

# Spotlight on Market Realities – an Exploratory Approach

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**Abstract.** Work in progress paper giving a market overview by using a methodological design best described as a systematic exploration – based on elements of qualitative content analysis. The research will focus on already identified fields of investigation, which are diffusion (of technology), key players or actors in the industry, fields of application and international comparability of markets.

**Keywords.** Market Investigation, Exploration, Industries, Markets, Applications

## 1. Introduction – Complex and Unclear Market Structure

Market and information structures in relation to location based services (LBS) are comparatively complex, and so far, only little information on the topic is available. Its current status is hardly definable in a systematic way and based on market data. Therefore, the purpose of the present study is to offer a review of the current situation and aggregating available knowledge by systematically describing market conditions. For this purpose, we make use of an exploratory approach of the current literature, which is best described as a systematic market investigation of qualitative data (see also methods section).

Zipf & Jöst (2012) and Ryschka and colleagues (2015) define LBS as location based services that are usable via a mobile device (e.g., smartphone or tablet). These services have direct access to the users' geographical location thus enabling the use of content that is coordinated with said location.

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Considering the enormous dynamic and development of LBS that can be observed worldwide, even market experts are hardly able to gain an overview of all available successful applications. Therefore, it has been challenging to extract best practises, which is indispensable for proper application development in applied settings. Therefore, this study will provide valuable information based on already developed applications and available solutions. So far, qualitative research regarding LBS has been based on a technological (e.g., Gartner & Ortag, 2012; Gartner & Huang, 2017; Luley, 2012; Schrom-Feiertag et al., 2012) or a strongly geoscientific point of view (e.g., Konecny et al., 2010; Lemmens, 2011). Studies concerning the use of LBS are available (Zhou, 2013), but rather hard to find. Furthermore, many studies in the field of LBS focus on privacy concerns that are associated with localization (e.g. Fodor & Brem, 2015; Junglas et al, 2008; Zurbarán et al 2014). There is little research on LBS through the economic or innovation theory lens though. The aim of this paper is to close this research gap and to find scientifically sound answers to the following questions by exploring the current market situation in a systematic way:

- Which branches and fields have applied LBS up to now?
- What kinds of applications and services use LBS?
- What kinds of value-added models exist in the field of LBS?
- What are the global differences concerning the diffusion of LBS?

## **2. Method – Systematic Insights to Market Realities**

The objective of this research project is to provide both an extensively broad *and* a systematically structured overview of the global market for LBS. This is the reason for choosing a qualitative content analysis as the research method. With the possibility of creating categories inductively, the procedure offers enough flexibility to cope with the diverse sample of market information.

By definition, exploratory approaches have the purpos of research idea generation and will, with that, focus on the development of hypotheses in order to investigate assumptions (Stebbins, 2001). Therefore, exploration can refer to procedures of empirical social research and to the completion and expansion of existing problem descriptions (Stacey, 1969). For this study, we use the term “exploratory” in regard to thoroughly investigating the current market literature in order to provide a comprehensive overview by finding specific criteria which will help to create dimensions.

The first stage is to identify the qualitative information contained in all available sources. Step by step, categories will be developed, deriving from

the analysed material (Mayring, 2007). In the second stage, we will analyse the whole amount of collected market information by means of the previously developed categories. In a third step, data will be aggregated and – where possible – quantified, to allow further statistical analysis. This step will help to generalize results: “quantitative data and its analysis can add to the overall picture” (Gillham, 2000). This process is much in alignment with the classical step model of inductive category development in qualitative research (Kohlbacher, 2006).

For now, identified categories read as following (examples):

- Localization technology used (Beacons, Geofencing, Wifi, GPS)
- Field of application of existing apps using LBS (e.g. navigation, gastronomy, tourism, news)
- Firm size and Revenue of LBS developers / hosts / providers

Additionally, we will integrate criteria from investigated market analyses, which already provide quantitative data. Therefore, the study makes use of different data collection methods, and data management will vary depending on the used and investigated sources.

