Mobile Gaming

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INTRODUCTION

A number of multifunctional handheld devices with Internet and multimedia capabilities are currently available on the market. The mobile network technologies implemented make it possible for a range of value-added mobile services known as "mobile entertainment" to be offered to paying subscribers (Carlsson, Hyvonen, Repo, & Walden, 2005). Examples include watching streamed news, downloading music and images, or playing a game on one's mobile phone (alone, or in an interaction with other players).

Mobile game development depends on the choice of a middleware platform, as the application needs to be portable across a wide spectrum of handheld devices and technologies (Yuan, 2004; Hagleitner & Mueck, 2002). A business model for offering mobile gaming as a service has been successfully trialled in Japan where playing games is one of the main components of the popular Japanese entertainment platform iMode (Natsuno, 2003, pp.88-90).

Research in the area of mobile gaming adoption has focused on the investigation of the value generation process and on identifying the critical factors for mobile gaming acceptance. A number of critical success factors have been identified (e.g., Shchglick, Barnes, Scornavacca, & Tate, 2004; Moore & Rutter, 2004; Yoon, Ha, & Choi, 2005), adapting and extending existing mobile business frameworks and models (e.g., Siau, Lim, & Shen, 2001; Varshney & Vetter, 2002; Lee, Hu, & Yeh, 2003; Barnes, 2003). This short article investigates the relationship between mobile gaming customers and the mobile gaming value chain, and discusses the implications from mobile gaming supply and demand perspectives.

BACKGROUND

Playing mobile games ("mobile gaming") is classified as a "mobile entertainment" application (Barnes & Huff, 2003; Van de Kar, Maitland, de Montalvo, & Bouwman, 2003). Mobile entertainment includes personal leisure activities undertaken via a network technology. Entertainment services might feature data transfer including voice and video over significant geographic distance while the user of the service is either on the move or has the potential to move without interrupting the activity (Ollila, Kronzell, Bakos, & Weisner, 2003).

Mobile gaming is also an example of a mobile commerce (m-commerce) application, provided through a specially designed m-commerce service. Typically, an m-commerce service involves payment: a monetary transaction which the customer conducts using the mobile payment mechanism provided with the service (Paavilainen, 2002). In the case of mobile gaming, the player's subscriber account with the mobile network operating the service is used to collect the revenue. Subsequently the network operator makes payments to other service providers who might be involved: content developers and publishers, portal aggregators, and retailers (Wiener, 2003).

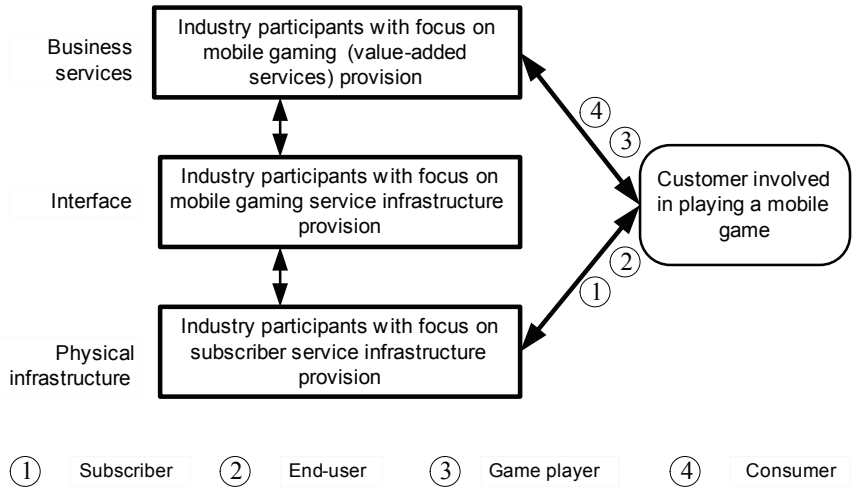
Some mobile games are simply downloaded and played off-line, paying once or with every update. Such games might be suitable for "low-end" handheld devices and might use text messaging. Other mobile games need to be played on smartphones, as interactivity among multiple players needs to be supported. These real-time mobile games require a persistent network connection to a dedicated game server. Advancements in mobile game development include the inclusion of location-based features into the game (Moore & Rutter, 2004; Maitland, van de Kar, de Montalvo, & Bouwman, 2005). In all cases, the mobile game player does not need to be stationary – he or she is "released" from the need to use a stationary networked device (Finn, 2005) .The assumed mobility of the mobile game player is one of the defining features of mobile gaming.

