

Mobile Commerce Business Models and Network Formation

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1 Introduction

New generations of wireless and mobile communications networks stand ready to revolutionize the global media industry by creating a ubiquitous and personalized channel to consumers. The extent to which this revolution will occur however will depend on a variety of factors, ranging from technical performance (Dehghan et al., 2000) to user acceptance (Anckar & D’Incau, 2002). Despite these uncertainties, the rapid increase in Japanese subscribers to mobile information services has fueled optimistic expectations elsewhere. Riding this wave of optimism, firms hoping to get involved will quickly see it is nearly impossible to ‘go it alone.’ An examination of the business models for currently available mobile content and information services, such as weather forecasts, banking services, and online gaming, reveals that coordination of a wide variety of firms is often required. Increasingly, this coordination occurs through a network of firms that comes together to provide a service. Network formation for service provision may help spread the risk of developing new services, however it may also increase the challenge of achieving financial success.

To some extent however these challenges are not new. Mobile information and entertainment services join a growing list of services from a variety of industries, ranging from automotive goods to biotechnology, which are produced through increasingly complex networks of firms (Hage & Alter, 1997). This trend was also evident in business models for electronic commerce, from which mobile commerce has much to learn. There are nevertheless a number of differences between the two, such as billing capabilities, greater levels of personalization, and network access, which will influence mobile commerce business models. At first these expanded capabilities may appear to broaden the range of possible business models, however this propensity will be tempered by the consensus that working in a network of firms requires.

The aim of this chapter is to investigate the issues inherent in mobile commerce business models that are developed and implemented through net-

works of firms. The investigation begins with a discussion of business models and the unique aspects of mobile commerce. This is followed by an exploration of the factors driving network formation in this industry. Subsequently the issue of power in inter-organizational networks and its effect on mobile business models are described. Next, using examples of the business models of two mobile commerce firms, the implications of network relations for business models are discussed after which the chapter concludes with suggestions for future research.

2 Business Models and Network Formation for Mobile Commerce

2.1 Business Models for Mobile Commerce

A business model is one of many tools used by a firm to develop new products or services or to revise existing offerings. A widely accepted definition is that of Timmers (1997 p. 31), “the organization (or ‘architecture’) of product, service and information flows and the sources of revenues and benefits for suppliers and customers”. As such a business model has limited scope and does not include, for example, the overall marketing strategy or general strategic orientation of the firm while it may be concerned with inter-organizational relations. The business plan may later be related to marketing or strategic plans in the implementation phase (Weill & Vitale, 2001). Thus, a business model can be seen as the initial plan that sets the service implementation process on a certain path, which can have implications for the eventual success of the service¹.

Mobile commerce business models, similar to those for e-commerce, will leverage the advantages of a new distribution, sales, and service channel and indeed there is much to learn from the valuable experience e-commerce presents.² However, there are aspects of mobile Internet use that make mobile commerce unique. Distinctive characteristics such as ubiquity, accessibility, reachability, localization and personalization create new bases for value (Baldi & Thaung, 2002). Furthermore, these characteristics lead to different settings for value creation: time-critical arrangements, spontaneous decision needs, entertainment needs, efficiency ambitions and mobile situations (Anckar & D’Incau, 2002). Also, the relationship between the end-user and the network operator makes billing and payment functions more convenient.

Leveraging these new sources of value and functionalities leads to a greater emphasis on personalization, and subsequently to more user-centric (Ropers,

2001), or individual or I-centric services (Ballon & Arbanowski, 2002). Furthermore, services are expected to be both passive, where the transfer of data occurs without action on the part of the end user (such as email receipt, status monitoring, and automatic updates) and active, such as shopping, information gathering, and appliance management, which require the participation of the user (Senn, 2000).

In addition to differences in functionalities, mobile commerce will also involve different groups of players than were found in e-commerce. According to functional categories players in the mobile commerce industry include: technology platform vendors, infrastructure and equipment vendors, application platform vendors, application developers, content providers, content aggregators, mobile portal providers and mobile service providers (Tsalgati-dou & Pitoura, 2001; Maitland, Bauer, & Westerveld, 2002). One of the main differences in the types of players to date is the absence of Internet Service Providers (ISPs). Although ISPs did not factor directly into the business models of many e-commerce services, they were active in many of the basic elements such as website hosting and providing e-mail services. In mobile commerce these functions have fallen into the domain of the network operator. Another difference between e- and m-commerce is the centrality of the role of middleware providers (Varshney, Vetter, & Kalakota, 2000). Due to the variety of platforms (cHTML, WML, xHTML) and mobile terminals (phones, PDAs, pagers) the effort needed to achieve interoperability is expected to be greater.

