SoCoMo Marketing for Travel and Tourism

Prof. Dimitrios Buhalis Bournemouth University +441202 961517
dbuhalis@bournemouth.ac.uk
Marie-Kristin Foerste Bournemouth University +4417549972
i7914205@bournemouth.ac.uk

Corresponding Author
Name : Prof. Dimitrios Buhalis
Affiliation : Bournemouth University
Address : School of Tourism, Bournemouth University, Talbot Campus, Fern Barrow Bournemouth , Poole, Dorset, BH125BB, England
Tel. : +44 1202 961517
Fax. : +44 1202 515707
Email : dbuhalis@bournemouth.ac.uk

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Abstract

Context-based marketing has gained significant attention as advanced technology enables users to amalgamate information from various sources on their mobile devices, personalise their profile through applications and social networks as well as interact dynamically with their context. The information overload, caused by the extreme amount of information available online, has generated a need for more context-relevant information. Tourism marketers are increasingly becoming aware of those cutting-edge Information and Communication Technologies (ICTs) that provide tools to respond more accurately to the context within and around their users. Context-aware marketing uses technologies that recognise the physical environment of their users dynamically. This paper connects different concepts of context-based marketing, social media and personalisation as well as mobile devices. It proposes Social Context Mobile (SoCoMo) marketing as a new concept that will enable marketers to increase value for all stakeholders at the destination. SoCoMo marketing introduces a new paradigm for travel and tourism and will enable tourism organisations and destinations to revolutionise their offering and co-create products and services dynamically with their consumers. A SoCoMo conceptual model is proposed to explore the emerging opportunities and challenges.

Keywords: Personalisation; Mobile Context-Awareness; Social Media Marketing; Mobile Technologies, Co-creation

1. Introduction

The central aim of marketing is to provide consumers with the right product, in the right place, at the right time (Gilbert, 2008). Considering the unique characteristics of the tourism product, this argument seems to be most valid for tourism. Imbal and Fitina (2011) claimed that travellers of the 21st century are more sophisticated, want to enjoy more and have less stress. In order to provide timely-relevant and location-specific information, marketers need to have a comprehensive understanding of who their customers are and what they need, based on their context. In recent years, context has gained significant attention by academics and industry professionals (Schilit et al., 1994; Prekop and Burnett, 2003; Tsang and Clarke, 2008; Haekkilae et al., 2009; Hoepken et al., 2010; Lamsfus et al., 2010; Bouwman et al., 2012; Mehra, 2012; Lamsfus et al., 2013; Liu and Fan, 2013; Mehan et al., 2013), whose studies resulted in the emergence of the context-based marketing concept.

Context-based marketing can be considered as a set of best practices that are designed to invigorate the value of content to prospective customers (Jogensen, 2012). The most common source for context-related information is Social Media and location based services. Social media is part of the Internet, which, for most prospective tourists, has become one of the most important sources to acquire information, search prices, suppliers, availabilities, product features and processes as well as to compare this information at the same time (Graeupel, 2006). On social media applications consumers share in-depth information about their needs and preferences whilst also create behaviour patterns towards favourable suppliers and places (Hensel and Deis, 2010). Many social media pages help travellers to write their travel-related comments, opinions and personal experiences (Xiang and Gretzel, 2010). Businesses can engage in social media in order to exploit this information for better addressing consumer needs and preferences and reacting upon market trends (Sigala, 2012). In recent years, consumers are increasingly pursuing their social media activities on their mobile devices, which are more frequently equipped with sensors that can accurately determine the user's surrounding context (Mehan et al., 2013). Constantly connected smartphones with interactive applications have enabled the collection of a vast range of new contextual factors of the users.

If marketers combine the preferences and needs that their customers reveal on personalised applications and social media with the situation-specific information from the customer's surrounding environment they will get a comprehensive representation

of the user's internal and external context. As a result they will be able to provide highly personalised information and recommendations and add value to customer experience dynamically. Therefore, it is the combination of social media (So) and context-aware marketing (Co) on mobile devices (Mo) that will drive successful businesses in the near future.

Although some innovative businesses are already implementing a combination of social media and some kind of context-aware technologies, few studies have made attempts to explore a broader concept of social media and context-aware marketing combinations. For example, Tussyadiah (2012) researched the combination of social networks and location-based services in location-based social network (LBSN) marketing. Her finding that rewards provided by suppliers for interacting through location-based social network applications can lead to actual behaviour and loyalty clearly outlines one of the key potentials of combining multiple context types. This paper takes this idea further and explores a wider range of different advantages that emerge from an enhancement of already proven to be successful marketing strategies with context-aware technologies. In this paper the SoCoMo concept is illustrated by a framework and its implications of its adoption is discussed.

2. Context-based Marketing

Context in tourism has been an important research topic for more than 20 years. The increased attention in the past few years towards this topic is a response to the growing amount of information available online as well as the proliferation of the tourism product, which confronts consumers with too many options to choose from (Gao et al., 2009). Large amount of heterogeneous information has started to create difficulties for people to find information related to their current situation (Tanca et al., 2011). As a result, consumers demand highly personalised products that are related to their individual context (Buhalis and Law, 2008) and an effective way to communicate dynamically.

Despite the importance of delivering context-related products and messages, the literature still lacks a universally accepted definition of context. A number of authors have made attempts to define the term. The most frequently cited definition was developed by Abowd and Dey (1999) who described context as "any information that can be used to characterise the situation of an entity. An entity is a person, place, or object that is considered relevant to the interaction between a user and an application, including the user and applications themselves". The information that characterises context is referred as contextual information, which can be of external or internal nature (Prekop and Burnett, 2003). Examples of external contextual information, or information from the physical environment, are location, proximity to other objects, time, conditions, pressure, temperature and lighting levels (Schmidt et al., 1998; Prekop

and Burnett 2003). Examples of internal contextual information, or human factors, are goals, personal events, tasks, social environment and emotional state (Schmidt et al., 1998; Prekop and Burnett, 2003) as illustrated on Table 1.

Table 1: External and Internal Contextual Information

External Contextual Information	Internal Contextual Information
• Location • Season/Time • Air Pressure • Light • Political Situation • Traffic • Emergencies • Delays • Weather • Social Environment	• Tasks (e.g. to look for a job) • Likes • Preferences • Emotional status (sad, happy etc.) • Familiarity with area • Goals • Disabilities • Topics of Interest

Some contextual factors, such as location or time, can be automatically derived from the environment whereas other factors, like topics of interests, may require a specification setting by the user (Tanca et al., 2011). Context factors such as location, time, season or temperature, are not static but a highly dynamic (Schilit et al. 1994). Hence the contextual information needs to be viewed over a period of time and episodes of use (Greenberg, 2001). Finally, some contextual factors are objective, whilst others are subjective and depend on the individual or the situation. Examples may include the feeling of cold or warm or the smell of the environment.

From a marketing perspective, context comprises all those "supplementary facts, rules, or axioms whose consideration makes our communications efficient, our commands actionable and our situations understandable" (Mehra, 2012: 12). Such context-aware data can create a parsimony of communications and interpretations that is enabled through context by supplementing what has been said or left out (Mehra, 2012). This translates into the proposed definition of context-based marketing as a set of best practices that are designed to invigorate the value of content to prospective customers at a particular point and situation in time (Jogensen, 2012). A common example of a form of context-based marketing may be a personalised recommender system, which is an application aimed at suggesting products and services to meet user's preferences and needs (Yu and Chang 2009). Such systems provide users with information to facilitate their decision making process (Saraee and Kahn, 2005; Tumas and Ricci, 2009).

