by Foursquare analytics platform could be a reliable sample of all customers.

Dedicated Location-Based Analytics platform – VenueLabs Connect with VenueRank provides different kind information. It cannot access private information generated by specific platform e.g. Foursquare Merchant Dashboard but it can

aggregate openly accessible data from different platforms and based on that present general consumer sentiment and online activity. Analyzing the case of "Frankie's Sports Bar & Grill" and VenueLabs company tools allowed to indentify several groups of information that could be important from marketing point of view and difficult to obtain in any other way.

In-store consumer sentiment

Measuring percentage of positive messages against percentage of negative messages allows monitoring consumer satisfaction and its temporal changes. This gives indication about overall customer experience and allows monitoring which venues are performing below and above brands average. Analysis showed that in-store experience in the Fort Worth venue among customers who are sharing their experience at the location is very bad. Analyzing temporal changes of the sentiment over time using VenueLabs dashboard showed that the quality of customer experience is not increasing.

Quality of consumer service

After investigating consumer satisfaction qualitative study using tag cloud visual analysis revealed that customer service seems to be significant problem the bar chain.

Consumer insight and preferences

The same qualitative study reveals consumer preferences in both positive and negative cases. In Lewisville and Fort Worth 'wings' seems to be most frequently mentioned food, in Dallas Tuesday promotions are the most popular topic. From the other hand in Lewisville 'smoking' related words seemed to be one of the most frequently mentioned in negative sentiment tag clouds, which suggests that customers do not like it.

Based that one can state that dedicated Location-Based Analytics solutions can indicate local impact of general marketing campaigns. They do not bring however significant input for monitoring particular Location-Based Social Media advertising campaign.

7. Trends and Challenges

Location-based technologies are dynamically evolving. The dissertation is summarizing the state of the art of Location-Based Marketing in February 2012 but due to the constant development one cannot fully anticipate how will the industry look like in 12 or even 6 months. There are however certain trends that seems to be highly probable.

Integration of different types Location-Based Services

Different types Location-Based Services will be integrated to enhance user interaction and engagement. One of examples could be application called Zombie Run[5], which links elements of jogging monitoring application with Location-Based Game. Integration of elements of augmented reality in different types of LBS seems to be a trend as well.

Integration of Location-Based Services with other technologies

One can observe integration of Location-Based Services with other technologies e.g. DOOH (Digital Out Of Home) technologies, which are displaying Location-Based Social Media content on the screen inside or close to the venue.

FIGURE 31. INTEGRATION OF LBSM AND DOOH (LOCAMODA.COM)

The company called LocaModa [6] is providing solutions that are displaying e.g. Foursquare and Twitter live feeds on screen inside particular venues, which is linking virtual community activity with in-store customers.

[5] https://www.zombiesrungame.com/
[6] http://locamoda.com/

Increasing role of Location-Based Analytics

According to ABI Research - technology market research company - the Location-Based Analytics market in US will reach the $9 billion in value by 2016. There are companies that are monitoring Location-Based Social Media content e.g. VenueLabs, but there as well business that monitor other consumer behavior that can be used for marketing purposed. One of examples could be a company called Path Intelligence which is providing analysis of spatial behavior of customer in shopping malls based on their mobile phone signal detection.

Indoor Location-Based Marketing

In late November 2011 Google publicly launched new version of Google Maps - 6.0 for Android platform with indoor maps and indoor navigation functionality. Although it is still in a beta mode and with limited locations, all major competitors in the market including Nokia announced to present their indoor navigation platforms in the near future. There are as well branded location-based indoor navigation products like mentioned in the thesis "The Meijer Find-it" application.

8. Summary

Location-Based Marketing is a new domain of business and academic interest. Its foundations are linked with Location-Based Services that received considerable attention from its early beginning in late 1990s due to their potential to transform mobile communications and the potential for a range of highly personalized and context-aware services (Dhar et al. 2011). Targeting possibilities of this technology have been realized by marketers, but technological and consumer adoption problems did not allowed it to achieve neither large-scale usage nor consumer acceptance. Users did not differentiate between regular and location-based marketing messages and considered messages often as a spam. The development and growing popularity of smartphones, broad usage of GPS navigation devices and acceptance of web and mobile mapping solutions, created demand for more advanced location-aware products and services. Integration of Location-Based Services and Social Media created new possibilities for user engagement and interaction. 'Traditional' SMS and MMS Location-Based Advertisements were as well redesigned in order to bring value to customers and to target them in the most efficient way e.g. Placecast Shop Alerts[7].

Although the academic and non-academic literature on Location-Based Marketing is accumulating, the topic is still under development and the research is in its early stages hence is highly inconsistent and fragmented. The goal of this dissertation was to put academic framework on that dynamically changing field.

[7] http://placecast.net

The research started with comprehensive analysis of Location-Based Services as the foundation of Location-Based Marketing. The analysis included definitions, investigation of academic concept, components, taxonomies, applications, and the most relevant technological issues. After creating the technological background, the research concentrated on identifying place of Location-Based Marketing within the academic concept and definition of marketing. Proposed point of view is contradictory to many of those stated in non-academic literature which wrongly equates marketing with advertising. The next step was to create a taxonomy of Location-Based Marketing, which have been broadly done using case studies and real life examples. Special emphasis has been placed on the topic of Location-Based Social Media due to its recognized marketing potential. Defining marketing as a process, implicated including marketing monitoring and analyzing tools (Location-Based Analytics) within the concept of LBM. The research reviewed legally accessible location-based content and methods of measuring it in Location-Based Analytics platforms. Finally it analyzed content of two major Location-Based Social Media services.