Four different kinds of secondary sources will be of interest:

- User studies mainly originating from the marketing sector, made available primarily by private market-research companies;
- Publications on LBS in special-interest magazines and leading blogs of the field;
- News and press releases published by manufacturers and developers, including industry information and product data
- User studies and case studies originating from manufacturers and developers

The literature search began in July 2017 and will continue throughout the entire time span of the linked research project (financed by EU). The search for sources started with the main industry service websites and newsletters in the field of digital development, mobile media and tech innovations to get first hints of products, developers or platforms involving LBS. Following the information from these first sources, we used a search engine to gather more data. Key words used to search for relevant literature include “location based services app” and “location based services platform” among others. By including terms like “iBeacons” and “hyperlocal marketing” in the search, studies that use or focus technology which is related, but not specifically termed as LBS, can be identified and integrated in this overview. Also, names of products, platforms, manufacturers and developers that were

mentioned in publications of industry service and newsletters were used as keywords.

One main limitation of this process of data collection is the impossibility to define a population of secondary information from which we could select a sample. Hence, it will be not possible to evaluate how accurately the conducted content analysis covers market structures. At the same time, the elucidated process of data collection is the only possibility of meeting the idea of exploration in a dynamic market that is poorly documented so far.

We have identified four important aspects of LBS guiding our investigation process. These are described below.

### **2.1. Diffusion of LBS Technology**

Currently, there is little information on how LBS technologies spread and how the market is developing generally in regard to this. The observation from a meta-level perspective is especially interesting though because up to this point, the spread of technology could scarcely be shown in such a clear temporal frame as for LBS. This is especially evident when considering Beacon technology: Although Apple already presented iBeacons in 2013, this sort of location and communication technology has hardly gained any recognition in the general public. Baring this in mind it can be stated: Worldwide there are plenty of providers in the field of LBS—mainly associated with computer sciences and IT-services though. The principal investigators of this project assume that specific applications whose services to consumers exceed the mere task of orientation are underrepresented. The exploration will illustrate to what extent currently available technologies have been transferred into specific applications. This is considered a valuable contribution – not so much in terms of deepening diffusion theory and its approaches based on Rogers' (2003) findings or formulating speculations regarding innovation adoption (Tornatzky & Klein, 1981; Tornatzky Tornatzky, Eveland, Boylan, and Lucas, 1979; as well as follow-up research). It is rather considered a contribution because it increases transparency of a truly complex market.

### **2.2. Key Actors in the Field of LBS**

Based on the previous considerations, a second crucial question can be asked: Who are the currently active key actors in the field of LBS applications? This raises further questions like:

- Which companies are currently using LBS?
- What kinds of developments can be found in different markets?
- How are power structures distributed?

- Who (and where about on the globe) are the big players?

### **2.3. Fields of Application**

Within the framework of market investigation, gaining an overview over the main application areas will be of particular interest. Additionally, the following examples of fields of application might inspire service development with a widespread impact:

Köbben, Huisman, and Lin (2012) for example investigated how information contained in digital photography could be used in order to optimize databases of Volunteered Geographic Information (VGI) as a whole. The presentation of options, also related to this specific application, remains the same, “The result is a large body of fairly unstructured but potentially rich geographic information” – information which remains to be unused.

Schmitz and Weiss (2013) provided a comprehensive analysis of the market of journalistic apps in English-speaking regions during which they found that LBS are relatively rarely used. When such were used, it was mostly for the purpose of gathering information about weather and traffic.

An important sector in terms of LBS is tourism – as many studies have shown (Althoff, Kratz, Landwehr, & Zeile, 2010; Chen & Tsai, 2017; Gartner & Huang, 2017; Santana, Wendel, Trujill, & Suarez, 2017; Petrova & Wang 2011; Yu & Chang, 2009; Zipf, 2002; Zipf & Malaka, 2001). Other studies are concerned with the potentials of LBS in stationary retail (Heinemann & Gaiser, 2015; Uitz & Koitz, 2013)

### **2.4. International Comparison**

Finally, this form of market investigation enables comparisons on an international level and will give answers regarding which countries and regions LBS is most disseminated in and what region-specific factors influence the development of the market. Special emphasis will be placed on Europe as the application area – a principal concern there is the protection of the users’ personal data while using a service, which is a distinctive factor in comparison to the US or Asia.

## **3. Conclusion – Diffusion Theory as a Blueprint**

The results of the exploration will initially be discussed in relation to present state of knowledge on diffusion theory. A critical discussion will have to be conducted on the fact that (especially quantitative market-data generating) publications of the examined material are often controlled by specific interests.

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