3. Context-based Marketing with Social Media

The most widely-explored area of context marketing is social media marketing. Social media comprise of "activities, practices, and behaviours among communities of people

who gather online to share information, knowledge, and opinions using conversational media. Conversational media are Web-based applications that make it possible to create and easily transmit content in the form of words, pictures, videos, and audios" (Brake and Safko, 2009: 6).

Social media has significantly affected the behaviour of consumers and has made them more powerful than ever before (Strauss and Frost, 2012). Most apparently, it has moved them away from demanding completely business-staged experiences towards a search for a balance between the experience stager and the self-determination of their activity (Binkhorst and Den Dekker, 2009). For example, it is estimated that 53% of active social network users follow a brand via social networks and 36% post brand related content (Ferrario, 2012). This represents a shift from value creation that is created inside an organization towards a definition of value that is based around the implicit negotiation between the individual consumer and the firm through the process of co-creation (Prahalad and Ramaswamy, 2004). Hence, social media marketing has encouraged a rethinking of past marketing views towards new marketing structures in which the roles of the providers and consumers fundamentally change. Among them one of the most recognised idea is 'Service-dominant logic' that was mainly shaped by Vargo and Lush (2014). In this view customers and manufacturers or service providers are never distinct because value is always co-created through an interaction of resources and an application of competences between the providers and the beneficiaries (Vargo et al. 2008). This implies that, regardless of whether co-creation is necessary or not, the customer is always viewed as an active and indispensable part of the value co-creation (Horbel, 2013). Co-creation is a set of methods used to establish an active, creative and social collaborative process between producers and customers (users) in the context of new product development (Roser et al., 2009). It allows consumers to customize products and services to their needs, to increase the value generated and to enhance the perceived uniqueness and authenticity of the destination (Binkhorst and Den Dekker, 2009). The goal in Service-dominant logic is to customize offerings by maximizing the involvement of consumers to better fit their needs and by recognizing that the customer is always a co-producer. This results in the generation of ideas that reflect the needs of the customers more closely than ever before (Hoyer et al., 2010). SoCoMo marketing facilitates that further by engaging contextual factors to the known personal preferences of the consumers at each particular moment.

The greatest advantage of engaging with customers on social media marketing strategies is that it allows the collection of rich data from consumer's internal context. This can be done, for example, through the use of personal data mining techniques like a sentiment analysis. Sentiment analysis explores sentiment expressions to determine preference, liking and intention to purchase (Meh et al., 2013). In particular, social networks, where

users with similar interests share information, declare interests and engage with content through likes and comments are rich in contextual information about the personal interests, preferences, friendship and relationships (Breach et al., 2010). Gathering rich personal data from the consumers internal context helps to better understand and address their customer's needs and to find out about new market trends (Sigala, 2012). By posting and sharing their travel-related comments, opinions and personal experience, customers reveal in-depth information about their travel behaviour (Xiang and Gretzel, 2010). Big data analysis will assist the aggregation and analysis of this information and the developments of patterns. If businesses analyse these reviews and recommendations, they can create more customised offers (Euromonitor International, 2012).

4. Context-Aware Marketing through Mobile Devices

Mobile devices are expected to bring the biggest potential for creating context-related information (Dalmau et al., 2009; Haekkilae et al., 2009). Since the introduction of cellular phones with built-in applications and Internet access in 2010 our mobile devices have become "smart" (Dickinson, 2012). They are enhanced with improved processing speeds and geo-location services, reduced data roaming costs, mobile payment options and cameras with rival point and shoot options (Szewzyk, 2013). Most importantly, however, is that they increasingly include sensors that can obtain information about the external or physical environment, the handling of these devices and the user itself (Schmidt et al., 1998). Types of sensors include optical sensors, audio sensors, bio sensors, accelerometers, microphones, cameras and digital compasses (Schmidt et al., 1998; Beach et al., 2010). These multiple sensors can capture historical data that is related to the usage records of users (Zhu et al., 2012). This makes mobile devices aware of the situation and the location in which they are used and of the tasks that the user will perform in the near future enhancing context-awareness (Haekkilae et al., 2009: 2).

Mobile context-awareness is concerned with the awareness of the physical environment that surrounds the user and his mobile device (Schmidt et al., 1998). This up-to date, situation-specific information, while the customer is on the move, has a great potential for facilitating social interaction and collaboration (Haekkilae et al., 2009). From the perspective of the consumer, context-aware information can also create additional value (Schmidt et al., 1998).

A form of context-aware mobile marketing that has been adopted for several years is Location-Aware Marketing (LAM) or Location-Based Marketing (LBM) (Beldona et al., 2012). This type of marketing makes use of the location of consumers in order to communicate and engage with them and to predict their needs (Xu et al., 2011). It

fetches local resources and creates solutions and interaction with organisations in the proximity of the user. Beldona et al. (2012) found that consumers consider LBM as an additional added value to their experience that can be augmented using location-based services. According to Malm (2013) advertisements that are targeted using a consumer's location generate higher returns than conventional mobile advertising. LBM can be particularly useful in the form of recommender systems, which are capable of filtering the content that is relevant to the user in the proximity (Hoepken et al., 2010). For example, Pecitas, a mobile trip advisory system, developed for the city of Bolzano, Italy, provides citizens and visitors with recommendations for the best routes using two arbitrary points (Tumas and Ricci, 2009). The study by Motsching et al. (2007) found that those tourists that used recommender systems could see four times more sights in a specific time period than those who did not use such systems. The strength of location-based marketing lies in its ability to enhance the travel experience of tourists through relevant location-aware information (Beldona et al., 2012).

The second reason why mobile devices are likely to pave the way for the emergence of context-based services (Lamsfus et al. 2010) comes from the dramatic impact that latest generation devices and connectivity technologies have on the behaviour of consumers. Ahlers et al. (2008) argues that mobile devices are more frequently entering the lives of more and more people. The 'Our Mobile Planet Report' from Euromonitor International (2012) showed that in 2012, 80% of all smartphone owners stated that never leave their home without their device. Mobile devices are increasingly seen as remote control of life and have become a major medium to access the Internet. The study by Euromonitor International (2012) revealed that mobile broadband subscription worldwide grew by 342% between 2007 and 2011, whereas fixed broadband connection could only reach a growth of 68% over the same period. Moreover, whereas in 2012, 115 million people in the US were owners of smartphones, this number is expected to grow by 2017 to up to nearly 200 million users (Joynt, 2013).

A major driver of this development is that the participation in social media has moved from desk computers to mobile devices with Internet access. Pampered with faster processing speeds and decreased roaming charges, users can now stay socially connected while moving around (Bouwman et al., 2012). Recent statistics show that 56% of smartphone users use their device to check their social networks on a daily basis (Rocketfuel, 2012). Breach et al. (2010) claimed that the explosive growth of social networks combined with the growing popularity of mobile devices and have led to massive growth rates of mobile social networking in recent years (Breach et al., 2010). For example, Facebook revealed that in 2013 it experienced a year on year increase of 54% or 751 million mobile users every month (Costello, 2013). This social activity on mobile phones enables consumers to share their decisions, experiences, debates and

encourage immediate reactions and recognition (Tussyadiah, 2012). This demonstrates the improved capability of smart mobile devices to eliminate the time and space barriers that have existed with stationary computers (Okazaki et al., 2012).

The growth of the social networking activities on mobile devices can explain why leading social networking services have started to prioritise their mobile offerings (Malm, 2013). Providers and users benefit from the advanced capabilities of mobile devices functionality and enable a variety of new services, such as social networking, information search and navigation (Wang and Xiang, 2012). A common practice is combining location-aware technologies with social networking on mobile devices (Marimon et al., 2010). This has resulted in the development of Location-Based Social Networks or applications (LBSNs; Gao and Liu, 2012; Tussyadiah, 2012; Traynor and Curran, 2013). There are more than hundred LBSN applications (Fusco et al., 2012) but probably the most popular ones are Foursquare, Yelp, Brightkite and Google Latitude. LBSNs allow users to share their location and restaurant recommendations with friends on social networks based on where the users network of friends are located (Wireless Telecommunication Bureau, 2012). The main activity performed with these applications is location sharing services through 'checking in' (Traynor and Curran, 2013).