A leader in mass mobile entertainment, the Japanese company NTT DoCoMo developed a comprehensive mobile service and platform: iMode. Entertainment applications and specifically mobile gaming are seen as the catalyst for the increased use of the range of other iMode services (Baldi & Thaung, 2002; Natsuno, 2003, p.92; Barnes & Huff, 2003; Funk, 2003, p. 28). In the global market, mobile gaming is seen as a viable business opportunity (Kleijnen, de Ruyter, & Wetzels, 2003, p. 205; Anckar & D'Incau, 2002; Paavilainen, 2002). According to some predictions, by 2010 the revenue from downloading mobile games might reach US$8.4 billion (Graft, 2006).

THE MOBILE GAMING VALUE CHAIN

A number of value chain models (e.g., Buellingen & Woerter, 2004; Siau et al., 2001, Barnes, 2003) and mobile frameworks (e.g., Varshney & Vetter, 2002; Stanoevska-Slabeva, 2003)

Figure 1. Customer relationships in mobile gaming (Derived from Petrova, 2005)



for m-commerce have been suggested in the literature and used to map industry players, roles and functions. A multiple value-chain model representing the relationships between a customer and the mobile gaming industry is shown in Figure 1. It applies the m-commerce reference model proposed by Petrova (2005) to the mobile entertainment value Web (Ollila et al., 2003) to identify the relationships between the customer (a mobile game player) and the mobile industry participants.

The network developers and providers, along with device developers, create the physical foundation needed for mobile gaming, and together with the mobile network providers, form a physical infrastructure layer. The interface layer includes developers of middleware platforms, which serve as game developing and servicing environments and enable the use of the networks and technologies for game service provision. The top layer represents the category of value-added services where mobile games are offered to customers directly or as a part of a mobile entertainment package. The main industry participants are mobile game developers, publishers and aggregators.

A company involved in mobile gaming can be categorised under more than one category: *Vodafone,* for example, provides a subscriber network and subscriber service, as well as mobile game downloading through its portal Vodafone Live! (Harmer, 2003). The revenue model of the company depends on its position in the value chain (Ollila et al., 2003).

MOBILE VALUE CHAIN RELATIONSHIPS

Mobile network operators are part of the physical infrastructure by building and maintaining the network. In most cases they also provide subscriber services and access to the network (e.g., *Vodafone, Orange)*. The 2G-2.5G technologies currently implemented include CDMA, GSM, and GPRS, and are capable of maintaining real-time, persistent network connection (Mobile Games, 2001). Customers interact with mobile network operators as subscribers to the network service (Relationship 1 in Figure 1).

Mobile device supply manufacturers (e.g., *Nokia*, *Siemens*, *Motorola*) provide customers with the devices needed to connect to a network and to access the services provided. In the case of mobile gaming, devices might need extended functionality such as a very fast processor (Leavitt, 2003). Customers interact with devices as information technology (IT) end-users (Relationship 2 in Figure 1).

A feature of the mobile gaming industry sector is the coupling between device and network technology: a handheld device might be designed to be used only with a particular technology and for access to networks based on that technology. The IT end-user experience will depend on the characteristics of the device and the underlying wireless network technology.

In the interface category, some widely used middleware products for game development are WAP and iMode (Baldi & Thaung, 2002; Lee et al., 2003). New software platforms (J2ME and BREW) and operating systems (Symbian) allow for the development of portable mobile games. The industry participants in this category provide the service infrastructure needed by game developers and other related content providers, but typically do not interact directly with customers (although *Nokia* have developed a mobile phone microbrowser). Rather they serve as a link between the physical infrastructure and the business services that bring mobile gaming to the customer.