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Technological regimes in m-commerce: Convergence as a barrier to diffusion and entrepreneurship?

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ABSTRACT

During the dotcom-period, a commonly shared belief was that m-commerce and m-payment would become just as successful as GSM and SMS. Although the ICT industry has successfully recovered from the dotcom crisis, m-commerce has still not had much success: why has the diffusion of m-commerce and m-payment been so slow, almost absent in Europe and USA? The article suggests that the obstacles accounting for this are plausibly systemic and related to factors that hinder the establishment of a new *technological regime* for m-commerce. Diffusion of m-commerce will require *convergence* of numerous disparate and competing elements and systems that at present belong to, or are controlled by, different sectors. The article presents a case study of a dotcom firm fictitiously entitled PinkFish in order to demonstrate these factors. By embracing a strategy of convergence based on symbiosis and co-operation, m-commerce may enter a rapid diffusion process in the future.

1. Introduction

Until recently, m-commerce[1] has not enjoyed much success, raising the question: why has the diffusion of m-commerce been so slow, almost absent outside Asia and *not* become an arena for growth and entrepreneurship, either in the dotcom-period or afterwards?

In contrast to e-commerce and related EFT, the slow diffusion of m-commerce and m-payment systems represents a puzzle, as pointed out by numerous analysts and researchers in an overview article by Turel and Yuan (2006). In some regions, specifically in Asia, m-commerce based on the Japanese iMode and similar mobile internet solutions has enjoyed some success, e.g. in Korea and Japan. In analyzing this development, Funk (2007) points to what he calls the "startup problem, standard setting, and mental models" that constitute barriers for the diffusion of m-commerce outside Asia. However, attempts at introducing iMode outside Asia have not had much success, and in 2007 several large telecommunications operators (KPN, Telstra, O2) announced that they were abandoning iMode due to lack of market response. The content provider access (CPA) model has enjoyed success in niche segments in some mobile communications markets (Nielsen & Hanseth, 2006), but CPA is based on the old VAS model from the POTS-era. In CPA, telecommunication operators provide billing services for transactions involving third parties, typically for payment for downloading of ringing tunes and logos to the mobile handset. Analysis of the situation provides a conflicting and incoherent picture: on the one hand, there is increasing interest among many actors in developing m-commerce and related payment services, as evident

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[1] m-Commerce may be defined as the use of mobile phones for the transaction of either physical goods using mobile handsets as wallets or credit cards (merchandising) or mobile services such as ringing tones and games (Nielsen, 2006).

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in the commercial press and trade journals[2] and launching of services such as PayPal Mobile and CEO Mobile by the San Francisco-based Wells Fargo bank, although still on a limited scale. On the other hand, this optimism does not accord with research on m-commerce. According to one study, the slow rate of development of m-commerce is due to uncertainty, specifically "…lack of standards and the immaturity of the market" (Ondrus & Pigneur, 2006). Others support this by pointing to "…increasing uncertainty and rapid technological development" as a factor which inhibits the development of mobile services in general (Gressgård & Stensaker, 2006). In a comparison of e-commerce with m-commerce, Turel and Yuan (2006), point to a number of factors that may inhibit the diffusion of m-commerce, one of these being that "…the structural differences between the e-commerce and m-commerce industries partially accounts for their dissimilar diffusion patterns", i.e. the slow, almost negligible rate of diffusion of m-commerce. The comparative success of m-commerce in Asia, e.g. iMode in Japan, may be explained in terms of differences in national regulatory regimes, but Funk (2007) suggests a number of other factors that constitute disincentives outside Asia, such as the comparatively high prices that operators charge for the popular SMS in Europe—which makes this service very profitable—and the revenue-sharing model that mobile operators impose on content providers, which makes these services simultaneously expensive for customers and unbalanced for those content providers.

The fusion of electronic payment and mobile communications has been a topic of interest for a long time. The basic idea is simple and attractive: People could substitute cash and payment cards with a function on their mobile telephones, a transition envisioned as attractive for a number of practical reasons and beneficial for society in general. The success of GSM-based SMS in Europe in the 1990s was generally perceived by the industry as a "proof of concept" for m-commerce. Hence, in the dotcom Zeitgeist of this period, this commonly held vision fueled a race or frenzy of activities related to deployment of mobile internet and m-commerce, as will be described below. In analyzing today's impasse in m-commerce, a retrospective analysis of the dotcom-period may provide insights as to why m-commerce still has not made a breakthrough similar to other new ICT-based services, such as mobile telephony in general, use of the internet and e-commerce.

The article is in part based upon research undertaken in the dotcom-period (1998–2002) on electronic money and payment services and published earlier (Godø, 2004). The case study of PinkFish is an expansion of this based on material from an extensive search of information in newspaper databases and other open sources, in addition to interviews of selected key informants. The case approach (Yin, 1989) was chosen because an in-depth analysis of one case will provide data of high validity as a typical representative of the phenomenon in this study. Because the firm presented here as PinkFish was a commercial failure, it has been given a fictitious name. The purpose of this case is to provide empirical evidence for an analysis and theoretical discussion on diffusion in mobile communications. The PinkFish case is from a Nordic country, i.e. from a region characterized by a high level of saturation of mobile communications and related services. The article will attempt to demonstrate that the slow or almost absent diffusion of m-commerce and m-payment may be due to the absence of an innovation regime capable of developing m-commerce and the required convergence. The concept of technological regime and the related concept of innovation regime will be elaborated in the next section as part of the conceptual framework of sectoral systems of innovation (SSI). A close look at the dotcom case of PinkFish may identify some of the barriers for the diffusion of m-commerce and m-payment, barriers that are still present many years after the dotcom crisis. The article will conclude with a discussion of convergence and how this relates to competition, co-operation and symbiosis in the development of new technological regimes.

2. Technological regimes and SSI

As pointed out by Katz and Shapiro (1985, 1994) and Shapiro and Varian (1999), positive network externalities or positive feedback is one of the main keys for successful diffusion of services in information and communication markets. Such effects arise when additional customers acquire and use the services, and may have a direct or indirect positive effect for the existing users in terms of the value of the services. Simply stated, these effects imply that success breeds more success, thereby enabling strong, self-sustaining growth. However, in order to initiate this positive growth and development, some sort of standard needs to be established. At least, the actors in the network need to have strong expectations towards one such standard. If this fails, the system will not be able to reach a critical mass of users and success will not be achieved. This type of explanation is suggested by Funk (2007) as a "startup problem". Although the notion of system competition may be fertile for explaining the successful diffusion of one technological solution to the detriment of a rival, this type of competition has not started in m-commerce, mainly because there is no competition or rivalry, at least not in Europe and the USA. Hence, this type of approach is not so interesting for explaining the present status of diffusion, or lack of this.

In innovation theory, the conceptual framework of SSI (Pavitt, 1984) has gained interest because in this approach analysis is focused on the economic sector itself and not on the national or the firm level. Following this approach, one may suggest that the primary obstacles to entrepreneurship and diffusion related to m-commerce are plausibly

[2] Cf. "Turning your cell phone into a wallet", posted 11 June 2006, in CNNMoney.com (http://money.cnn.com/2006/07/10/magazines/business2/mobilecommerce.biz2/), "2007 is looking like the year cell phone banking gets started", posted 27 November 2007, in Bank Systems&Technology (http://www.banktech.com/showArticle.jhtml?articleID=196513743) and "Retail payments business moving more toward mobile", posted 30 March 2007, in Bank Systems&Tech (http://www.banktech.com/showArticle.jhtml;jsessionid=KEDGYYK5VX1C0QSNDLOSKH0CJUNN2JVN?articleID=198700456).