Making the individual location known to someone's network has become an interesting feature of social networking services (Preotiuc-Pietro and Cohn, 2013). It is used with varying motivations among different users. According to Gao and Liu (2012) some people use LBSNs to find local points of interest (POIs) and to receive discounts and special offers. For example, by checking into Domino's Pizza with Foursquare, customers are rewarded with a free garlic pizza bread or potato wedges, when they spend more than $23 (Kats, 2011). Other motivations were identified in the study by Traynor and Curran (2013) who summarized these motivations into five categories, namely; access to relevant information, arranging to meet, a sense of exploration, the social gaming aspect and keeping a personal history. By pursuing these activities, users of these applications form a unique location-based network in which they are able to interact (Preotiuc-Pietro and Cohn, 2013). This can result in a significant enhancement of their experience in online social networks (Fusco et al., 2012). Checking in to a location also propels real-time services where consumers can be served in real-time and be offered products and services as well as incentives for sharing hashtagged content on the spot. This can trigger additional managerial and marketing processes, such as yield management and dynamic pricing according to real-time marketing conditions.

Among professionals the use of LBSNs for proximity marketing is frequently called SoLoMo marketing. SoLoMo marketing emerged from the increased partnerships with location-based social networks (LBSNs) and the setting up of virtual zones around their

business location in which potential customers can be alerted about their service when they are nearby. The main aim here is to encourage check-ins, Likes, hauling and reviews to generate word of mouth (WOM) among customers (Marketing, 2012). Encouraging users to check in to their location features the logo of a businesses among the friends of the user, which, in turn, helps business to move up their presence on important search rankings (Thompson, 2013). From a business perspective, SoLoMo marketing provides marketers with knowledge about their consumer that goes beyond geographical coordinates and helps to describe their consumer's mobility (Noulas et al., 2012). It also enables them to see comments and understand sentiments, enhancing their online reputation. This offers an opportunity for targeted offers that reflect the location, local economic condition and the level of trading in that particular moment. The combination of social and location information provides a large amount of information about what humans do and how they share experiences (social) with their need for information from their immediate environment (local) and the ability to have both met "on the go" (HeBsdigital, 2012). In addition, it offers the opportunity for time specific offers and services and therefore enables dynamic revenue management techniques to address fluctuation of demand.

SoLoMo marketing is already a very advanced form of context-aware social media marketing that provides immense opportunities for businesses. However, its focus on location-based technologies seems to ignore the fact that location is just a part of context. This paper argues that the advantages of social media marketing combined with a broader scope contextual marketing into social media context-based mobile (SoCoMo) marketing can maximize potentials.

5. SoCoMo Marketing

SoCoMo marketing integrates social media, context-based and smart mobile devices capabilities, It combines the different aspects of social, location and proximity as well as mobile marketing as illustrated in Figure 1 to bring unprecedented opportunities for co-creation through the interrelations of personal information, content and dynamic interaction with the users context.

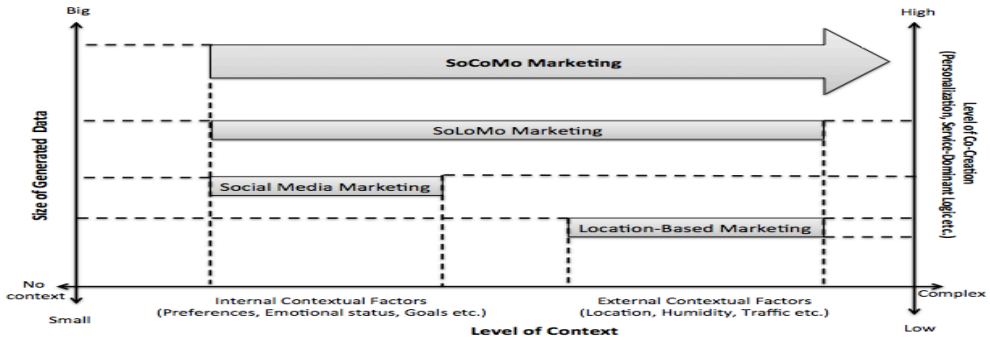

Figure 1. Interrelation of the topics related to SoCoMo marketimg

SoCoMo marketing is defined as an advanced systematic method of context marketing on smart mobile devices that integrates social media to empower co-creation of value. Context-awareness, supported by personalisation based on social media and learning algorithms helps applications to increase the relevance of offers and information to individual users. The conceptual model illustrated in Figure 2 illustrates this definition and demonstrates how SoCoMo emerges in the market place. The system incorporates information emerging from the user but also from a very wide range of information and product suppliers. Increasingly peer to peer computing also means that users will be generating and sharing content which will be imported as input in the system. For example, social media messages on twitter may be used for developing contextual information on a festival and indicate different activities happening in different locations through check-ins.

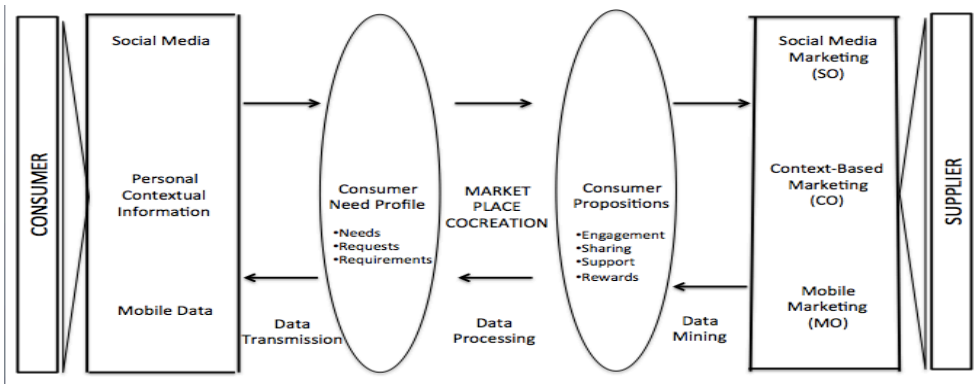

Figure 2. SoCoMo marketing framework

The conceptual framework shows that SoCoMo marketing is based on the capture of in-depth information that is generated primarily from three sources. The first source of this information is social media. Through the consumer's participation in different social media channels, such as social networks, blogs and forums, the consumer reveals rich insights into his internal context. This can include preferences, cultural backgrounds, needs, tastes concerns, relationship status, sexual orientations or wishes. Content, such as photographs, video and text, can demonstrate location, activity, sentiment and patterns of behaviour. The extent of this information may, however, vary, depending on the consumer's privacy settings. The second source of information is generated within the consumer's external context that surrounds him and his mobile device. This may include weather conditions, traffic, location and time. These contextual factors can be extracted by sensors that are in-built in mobile devices and aggregated through the interactions with service providers that offer real-time location based information. The information supplied by consumers on social media and the information filtered from the consumer's external context by mobile devices may overlap. For example, the consumer may reveal his location on social media while this location can also be identified through sensors in the mobile device. In addition, they may reveal particular patterns of behaviour such as a user is having ice-cream if the temperature is higher than 23 °**C** or that visits a particular restaurant every time he visits a particular city. The third source of information is the mobile device itself, which documents the mobile behaviour of the consumer. This information may include personalised patterns such usage, patterns of usage and frequency. In addition, personalization data may also be included, such language patterns, loyalty clubs, diet preferences, motilities or disabilities.