2.2 Network Formation in Mobile Commerce

Mobile commerce network formation will occur amidst an economy-wide trend toward production through complex networks. As noted by Hage and Alter (1997, p. 108) "the growth in knowledge and the speed with which it changes has forced organizations toward more complex modes of coordination, greater differentiation of partners, and increased involvement in multiple interorganizational networks." This trend is exemplified in the development of General Motor's OnStar system, a mobile information service, as described by Barabba et al. (2002). In the case the authors describe the complex coordination required for service development and provision, which in its final form involved firms both from inside and outside the industry including auto manufacturers, a media (radio) firm, and content and information service providers. Furthermore, in developing the business model the GM team considered the possible strategic alternatives for prospective competitors and the pros and cons of forming alliances with each group.

As the OnStar example suggests, network formation is a complex process and membership in a network may be based on several criteria. Studies of network formation have concluded that a firm's contribution to end-customer value is of paramount importance in network formation (see Kothandaraman & Wilson 2001; Christensen & Rosenbloom, 1995) and this is likely to be true in mobile commerce as well. Certainly a mobile operator interested in partnering with a bank to develop mobile payment applications will evaluate potential partners based on the value-added they can contribute. It is also likely however that many banks could fill this role and it is often connections, whether social or professional, which differentiate the successful partner. Indeed, these connections have beneficial effects such as discouraging malfeasance and facilitating trust (Granovetter, 1985) as well as contributing to the success of firms (Uzzi, 1996). In mobile commerce where these partners are more likely to come from diverse industries the normal synergies gained from these social connections may be reduced due to inter-industry frictions in cultures and processes.

Thus, the trend toward greater network formation in the provision of services is likely to be observed within the unique circumstances required for mobile commerce. Considering the possible effects of this combination for business models raises the following questions. First, how will mobile commerce networks form and what will be the implications of the distribution of power among the players? Second, how do these networks contribute to the dynamic nature of mobile commerce business models?

3 Relationship-Based Perspectives

Frequently, discussions of mobile commerce business models portray firms as autonomous entities, free to decide which business model to pursue independent of their relations with other firms. In what follows this discourse is expanded by explicitly examining the effects of networks on mobile commerce business models. In particular an examination is made of the distribution of power among firms in a network and how this affects the business model. In a network power is often derived from the contribution to value-added, social or professional contacts or through assets, and power derived in previous business ventures. The discussion of networks, power and mobile commerce business models will take three forms. First, to highlight the role of power and its implications for business models two perspectives or paradigms are proposed. In each paradigm an extreme distribution of power in the mobile commerce industry is represented. Next, the concept of coupling

(or joint investments) and its role in terms of power and business models is presented. Finally, the issue of dynamic forces in the power distribution and their affect on business models is considered. After these various perspectives are presented, the concepts are demonstrated through an example of an early mobile commerce venture involving Vodafone and Vizzavi. The section ends with a discussion of the role of power, as presented in the three perspectives, in the development of mobile commerce business models and their implications for content providers.

3.1 Perspectives

In mobile commerce the lack of clarity over the issue of where the value, and hence the power, lies is demonstrated by the uncertainty, at least in some sectors of the industry, over who should pay whom. To better understand the implications of power and explore situations where the source of value is clear, two extreme perspectives are proposed: the 'network perspective' and the 'content perspective'. This is similar to the business model typology consisting of firm-based control, hybrid, and network-based control used by McKelvey (2001) to analyze the relationship between software development processes and broader forms of economic dynamics.

In the mobile commerce context the 'network perspective' represents a market where the value and hence the power lies with those firms controlling access to the network, namely equipment vendors, network operators, or license holders and ISPs. Requesting access are the content providers, application service providers (ASPs) and MVNOs. In this perspective, mobile operators rely on power developed from historical control over access to customers as well as the assets their networks represent. The power of a network operator with their own inter-organizational network will also be influenced by the power it has vis-à-vis other network operators in competing networks of firms.

From the 'network perspective' the formation of inter-organizational networks will be largely at the discretion of those controlling access to the network. In return for access content providers and others may be required to pay fees or agree to exclusive contracts whereby they are restricted from offering their content on other networks. Network operators are allowed to control network access because the mobile marketplace is often a competitive one and thus there is little basis on which policy makers can require open access.

The 'content perspective' or 'content paradigm' represents a market where content is the most highly valued asset in mobile commerce and content

firms are able to translate this value into power through which they can direct their peers. In this paradigm operators and Mobile Virtual Network Operators (MVNOs) compete to attract these players to their networks (De Vlaam & Maitland, 2003).

Dominant firms in the content paradigm derive power from the value they bring to mobile commerce but also from the depth of their investments in a variety of media and their brand. Further power derives from the flexibility with which they can enter mobile commerce, as well as leave if necessary. From the content perspective exclusivity means that content from a particular provider will be the only content of that genre carried by a network.