The research contribution is creating the academic framework of the new concept of Location-Based Marketing from the perspective of LBS and marketing. It as well clearly differentiates marketing from advertising, which was issue in many literature resources and it includes Location-Based Analytics tools with-in the scope of LBM.

From the results of the whole dissertation, one can conclude that development of Location-Based Marketing have its implications for both Location-Based Services and marketing. LBS market reports indicate that industry revenues are growing much slower than number of users. Location-Based Marketing in any form creates an opportunity to more effectively monetize the potential of location-based technologies by shifting the revenue source from users to advertisers. Profitable business models give foundations for further, rapid development of the LBS industry. From the general marketing perspective LBM is not only a new interactive marketing channel but it with growing number of users is seems to have significant monitoring and controling potential through Location-Based Analytics services.

9. Limitation and future studies

The major limitation of the study was unwillingness of venue owners active in Location-Based Social Media to reveal private information about their users activity. Analyzing case study where cooperating venue would be analyzed using both dedicated and integrated Location-Based Analytics platform could provide results to convert information about accessible location-based content into measurable business benefits.

Location-Based Marketing can be considered to be in its early development stage. Many solutions mentioned in the dissertation have been launched in 2011and they are still dynamically changing and evolving. The research is putting academic framework on the general concept of Location-Based Marketing but particular fields

of the concept could be investigated in a more detailed way. One of elements that was not comprehensively discussed within the thesis was element of so called gamification in Location-Based Marketing. Gamification employs elements of particular features used in traditional games in order "to improve user experience and user engagement in non-game services and applications" (Deterding et al. 2011). According to the research discussed in the chapter 5.5.3. those elements are the biggest motivation factor for users of Foursquare.

The thesis discussed as well the analytical potential of Location-Based Marketing. While analyzing Location-Based Analytics platform VenueLabs one could observe its value in monitoring general marketing activities of organizations or/and brands. It is observable that different kinds of marketing campaigns including location-based and non-location-based activities have observable different geographic sensitivity - impact on particular Location-Based Social Media. Investigating this sensitivity requires dedicated research using Location-Based Analytics tools.

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APPENDICES

APPENDIX I – VENUE LABS COMPANY

VenueLabs company was launched in early 2009 as Valuevine by Neil Crist and Pete Mannix in Seattle. The company offered one of the first social media marketing platform for retail, and restaurant chains, and franchises. The product was successful achieving market penetration of nearly 5% of the franchise market.

In February 2011, after many requests from their clients the company expanded the technology offering one of the first location-based social media analytics product – ValueVine Connect - that provides brick & mortar brands with deep location-based insight into customer experience, sentiment, trends, and the overall health of their storefronts. The company experienced such a significant growth in this particular area that in October 2011 decided to focus only on the location-based analytics market. Valuevine rebranded into VenueLabs and offered VenueLabs Connect analytic platform. In November 2011 the company launched their latest product with is called VanueRank - single score benchmarking tool. The single score has a range of 0-100 that allows VenueLabs clients to compare storefronts within a brand, across brands with competitors, and groups of stores within and across brands. The score examines four different dimensions: consumer sentiment, community engagement, community size, and reach.

Venuelabs

7829 Center Blvd SE, Suite 153
Snoqualmie, WA 98065
1-866-333-7328

http://venuelabs.com/

APPENDIX II - FRANKIE'S SPORTS BAR & GRILL

Frankie's Sports Bar and Grill was opened in the summer of 2000. Since that time it has grown from a humble, local haunt into of the the finest sports bars in Dallas. Afterwards two more venues in Lewisville and Fort Worth have been open. Frankie's Sports Bar and Grill restaurant chain is actively using Social Media including Facebook, Twitter, Fouraqaure, Locai and other to promote and attract customers.

With 78 televisions, high class sound system, a digital jukebox with access to over a quarter of a million songs, pool tables and the latest video games it positions itself as one of the highest quality sport bars in Texas.

Dallas Morning News describes Frankie's as, "Hip, but not snooty." Whether you're wearing a tie or Tevas, come in and see for yourself why Frankie's is, "Raising the Bar for Sports Bars in Dallas."

Frankie's Sports Bar and Grill
http://www.frankiesbar.com/

Frankie's Sports Bar and Grill - Dallas
3227 McKinney
Dallas, TX 75204
http://www.yelp.com/biz/frankies-sports-bar-and-grill-dallas
https://pt.foursquare.com/v/frankies-sportsbargrill/4a7bcaf6f964a520cbeb1fe3

Frankie's Sports Bar and Grill - Lewisville
2516 S. Stemmons Frwy.
Lewisville, TX 75067
http://www.yelp.com/biz/frankies-sports-bar-and-grill-lewisville
https://pt.foursquare.com/v/frankies-sportsbargrill/4b254095f964a520c26e24e3

Frankie's Sports Bar and Grill - Fort Worth
425 W. Third St.
Fort Worth, TX 76102
http://www.yelp.com/biz/frankies-sports-bar-and-grill-fort-worth
https://pt.foursquare.com/v/frankies-sports-bar-and-grill/4c7666d42db5236a0b8bbf79

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