Ideally all this information is generated on one mobile context-based social network application (CBSN) that directly uses the data received. This complex data set can then be used to discover valuable information about the consumer using a specific data mining technique that is capable of creating a comprehensive picture of the consumer context. In particular, it would allow the comparison with past data for making predictions of the consumer's behaviour and proactively offering products and services from the contextured environment to suit the anticipated needs. Big data aggregation will enable the profiling of consumers with particular contexts. For example someone may have a bargain hunting behaviour when out with the family and an adventurous profile when travelling with male friends. Interacting with service and product suppliers dynamically can support the co-creation of personalisable products and services that add value to all stakeholders.

Increasingly the task of the future marketer would be to data mine this information to craft a highly relevant marketing message that will adequately address the consumer's

needs and engage in a dynamic dialogue for co-creating value. Through the combined application of social media (So) context (Co) marketing on the mobile device (Mo) relevance and personalisation can increase to address the individual needs of consumers at this particular moment and encourage consumers to act upon this Market Place Co-Creation using a range of methods, such as personalised context-aware recommender systems. Unlike traditional recommendation systems, a SoCoMo empowered recommender system would incorporate contextual information in combination with user's preferences providing a much better user experience (Zhu et al., 2012). The advantages for both suppliers and consumers are listed in Table 2.

Table 2: Advantages of SoCoMo marketing for suppliers and consumers

Suppliers	Consumers
• Long-term loyalty • Real-time engagement • Online reputation • Targeted advertising • Real-time promotion • Real-time yield management • Personalisation of products and services • Influence consumer decision making • Increased co-creation • Opportunity to compete among larger businesses	• Personalised, situation-specific information • Customer satisfaction • Better cover of needs • Co-creation • Personalisation • Customisation • Special offers • Social interaction • Extra value

SoCoMo marketing bridges the gap between supply and offering personalised consumer requirements in real-time. From the perspective of the suppliers the most obvious opportunity emerges from the huge amount of in-depth data that can be obtained. With precise sensors and techniques, this in-depth information creates big data that exceeds the current capabilities of marketers by multiplying the contextual relevance for the consumer. Big data refers to the ever-increasing volume, velocity, variety, variability and complexity of information emerging as a consequence of the new marketing landscape, born from the digital world. Therefore, suppliers can understand the specific needs more accurately, provide better value and serve their customers better in real-time.

Hence, SoCoMo marketing can give marketers a tool to influence the decision-making of consumers and to direct them to their businesses and services. This can further the process of co-creation by including the information from the consumer's surrounding contexts, such as close businesses and nearby available services. Engaging in a dynamic dialogue enables the co-creation of value through a dynamic dialogue value can be added for all stakeholders engaged on dynamic value systems. As the tools for SoCoMo marketing are available for any business, independent of their size and nature, it may

also provide smaller businesses with an effective method to generate awareness and to compete against larger organisations.

Consumers, on the other side, benefit from SoCoMo marketing by receiving highly relevant information and benefits specific to their condition. This would be highly personalised to their needs and preferences, and take into account their current situation. An invitation, for example, for an indoor activity when it is raining heavily or a recommendation to do an activity at the time that is predicted fine weather will add value to consumers. The combination would provide additional value for consumers, increase satisfaction with their experience, encourage them to interact more with context-aware services and to reveal more identity information on social media.

6. SoCoMo Marketing in Travel and Tourism

Due to the unique characteristics of their consumer behaviour, tourists respond best to the highly context-aware SoCoMo marketing strategies. In order to understand those tourism consumer behaviour characteristics that are particularly relevant for SoCoMo marketing, it is important to recognise that by their nature most tourism products are services (Swarbrooke and Horner, 2007). A service can be defined as "a kind of action, performance or promise that is exchanged for the value between the customer and the provider (Lusch and Vargo, 2006). Due to their intangible, inseparable and perishable characteristics (Gilbert, 2008) and their limited ways to measure quality before consumption, tourism products are often associated with a higher perceived risk than physical products (Ayeh et al., 2013). Since this perceived risk can lead to a negative effect on the usefulness and ease of use of a product or service (Choi et al., 2011), providers need to reduce this risk by giving access to higher levels of information (Urbany et al., 1989). Especially, during the trip, tourists demand personalized information to increase the usability of their unknown and temporarily used services (Hoepken et al., 2010). This information needs to be timely, ready and relevant throughout all stages of the travel experience, including travel planning, booking, on vacation and after their trips (Steinbauer and Werthner 2007).

However, tourists are often overwhelmed with the bulk of information that is available to them (Imbal and Fitina, 2011). Therefore, they require information that is context-related (Binkhorst and Den Dekker, 2009). Lamsfus et al. (2009: 609) described context in tourism as "any relevant information that characterises the situation of the user". This contextual information influences, to some extend, the pattern of tourist behaviour (Liu and Fan, 2013). For example, personalized adjustments to service offerings can result in customer satisfaction and long-term loyalty (McCabe, 2009). Context, therefore, facilitates the negotiation between information provided by tourism organisations and

the information required by tourists at a certain point of time and based on their situation (Lamsfus et al., 2010).

With peer to peer communication emerging rapidly SoCoMo marketing will engage more fellow consumers through reviews, content generation and virtual libraries that emerge. Ultimately, social media responds particularly well to information needs of tourists (Gruen, 2001). When interacting with experienced travellers or reading about the experience of other travellers, which tends to be perceived as more authentic, tourists can compile trips that are more likely to be in congruence with what they are looking for (Lange-Faria and Elliot, 2012). There are a number of travel companies, such as Lonely Planet, that have incorporated peer to peer information sharing and already engage their audience in conversations and interaction on tourism and travel specific topics (Hays et al., 2012). This has been generating an extremely valuable information source for gathering rich data not only for potential travellers but also for marketers who can learn about their tourist's internal contexts and adopt and customised products accordingly.

Tourism is by nature a dynamic activity and industry. Tourists leave their place of residence and visit unfamiliar places for leisure or business purposes (Yovcheva et al., 2012). Unsurprisingly, tourists are heavy adopters of mobile devices and they often rely on them for navigating, accessing information, keeping in touch with home, generating and sharing content through social media. Mobile devices provide travellers with reliable and unlimited access to information on the Internet (Wang and Xiang, 2012) and can also be used to acquire and share information at all stages of the travel process (Hoepken et al., 2010). According to Neuhofer et al. (2012) it is the mobility aspect of smartphones, in combination with useful applications that have made these services particularly relevant to the tourism industry. While at the destination, smartphone owners can acquire information that was unforeseen before their trip through information search (Okazaki et al., 2012).

Wang and Fesenmaier (2013: 67) found that mobile devices and smartphones today "unlock the three-stage model of the travel experience by eliminating or shortening the pre-consumption and post-consumption stage and extending the consumption stage". Therefore, especially for tourism destinations SoCoMo marketing can present a powerful medium to communicate with tourists (Wang and Xiang, 2012). At first, tourism destination marketers can gain information from interacting with tourists on social media or from analysing interactions among them, using data mining techniques. This data can be used to generate highly personalised tourism marketing messages based on their internal context (Hoepken et al., 2010). SoCoMo marketing can enhance

internal contextual information with additional real-time contextual information from surrounding environments. Hence, its marketing messages can be highly relevant and represent high value for tourists. These messages can also help tourists to cope with unexpected situations in the destination and to continue their travel experience in an efficient and effective manner. SoCoMo may motivate tourists to make more spontaneous decisions about travel-related components within the destination adding value to their experience. As a result they may use SoCoMo applications in the near future when it is even very likely that the information will find the user rather than the user finds the information.

