



ELSEVIER

Contents lists available at ScienceDirect

Technological Forecasting & Social Change



FROM MY PERSPECTIVE

Developing location-based mobile advertising in Singapore: A socio-technical perspective

Trisha T.C. Lin ^{a,*}, Fernando Paragas ^b, Dion Goh ^a, John Robert Bautista ^a^a Wee Kim Wee School of Communication and Information, Nanyang Technological University, Singapore^b College of Mass Communication, University of the Philippines-Diliman, Metro Manila, Philippines

ARTICLE INFO

Article history:

Received 17 August 2013

Received in revised form 18 March 2015

Accepted 2 June 2015

Available online xxxx

Keywords:

LBA

Location-based advertising

Mobile advertising

Socio-technical framework

ABSTRACT

Increasing adoption of location-based services and smartphones leads to optimistic forecasts for location-based mobile advertising (LBA). This study investigates the development of emerging LBA in Singapore by examining stakeholders' perspectives and shaping forces in the socio-technical subsystems (i.e., technology, market/industry, and government/regulation). In addition to document analysis, it conducts in-depth interviews with key industry players in the LBA value chain, policy-makers, and smartphone consumers in order to identify drivers and challenges in this nascent mobile business. The socio-technical analyses show that LBA in Singapore is technology-ready with government support and industry pull, while conservative advertisers, negative consumer attitudes, and insufficient regulations hinder LBA's diffusion. The results reveal that LBA at an early adopter stage in Singapore has a relatively convergent and competitive value chain, as telcos play a crucial part in creating and distributing LBA services. With a newly launched Personal Data Protection Act, smartphone consumers still show concerns about personal privacy, data security, and intrusive spam. Technical implementation and LBA effectiveness are major inhibitors for advertisers' adoption. The Singapore case offers market and regulatory implications for other mobile-advanced countries to develop mobile marketing, location-based services, and LBA.

© 2015 Elsevier Inc. All rights reserved.

1. Introduction

Advancements in mobile devices (e.g., smartphones and tablets) integrated with global positioning technology have paved the way for emerging location-based services (LBS). By integrating mobile advertising with LBS, location-based mobile advertising (LBA) enables the delivery of marketer-controlled information customized for users' geographic positions delivered to their mobile devices (Brunner & Kumar, 2007). Compared with traditional advertising, LBA presents an innovative channel that enables advertisers to deliver unique

offers (e.g., promotions, vouchers, and coupons) that can be customized based on consumers' preferences and geographic location (Xu et al., 2009). With the increasing adoption of ubiquitous mobile devices capable of wireless Internet connectivity and location awareness, LBA creates opportunities for targeted marketing and revenue generation (Dhar & Varshney, 2011).

Recent industry reports suggest optimistic forecasts for the fledging LBA industry. Analyst firm Pyramid Research projected global LBA revenues to reach US\$6.2 billion by 2015 and comprise 35% of mobile advertising revenue and 60% of LBS revenue (PR Newswire, 2011). On the other hand, Berg Insight estimates that the LBA market will grow to US\$6.5 billion by 2016 (Cett, 2012) while Global Industry Analysts forecasts US\$12.8 billion growth by 2017 (PR Web, 2011). Although the US and Europe currently dominate the global LBA market (PR

* Corresponding author at: 02-02, 31 Nanyang Link, Singapore 637718. Tel.: +65 6790 5771.

E-mail addresses: trishalin@ntu.edu.sg (T.T.C. Lin), fparagas@upd.edu.ph (F. Paragas), ashlgoh@ntu.edu.sg (D. Goh), jbautista@ntu.edu.sg (J.R. Bautista).

Web, 2011), the Asia-Pacific region is expected to take the lead by 2016 (Cett, 2012). Countries such as Japan and South Korea are currently leading the Asian LBA market since location-based services have been offered there by telcos for several years (PR Newswire, 2011; Mobile Marketing Association (MMA), 2011).

Despite the fast growth of LBA, little scholarly attention has been given to examine its drivers and challenges especially in the Asian context. Previous studies mostly comprise of attempts to explore mobile advertising at the micro level with emphasis on consumer perceptions (Xu et al., 2009; Banerjee & Dholakia, 2008; Liu et al., 2012; Unni & Harmon, 2007), attitudes (Brunner & Kumar, 2007; Lohan et al., 2011), and adoption (Zolfaghar et al., 2010). To our knowledge, no work has yet to provide a macro-level socio-technical analysis of the development of LBA subsystems. It is holistic and insightful to examine the development of emerging mobile technology like LBA using a socio-technical framework as this approach can analyze the shaping power and complex interrelationships among actors in technology, market/industry, and policy/government sub-systems and LBA's technological trajectory in a social system (Allen, 2003; Lin, 2012a; Shin, 2010).