SoCoMo marketing still has to be considered as a futuristic concept. At least in tourism, there seems to be no organisation yet that successfully combines all aspects of SoCoMo marketing into one strategy. Various service providers such as vouchercloud, myvouchercodes and similar organisations are gradually emerging and they provide location based services whilst integrating social media. However, through the collection of facts and trends in the area of social media, context-based, mobile, marketing, first scenarios can be created to demonstrate the new techniques.

7. SoCoMo Marketing Scenario

A possible scenario of SoCoMo marketing could be the following. Marta is a tourist who is on her way to the beach of destination X. When it suddenly starts to rain, her plan of lying at the beach all day seems to be ruined. However, Marta has recently downloaded the social media context-based application that was developed by destination X. The application gathers certain types of contextual information that currently affect Marta's tourist behaviour. The application identified a day before that there is the possibility for heavy rain and this was confirmed by the weather channels this morning.

Marta's mobile phone identifies that the air temperature has dropped by five degrees and that sunlight has decreased dramatically due to clouds. From Marta's social media profiles, the application also knows that Marta is a 24 year old girl from Norway who, apart from relaxing at the beach, likes to spend her time looking at art galleries. Her favourite painters are Gaugin or Hopper. Finally, from her mobile phone data the application knows that she likes coffee as she frequently checks in at various coffee places. The combined contextual information is then received and processed by the destination marketing organisation of destination X. Connecting all this information

together, the destination application identifies a profile, develops three to four items on two personalised itineraries that are focused on an art exhibition at the museum X. The art exhibition features pictures from Gaugin and several others similar to Hopper. Moreover, the museum, which only charges a small admission fee, offers free coffee to its guests. The destination application builds a different itinerary and crafts together a message to notify Marta about this event with directions on how to get there. A voucher of 50 % discount in the museum store is included together with three recommendations for restaurants that are next to the museum, including her favourite Pizza place as well as another Italian restaurant located within thirty yards. Marta receives the notification and she is happy about the great alternatives that are offered to her. An indoor exhibition that complies with her preferences and even serves hot drinks for a low admission fee seems to be a wonderful idea that could still make her day and avoid her from going home with a bad impression from destination X. During her visit at the art gallery she posts positive real-time updates about her experiences and connects them with pictures of the beautiful museum. The application also identified that Anne, a friend of Marta on Facebook and Twitter, is also in the museum as they have both checked in on Foursquare. It notifies both and they meet for lunch at one of the recommended restaurants. Later in the day she documents her visit on her personal blog and on a review website, which impresses her friends and other potential visitors of destination X who consider destination X for their next travel plans. At the end of the day Marta is happy that she opted-in for receiving information from the DMO application and decides to continue using the app in the future. She also creates proactive and reactive itineraries and recommendations to friends. In return, the DMO captured valuable information about Marta's travel behaviour that will help to present her with even more personalised information upon Marta's next visit. It also saved the positive reviews and exposure to Marta's friends through her social media engagement.

8. Challenges of SoCoMo marketing in travel and tourism

With the enhanced opportunities come a number of challenges that businesses intending to adopt SoCoMo marketing need to consider in their strategy. Many of the challenges are derived from the existing literature on social media marketing, context-aware marketing and mobile marketing.

One of the major challenges is that collecting a combination of different contextual information about a person raises questions about how this would affect the consumer's privacy. For example, Gao and Liu (2012) found that, whereas some users enjoy sharing their location with their friends, others consider sharing their personal location as a disclosure to their preferences and movement risks, which they think can result in potential security risks. Perez (2010) found that 55% of the participants stated to be worried about a loss of privacy and 34% felt that by revealing their current location they

could inform burglars when they are away from home. While there may be some people who are willing to reveal their current location to providers, they often do not want to share their location to another entity (Junglas and Watson, 2008). Taking consumer privacy and security rights into account is especially important when considering that the responsiveness towards mobile promotions strongly depends on the consumer's attitude to mobile marketing (Shankar and Balasubramanian, 2009). Therefore, if businesses want to succeed they have to find ways to increase the trust by consumers. This can, for example, be achieved through giving the consumer options about what personal information can be accessed by companies and which cannot, via an opt-in or opt-out mechanism (Wireless Telecommunication Bureau, 2012).

The second challenge for businesses intending to apply SoCoMo marketing strategies is to cope with the existing technological challenges that currently limit the opportunities of SoCoMo marketing. Combining social media and mobile marketing requires businesses to integrate social media as well as to establish mobile engagement on social platforms (HeBS, 2012). Closely related to this problem are certain limitations that exist with the display of data on mobile devices. Often the provision of rich graphical content depends on the screen size while formatted text, font sizes and graphics are displayed differently on other devices (Dhar and Varshney, 2011). Rugel (2012) highlighted that the design of a successful application is a long-term investment that requires a certain standard of quality in content and user interface as well as an on-going engagement. Another frequently mentioned technological challenge is that the power and batteries of today's smartphones is not good enough yet to cope with the advanced capabilities and power demands that integrated in the device. Warres (2012) highlighted that the power of these batteries is often quickly drained by the GPS function for location-based applications, especially in cold environments such as ski resorts. In addition, moving from outdoor GPS connection to indoor requires a change to indoor location technology, like LAN, RFID or sensor networks (Dhar and Varshney, 2011), which may, in some circumstances, lead to interruptive services. Chan (2012) warned that these challenges could be increased by the existence of many different smartphone providers and individual platforms. This makes it difficult for developers to build applications that function the same effectively and smoothly on all types of mobile phones. Liu and Fan (2013) pointed out that the different capabilities of mobile devices directly or indirectly influence the behaviour pattern of tourists. The proliferation and advancements of the IOS (iPhone) and Android based smartphones are gradually eliminating some of these challenges.

Thirdly, the reach of mobile marketing strategies is restricted to those people who own mobile devices and opt-in to receive communications from marketers (Shankar and Balasubramanian, 2009). In SoCoMo marketing this reach may even further be limited

to those users who use specific services more frequently than others (Balamurugan, 2012). Hence, in order to reach a broader range of target audiences, SoCoMo marketing should be accompanied with other marketing strategies.

Fourth, to provide context-aware services used in context-based marketing requires the mining of a vast range of data from various sources. Big data emerges to capture the wellness of information available online. Data mining analyses patterns over user behaviour and environment, enables proactive communications and increases the relevance when a device or service responds to actions that were initiated by users (Mehra, 2012). Whereas data mining has been a comprehensively researched field, mobile data mining seems to still lack useful applications. In particular, data mining applications within the tourism industry show poor growths rates (Saraee and Khan 2005).

Lastly, these context-based marketing methods result in an ever growing amount of heterogeneous, autonomous data, generated on both desktop computers and mobile devices (Wu et al., 2014). Big Data provides an interesting base for intelligence gathering (Traynor and Currant, 2013) as well as a potential source for powerful new variables that can be used for consumer research (Nunan and Di Domenico, 2013). Increasingly the extraction of valuable information from Big Data is very efficient and close to real-time (Wu et al., 2014) empowering SoCoMo. In order to open new opportunities for consumers and enable new capabilities through the personalisation, contextualisation and provision of information that creates efficiencies (Fulgoni, 2013) research on big data should address these issues in the near future.

The challenges mentioned above are by far not exhausting but identify the key issues that will be determining the ability of SoCoMo marketing to achieve its full potential and to maximise the value generated for all stakeholders. A number of technologies are critical for providing the infostructure that will support SoCoMo. These include ambient intelligence, 4G and 5G, WiMax and wide area WiFi coverage to achieve connectivity to networks; The Internet of Things and Machine to Machine connectivity to ensure interconnectivity and interoperability between different devices and systems as well as augmented reality to add visual representation on the field of vision. Future research will also need to focus on artificial intelligence (AI) that are needed to connect all these devices, organisations, users, and information together and to provide relevant context modeling. Smart cities and smart destinations also emerge to facilitate these developments and to bring stakeholders closely together.

Future research should also investigate managerial implications and the requirements for realizing many of the advantages suggested from SoCoMo marketing. These challenges inevitably bring a reengineering of the tourism industry and require dynamic organisational formations to ensure that tourism organisations and destinations can

organise themselves to take advantage. There is also a need to further explore the various influences SoCoMo marketing may have on the travel behaviour and how this affects the performance of tourism businesses. Perhaps most importantly, SoCoMo is propelling a new way of interactive and dynamic consumption based on co-creation between consumer and producer but also between peer to peer interaction that is only possible in the digital era where everybody is consumer and producer of information.

9. Conclusions : SoCoMo revolutionises tourism marketing

Providing context-relevant messages is becoming an increasingly relevant topic for marketers. The dramatic advancement in ICTs have led to a growing amount of mobile devices that allow marketers to generate information that is highly personalised and can take into account the situation of the consumer at each particular moment. This conceptual paper investigated the potential of combining social media marketing and context-aware technologies on mobile devices. It proposes a social media context-based mobile (SoCoMo) marketing framework and demonstrates how tourism organisations and destinations can take advantage of the emerging opportunities, whilst outline the challenges. With the growing adoption of smart mobile devices and their expansion into the everyday lives of consumers, SoCoMo marketing is going to play a major role in the near future. In particular, smartphones seem to leverage a series of innovations through applications that provide highly valuable services (Wang and Xiang, 2012). Due to the unique characteristics of tourist behaviour and their mobility, tourism has been identified as an ideal test bed industry where SoCoMo may reveal its biggest successes. Tourist, especially on their first trip to a destination, rely much less than local residents who are familiar with the area on tacit knowledge. Often, they are unable to communicate and read the local language and have no idea where and how to start their search for services. Therefore, they have greater needs for context-relevant information as they navigate through unfamiliar languages, environments, cultures and food.

SoCoMo will enable local service providers and destinations to generate context specific solutions that address the individual needs of travellers dynamically through a combination of personalisation based on pre-set preferences, social media interactions and learning through patterns of behaviour. The high adoption of mobile devices, as remote controls for life, enables the tourism industry to develop highly responsive SoCoMo marketing practices and dynamically co-create tourism products and services, offering more satisfying tourist experiences and co-creating value for all stakeholders.

SoCoMo marketing is developing fast and its success can already be predicted by the expected emergence of even more advanced context-aware services. This will be enhanced with a lot more information that is transmitted with or without the consumer's consent, as all devices will increasingly act as sensors of contextual information. The semantic web will bring about technologies that recognise and understand the meaning

of content and therefore maximize the potentials of SoCoMo marketing. Further opportunities will arrive with the increased introduction of 4G and 5G and extensive Wifi coverage, which will provide users with wireless broadband Internet access to entire destinations and the elimination of expensive data roaming charges (Buhalis and Law, 2008). Many of these new technologies may help to overcome the limitations that still exist for SoCoMo marketing. SoCoMo marketing could therefore is the beginning of a whole new era of mobile-based agile tourism marketing that will revolutionize the tourism product by serving tourists real-time, context-relevant information at all stages of their travel experiences.

The SoCoMo developments and model revolutionise destination marketing. Destination managers need to be able to understand and appreciate the emerging opportunities and challenges. There is a need for dynamic communication with individual consumers before, during and after their travelling experience. Producing brochures and marketing campaigns is simply not adequate in the era of connectivity when consumers engage in dynamic dialogue in order to co-create their travel experiences. Destination marketing organisations need to coordinate all stakeholders, including not only official organisations and partners but also many unofficial resources of information emerging towards generating better experiences. Many destination marketing organisations have already understood the changes and harness the power of bloggers, photographers, instagrammers in the co-creation and management of their online reputation. Destination management and marketing is revolutionised from public sector practices to cutting edge dynamic interactions that require innovation, agility and constant engagement with stakeholders towards the maximisation of the value generated for all stakeholders. This will effectively reengineer the entire tourism industry from a process based mechanism to a dynamic ecosystem of value co-creation for consumers and all stakeholders involved. Those tourism organisations and destinations that understand SoCoMo marketing and prepare for its implementation now will be able to successfully benefit from new possibilities in the future.

References

Abowd, G.D. and K. Dey., A.K. (1999). Towards a Better Understanding of Context and Context Awareness. *In*: Gellersen, H.-W., ed. *Proceedings HUC Ubiquitious Computing*, Karlsruhe, Germany, 27-20 September 1999. Vienna: Springer Verlag. 304-307.

Ahlers, D., Boll, S., and Wichmann, D., (2008). Virtual signposts for location-based story-telling. *In*: GI-Days 2008 Münster, Germany 16-17 June, 2008.

Balamurugan.V, (2012). Mining User Mobile Behavior in Location Based Services.

Ayeh, J.K. Leng, D., Norman, A. and Law, R. (2012). Perceptions and Strategies of

Hospitality and Tourism practitioners on social media: An exploratory study. *In*: M. Fuchs, F. Ricci and L. Cantoni, eds. *Information and Communication Technologies in Tourism (Proceedings of the ENTER 2012 Conference)*Helsingborg, Sweden, 25-27 January, 2012. Vienna: Springer. 1-3.

Beach, A., Gartrell, M., Xing, X., Han, R., Lv, Q., Mishra, S. and Seada, K., 2010. Fusing Mobile, Sensor, and Social Data To Fully Enable Context-Aware Computing. In: *HotMobile '10 Proceedings of the Eleventh Workshop on Mobile Computing Systems and Applications* Annapolis, USA, 22-23 February 2010. 60-65.

Beldona, S., Lin, K. and Yoo, J. (2012). The roles of personal innovativeness and push vs pull delivery methods in travel-oriented location-based marketing services. *Journal of Hospitality & Tourism* 3 (2), 86-95.

Bouwman, H., Carlsson C., Lopez-Nicolas, C., McKenna, B., Molina-Castillo, F., Tuunanen, T. and Walden, P., (2012). Mobile Travel Services: The Effect of Moderating Context Factors. *Information Technology and Tourism* 13 (2), 57-74.

Brake, D.K., and Safko, L., (2009). *The Social Media Bible: Tactics, Tools, and Strategies for Business Success*. Hoboken: Wiley.

Buhalis, D., and Law, R., (2008). Progress in information technology and tourism management: 20 years on and 10 years after the Internet – The state of eTourism Research. *Tourism Management* 29, 609-623.

Chan, T.J.T., 2012. Mobile customer relationship management: Factors affecting consumer mobile technology adoption within the hotel industry. *Studies by Undergraduate Researchers at Guelph 5 (2),* 44-50.

Choi, H-S.,' Park, J.-W. and Park, S.-B., 2011. A Study on the Effect of Mobile Tourism Information Services on Tourist Satisfaction and Continual Reuse. *International Journal for Business Information Technology*, 1 (3).

Costello, S. (2013, May 2). Facebook revealed that is has experienced a year on year increase of 54% or 751 million mobile users every month. *Mobile World Live*. Retrieved from: http://www.mobileworldlive.com/efbbbffacebook-hits-750m-mobile-users-as-ad-revenue-on-the-up.

Dalmau, M., Roose, P., and Laplace, S. (2009). Context Aware Adaptable Applications – A global approach. *IJSCI International Journal of Computer Science* 1, 13-25.

Dhar, S., and Varshney, U., 2011. Challenges and Business Models for Mobile Location-based Services and Advertising.*Communications of the ACM*, 54 (5),121-128.

Dickinson, J.E., Ghali, K., Cherrett, T., Speed, C., Davies, N. and Norgate, S. (2012). Tourism and the smartphoneapp: capabilities, emerging practice and scope for the travel domain. *Current Issues in Tourism*, 1-18.