In the Asian context, Singapore has a mobile penetration rate of 148.2% with more than 7.8 million 3G and 4G mobile subscriptions as of November 2014, according to the country's Infocomm Development Authority (IDA) (Infocomm Development Authority, Singapore (IDA), 2015). In a Nielsen 2013 survey, Singapore has the highest smartphone ownership in Asia (Magdrilla, 2013). Singapore's high mobile phone penetration and well-regulated media environment can benefit the future development of mobile advertising (Wei et al., 2010). Singapore's mobile advertising market grew by 30% in 2011 (InMobi, 2012) and ranked 15th globally in terms of mobile advertising impressions (Opera, 2012). It has a vibrant LBS market with a number of startup app developers and avid mobile consumers (Lau, 2012). Seeing Singapore's potential as a test bed for LBA development, the Location Based Marketing Association (LBMA) made Singapore its regional hub in Asia in November 2012 (Lau, 2012; Lee, 2012).

Using a socio-technical framework as an analytical lens, this exploratory study examines LBA's technology, market/industry, and government/policy subsystems in Singapore. This study, which conducts document analysis and interviews with stakeholders, aims to provide insights to drivers and challenges of LBA in Singapore. The findings can enhance the understanding of LBA's socio-technical subsystems, identify key developmental issues, and analyze its future trajectory. This study also makes recommendations to improve LBA policy development and LBA's market/industry competitiveness.

This article is divided into seven sections. The next section reviews literature on the socio-technical framework and explains its application to emerging technologies. After Section 3 illustrates the methodology, Section 4 presents an overview of LBA's technology, market/industry and policy subsystems by sorting out abundant information in prior studies and market reports globally. Section 5, which analyzes the results of stakeholder interviews and document analysis, explicates LBA's socio-technical subsystems in Singapore. Section 6 provides a holistic socio-technical analysis of LBA's drivers and challenges in Singapore, and makes recommendations for other countries. Finally, Section 7 concludes with a summary and lists contributions and future research directions.

2. Socio-technical analytical framework

Technological innovations have been evaluated only with its technical aspect focusing on systems and applications (Shin, 2010). According to Shin (Shin, 2012), such a traditional view is short-sighted since social factors need to be considered in addition to the technical core of emerging technologies. Moreover, technological artefacts are greatly influenced by technical, political, social, and economic factors (Lin, 2012a). Realizing the important role of social factors, there is a need to highlight the interaction of consumers, industries, and the government in relation to the technology.

Past studies have shown that this analytic framework is helpful in understanding complex interrelationships between technological and social systems shaping the development of emerging mobile technologies (Lin, 2012a,b; Shin, 2010; Hsu et al., 2008; Sawyer et al., 2003; Han, 2003; Lin & Liu, 2011). Sawyer, Allen, and Lee (Sawyer et al., 2003) predicted the course of emerging broadband and mobile opportunities through the lens of a socio-technical approach by examining the technological and social forces (regulation/government/market/users). Similarly, Shin (Shin, 2010) evaluated South Korea's cyber-infrastructure by investigating complex interactions of its social and technical aspects. To analyze adoption of broadband technologies in South Korea, Han (Han, 2003) concluded that the information and communications technology (ICT) policy was the main driving force among the technology, policy, and culture systems. Lin and Liu (Lin & Liu, 2011) applied the socio-technical framework in examining mobile broadcasting TV in Singapore and Taiwan and found industry pull as the driving force but policy postponed the deployment of technology-ready mobile services. Lin's (Lin, 2012a,b) socio-technical analysis of mobile TV study in China argued that the rollout of government/policy driven mobile media was delayed by regulators' competition, multiple technological standards, and weak market receptiveness. These studies support the view that a socio-technical approach which analyzes multi-directional shaping power from various actors is suitable for examining how subsystems shape the trajectory of emerging technology at different stages and contexts (Lin, 2012a,b; Shin, 2010; Hsu et al., 2008; Sawyer et al., 2003; Han, 2003; Lin & Liu, 2011).

As the LBA industry in Singapore is nascent and evolving, a socio-technical analytical framework is appropriate for investigating and analyzing its developmental trajectory. In order to identify the drivers and challenges, this study identified stakeholders in the technology, market/industry, and government/policy subsystems and analyzed their perspectives and interests so as to understand their shaping power of LBA's trajectory. Stakeholder analysis, which has been applied to mobile management (Shin, 2008) and broadband diffusion (Sawyer et al., 2003), is the process of identifying key actors who are likely to have impact on the development of emerging technologies (Shin, 2012). The analysis will illuminate discrepant views, power struggles, and potential strategies. According to Shin (Shin, 2012), a stakeholder analysis: 1) identifies stakeholders, 2) determines their claims, 3) decides resources provided by stakeholders and their influence, and 4) analyzes stakeholder attributes of power, legitimacy, and interests. Within the socio-technical framework, this study analyzes dynamic and critical relationships among stakeholders.

Download English Version:

<https://daneshyari.com/en/article/7256274>

Download Persian Version:

<https://daneshyari.com/article/7256274>

[Daneshyari.com](https://daneshyari.com)