Euromonitor International, 2012. *SOLOMO (SOCIAL LOCAL MOBILE): A GAME CHANGER FOR THE TRAVEL INDUSTRY?* London: Euromonitor International. Available from: http://www.euromonitor.com/.

Ferrario, B. (2012). Making sense of the SoLoMo Landscape. *Rocketfuel*. 23 May 2013. Available from: http://rocketfuel.com/newsroom/blog/making-sense-of-the-solomo-landscape.

Fusco, S.J., Abbas, R., Michael, K. and Aloudat, A., (2012). Location-Based Social Networking and its Impact on Trust in Relationships. *IEEE Technology and Society Magazine,* 31 (2), 39-50.

Fulgoni, G., (2013). Big Data: Friend or Foe of Digital Advertising? Five Ways Marketers Should Use Digital Big Data to Their Advantage. *Journal of Advertising Research*. 372-376.

Gao, M., Kecheng, L. and Wu, Z.(2009). Personalisation in web computing and informatics: Theories, techniques, applications, and future research. *Information Systems Frontier,* 12, 607-629.

Gao, H., and Liu, H., 2012. Data Analysis on Location-Based Social Networks. *In*: Chin, A. and Zhang, D., D., eds.*Mobile Social Networking: An Innovative Approach*.Vienna: Springer. 1-29.

Gilbert, D., (2008). Managing Marketing for Tourism. In: Cooper, C., Fletcher, J., Gilbert, D. and Wanhill, S., eds. *Tourism Principles and Practice*. 4th ed. Harlow: Pearson Education Limited.

Gruen, C., (2001). Making Pre-Trip Services Context-Aware. *In: Proceedings 2nd Intl. Workshop on the Semantic Web (SemWeb'2001),* Hong Kong, China.

Haekkilae, J., Schmidt, A., Maentyjaervi, J., Sahami, A., Akerman, P., Dey, A.K.(2009). Context-Aware Mobile Media and Social Networks. *In: Proceedings of the 11th Conference on Human-Computer Interaction with Mobile Devices and Services*, Munich, Germany.

Hays, S., Page, S., and Buhalis, D., (2012), Social media as a destination marketing tool: its use by national tourism organisations, *Current Issues in Tourism*, 16(3), 211-239

HeBSdigital, 2012. Converging Social and Mobile: Why 2012 is going to be "The Year of SoLoMo". Retrieved 5 March 2013 from: http://www.hebsdigital.com/blog/converging-social-mobile-why-2012-is- going-to-be-%E2%80%9Cthe-year-of-solomo%E2%80%9D/.

Hensel, K. and Deis, M.H. (2010). Using Social Media to Increase Advertising And Improve Marketing. *The Entrepreneurial Executive*, 15, 87-97.

Hoepken, W., Fuchs, M., Zanker, M. and Beer, T. (2010) Context-based Adaption of Mobile *Applications in Tourism. Information Technology & Tourism* 12, 175-195.

Horbel, C., (2013). Service-dominant logic and tourism management: Enriching each other. *DBW* 73 (2), 131-142.

Hoyer, H.-D., Chandy, R., Dorotic, M., Krafft, M. and Singh, S. (2010). Consumer Co-Creation in New Product Development. *Journal of Service Research* 13(3): 283-296.

Imbal, J. and Fitina, L., 2011. The convenient traveller: using technology to enhance tourism

in Papua New Guinea. *Contemporary PNG Studies: DWU Research Journal*, 14, 28-37.

Jogensen, K., (2012). What is Context Marketing? Is It Different Than Content Marketing? *Innovative Marketing Resources*. Available from: http://www.imrcorp.com/innovative-marketing-blog/bid/59267/What-is-Context-Marketing-Is-It-Different-Than-Content-Marketing.

Joynt, N., (2013). 7 Key Principles for Mobile Commerce Success. *Websitemagazine*. 16 May 2013. Available from: http://www.websitemagazine.com/content/blogs/posts/archive/2013/05/16/7-key-principles-for-mobile-commerce-success.aspx.

Junglas, I. A. and Watson, R.T., (2008). Location-based services. *Communications of the ACM – Urban sensing: out of the woods*, 51 (3), 65-69.

Kats, R., (2011). Domino's builds loyalty via foursquare, Facebook Places incentive. 28 November 2011. *Mobile Commerce Daily*.http://www.mobilecommercedaily.com/domino%E2%80%99s-offers-free-food-via-foursquare-facebook-places-incentive.

Lamsfus, C., Alzua-Sorzobal, A., Martin, D. and Salvador, Z. (2010). Semantic-Based Contextual Computing Support for Human Mobility. *In*: U. Gretzel, R. Law and M. Fuchs. *Information and Communication Technology in Tourism (Proceedings of the ENTER 2010 Conference)*. (pp. 603-615). Vienna: Springer.

Lamsfus. C., Xiang, Z., Alzua-Sorzabal, A. and Martin, D., (2013). Conceptualising Context in Intelligent Mobile Environment Travel and Tourism. In L. Cantoni and Z. Xiang, *Information and Communication Technologies in Tourism (Proceedings of the ENTER 2013 Conference).*Vienna: Springer. 1-11.

Lange-Faria, W. and Ellitott, S., (2012). Understanding The Role of Social Media in Destination Marketing. *Tourismus: An International Multidisciplicnary Journal of Tourism* 7 (1), 193-211.

Liu, D.-S. and Fan, S.-J., (2013). *Tourist Behavior Pattern Mining Model Based on Context*. New York: Hindawi Publishing Corporation Discrete Dynamics in Nature and Society, 1-12.

Lusch, R.F. and Vargo, S.L., (2006). Service-dominant logic: reactions, reflections and refinements. *Marketing Theory,* 6, 281-288.

Malm, A., 2013. *The LBS market shows healthy growth in the coming five years*. BergInsight. Available from: http://www.berginsight.com/ReportPDF/ProductSheet/bi-lbs7-ps.pdf.

Marimon, D., Sarasua,C., Carrasco, P., Álvarez, P., Montesa, J., Adamek,T., Romero, I., Ortega, M. and Gascó, P., (2012). MobiAR: Tourist Experiences through Mobile Augmented Reality. *In*: Fuchs, M, Ricci, F. and Cantoni, L., eds. *Information and Communication Technologies in Tourism 2012,* 25-27 January 2012 Helsingborg. Wien: Springerverlag.

Marketing, (2012). Social + Location + Mobile: The ultimate relevance. *Marketing*. Available from: http://www.marketingmag.com.au/interviews/social-location-mobile-the-ultimate-relevance-13181/#.UxwaNl76R50.

McCabe, S., (2009*). Marketing Communications in Tourism and Hospitality: Concepts, strategies and Cases*. London: Butterworth-Heinemann.

Mehan, K., Lunney, T., Curran, K. and McCaughey, A., (2013). Context-Aware Intelligent Recommendation System for Tourism. *Work in Progress session at PerCom 2013*, San Diego (19 March 2013).

Mehra, P., (2012).Context-Aware Computing. Beyond Search and Location-Based Services. *IEEE Internet Computing* 16(2), 12–16.

Neuhofer, B., (2012). An Analysis of the Perceived Value of the Touristic Location Based Services. *Information and Communication Technology in Tourism*, 84-95.

Noulas, A., Scellato, A., Lathia, N. and Mascolo, C., (2012). Mining User Mobility Features for Next Place. Prediction in Location-based Services. *In: Proceedings of the IEEE International Conference on Data Mining* Brussels*,* Belgium, 10-13 December, 2012. 1038–1043.

Nunan, D., and Di Domenico, M. L., (2013). Market Research and the ethics of Big Data. *International Journal of Market Research* 55 (4), 2-13.

Okazaki, S., Champo, S. and Andreu, L. (2012). Mobile Marketing in Tourism Services. *In*: Rodoula, H.T. and Goldsmith, R.E., eds. *Strategic Marketing in Tourism Services*. Bingley: Emerald Group Publishing Ltd. 339-358.

Perez, S., (2010). Study: *Location-Based Services Users are Passionate but Niche.* RedWrite Mobile, 10 September 2010. Available from: http://readwrite.com/2010/09/09/study-location-based-services-users-are- passionate-but-niche.

Prekop, P., and Burnett, M. (2003). Activities, Context and Ubiquitous Computing. *Computer Communications* 26,1168–1176.

Prahalad, C.K, and Ramaswamy, V., (2004). Co-creation experiences: The next practice in value creation. *Journal of Interactive Marketing,* 18 (3), 5- 14.

Preitiuc-Pietro, D., and Cohn, T., (2013). Mining User Behaviours: A Study of Check-in Patterns in Location Based Social Networks. *WebSci'13* Paris, 2-4 May, 2013.

Roser, T.,Samson, A., Humphreys, P., and Cruz-Valdivieso, E. (2009): New pathways to value: Co-creating products by collaborating with customers. *Promise*. Retrieved from: http://www.promisecorp.com/documents/COCREATION_REPORT.pdf.

Rugel, A. (2012). Marketing a destination mobile app. Tnooz, August 29, 2012. Available from: http://www.tnooz.com/2012/08/29/how-to/marketing-a-destination-mobile-app-the-sweat-equity-approach/.

Saraee, M., and Kahn, S., (2005). Data Mining Approach to Implement a Recommendation System for Electronic Tour Guides. *In*: *Proceedings of The 2005 International Conference on E-Business, Enterprise Information Systems*, Las Vegas, USA, 20-23

June, 2005.
Schilit, B., Adams, N., and Want, R., (1994). Context-Aware Computing Applications. *In*: *WMCSA '94 Proceedings of the 1994 First Workshop on Mobile Computing Systems and Applications*. Santa Cruz, USA 85-90.
Schmidt, A., Beigl, M., and Gellersen, H.-W., (1998). There is more to Context than Location. *In: Proceedings of the Interactive Applications of Mobile Computing (IMC '98)*, Rostock, Germany.
Shankar, V., and Balasubramanian, S., (2009). Mobile Marketing: A Synthesis and Prognosis. *Journal of Interactive Marketing* 23, 118-129.
Sigala, M., (2012). Web 2.0 and Customer Involvement in New Service Development: A Framework, Cases and Implications in Tourism. *In*: M. Sigala: *Social media in travel, tourism and hospitality: theory, practice and cases*. Farnham: Ashgate Publications, 25-33.
Steinbauer, A., and Werthner, H. (2007). Consumer Behavior in e-Tourism. *In*: M. Sigala, L.Mich and J. Murphy, J. (Eds.), *In Information and Communication Technologies in Tourism Proceedings of the ENTER 2007 Conference* Ljubljana, Slovenia. Vienna: Springer. 65-76.
Strauss, J., and Frost, R., (2012). *E-Marketing*. 6th. New York: Pearson Education Limited.
Swarbrooke, J., and Horner, S., (2007). *Consumer Behaviour in Tourism*. 2nd ed. London: Butterworth-Heinemann.
Szewcyk, M., (2013): The year of SoloMo? *Wired,* 16 January 2013. Available from: http://www.wired.com/insights/2013/01/2013-the-year-of- solomo/
Tanca,L., Bolchini,C., and Orsi, J., (2011). *Notes from the workshop 'Problems and Opportunities in Context-Based Personalization'*. Retrieved from: http://persdb11.imis.athena innovation.gr/resources/PersDB_2011_paper_6.pdf.
Thompson, C., (2013). 75% of America's top retailers and restaurants have a Foursquare presence. About Foursquare, 10 May 2013. Available from: http://www.aboutfoursquare.com/75-of-americas-top-retailers-and-restaurants-have-a-foursquare-presence/.
Tussyadiah, I. P. (2012). A Concept of Location-based Social Networking Marketing. *Journal of Travel and Tourism Marketing* 29, 205-220.
Tumas, G., and Ricci, F., (2009). Personalized City Transport Advisory System. *In:* Hoepken, W. Gretzel, U. and Law, R., eds. *Information and Communication Technologies in Tourism* Amsterdam, Holland. 8-30 January, 2009. Springer: Vienna. 173-383.
Traynor, D., and Curran, K., (2013). Location-Based Social Networks. . *In*: Lee, I. , ed. *Mobile Services Industries, Technologies, and Applications in the Global Economy*. Macomb :Western Illinois University.
Tsang, S.L., and Clarke, S., (2008). Mining User Models for Effective Adaptation of Context-aware Applications. *International Journey of Security and its Applications*, 2 (1), 53-62.

Urbany. J., Dickenson, P., and Wilkie, W.L., (1989). Buyer uncertainty and information search. *Journal of Consumer Research* 16, 208-215.

Vargo, S.-L., and Lusch, R.F., (2004). Evolving to a new Service Dominant Logic for Marketing. *Journal of Marketing* 68, 1-17.

Vargo, S.L., Maglio, P.P. and Akaka, A.M., (2008). On value and value co-creation: A service systems and service logic perspective. *European Management Journal* 26, 145–152.

Wang, D., and Xiang, Z., (2012). The New Landscape of Travel: A Comprehensive Analysis of Smartphone Apps. *In*: M. Fuchs, F. Ricci and L. Cantoni,eds. *Information and Communication Technologies in Tourism (Proceedings of the ENTER 2012 Conference)*Helsingborg, Sweden, 25-27 January, 2012. Vienna: Springer. 308-315.

Wang, D., and Fesenmaier, D.R. (2013). Transforming the Travel Experience: The Use of Smartphones for Travel. *In*: M. Fuchs, F. Ricci and L. Cantoni, *Information and Communication Technologies in Tourism (Proceedings of the ENTER 2012 Conference)* Helsingborg, Sweden, 25-27 January, 2012. Vienna: Springer. Vienna: Springer.58-67.

Warres, A., (2012). SoLoMo offers great potential, but brands need to navigate carefully. *The Wall: Social Media Marketing blogged.* Retrieved from http://wallblog.co.uk/2012/11/12/solomo- offers-great-potential-but-brands-need-to-navigate-carefully/.

Wireless Telecommunications Bureau, (2012). *Location-Based Services. An Overview Of Opportunities And Other Considerations* - May 2012. Washington D.C.: Federal Communications Commission.

Wu, X., Zhu, X., Wu, G.-Q., and Wei, D., (2014). Data Mining with Big Data. *IEEE Transactions on Kowledge and Data Engineering* 26 (1), 97-107.

Xiang, Z., and Gretzel, U., (2010). Role of social media in online travel information search. *Tourism Management*, 179-188.

Xu, H., Lui, X.R., Carrol, J.M., and Rosson, M.B. (2011). The personalisation privacy paradox: An exploratory study of decision making process for location-aware-marketing. *Decision Support System*, 51(1): 42-52.

Yovcheva, Y., Buhalis, D., and Gatzidis, C., (2012). Overview of Smartphone Augmented Reality Applications for Tourism. *e-Review of Tourism Research (eRTR) 10 (2), 63-66.*

Yu, C.-C., and Chang, H.-.P., (2009). Personalized Location-Based Recommendation Services for Tour Planning in Mobile Tourism Applications. *E-Commerce and Web Technologies*, 5692, 38-49.

Zhu, H., Chen, E., Xiong, H.,Yu, K., Cao, H., and Tian, J., (2012). A Mining Mobile User Preferences for Personalized Context-Aware Recommendation. ACM Transactions on Intelligent Systems and Technology.