Although these two 'perspectives' or paradigms are merely exaggerations and do not represent realistic mobile commerce scenarios, they provide a framework for analyzing sources and consequences of power. In inter-organizational relations the power will also have an influence on the degree to which firms 'couple' or pursue joint investments. Although coupling and exclusivity are related, for example tight coupling often accompanies exclusive agreements, they are different in that it is possible for firms to be loosely coupled while pursuing exclusive agreements.

Tight and loose coupling are important for business models for several reasons. First, although tight coupling does not wholly determine stability, firms that invest jointly will have a greater incentive to stay together during times of economic or organizational stress. Furthermore, coupling arrangements will have implications for others in the network. Two tightly coupled firms are likely to wield greater power within a network and steer the development of the business model to suit their needs.

The diversity of mobile commerce inter-organizational networks is likely to create instability in the distribution of power and hence it is likely to change. Although within an industry power amongst players usually changes slowly, in diverse networks this is not necessarily the case as the bases for any initial power are less established. As mobile commerce diffuses and sources of value become more well defined (e.g., ringtones), bases of power are likely to change. In turn, changes in the business model may be desired or required.

3.2 Examples

In the following paragraphs an example of an early mobile commerce service provider is presented. The case explores the role of the operator and a content provider in the mobile commerce industry, examines their revenue and business models and notes how the service fits with other firm investments. Sub-

sequently the information will serve as the basis for discussion concerning the role of power in this mobile venture.

3.2.1 Vodafone Group

Vodafone emerged as an independent mobile telecommunications operator in the UK in 1991 and has not looked back. Building on its growth in the domestic arena, in 1993 it began an internationalization drive, joining several consortia and forming Vodafone Group International. By 1999 the company had interests in mobile concerns in over 24 countries and secured a position in the U.S. market through its merger with AirTouch Communications. This position was strengthened in 2000 when the Vodafone AirTouch Group joined forces with Bell Atlantic to launch Verizon Wireless of which the Group owns a 45% stake. Also in 2000, Vodafone Group finalized its purchase of Mannesmann AG, a German telecommunications and engineering conglomerate. The acquisition created an uproar in Europe as it was the first foreign hostile takeover of a German firm. With the acquisition of Mannesmann Vodafone Group nearly doubled in size. In 2001 Vodafone cemented its position in Asia by acquiring majority stakes in both J-Phone and its parent Japan Telecom. Since then Vodafone's international presence has expanded to include 38 countries.

As a conduit for media content Vodafone's strategy, much along the lines of its marketing strategy, is centralized. Vodafone's subsidiaries will all eventually adopt the Vodafone name and are likely to receive a majority of their content through the parent company. Through its Via Vodafone program the company is offering developers access to a gateway that will be reachable by all of their local subsidiaries in return for an unspecified revenue sharing arrangement. These developers will have to compete with other direct Vodafone content investments, such as its purchase of football media rights from KirchMedia and a marketing (and content development) agreement with David Beckham of Manchester United. This is in addition to the legacy of the Vizzavi organization, Vodafone's content portal.

3.2.2 Vizzavi

Vizzavi was a portal formed in 2000 through a \$1.4 billion, 50/50 joint venture of Vodafone Group Plc. and Vivendi Universal. Vodafone is one of the largest mobile phone companies worldwide and Vivendi Universal is a global

media and communications firm, which among other activities owns Universal Music Group as well as Canal+.

In creating Vizzavi, the partners aimed to develop a multi-access portal, to be used by fixed and mobile customers alike. In terms of mobile commerce, Vizzavi served as a branded content aggregator/portal and was to be the initial default portal for subsidiary operators of both Vodafone and Vivendi. The formation of Vizzavi caused apprehension at the European Union where policy makers were concerned that rival portals might be excluded from Vivendi's set-top boxes and Vodafone's mobile terminals. Approval was eventually granted based on the special condition that the consumer be able to change the default portal to one of his or her own choosing (CIT, 2001).

As a content aggregator, Vizzavi made agreements with a variety of firms, including Google, Reuters, and eCentive. Despite these agreements the venture has been a disappointment to both parent companies, having failed to win enough subscribers and generate substantial revenues. Existing web portals and mobile multimedia GPRS services apparently created more competition than the service could handle. Vizzavi intended to meet this challenge by focusing greater attention on the acquisition of visual content.

The ownership structures that governed the relations of Vizzavi with its clients are complex. As the default portal for Vodafone's and Vivendi's networks throughout Europe, it was meant to serve as a source of content for these operators. The names, locations, and Vodafone's stake in selected operators during 2001 are shown in Table 1. In each operating territory a local Vizzavi entity was established to provide language-specific and culturally relevant content. This local company was owned 80% by Vizzavi Europe Ltd. and 20% by the local network operator. These relations are depicted in Figure 1.

Table 1: Vizzavi Portal Presence³

Operating country	Year of Agreement	Local network operator	Vodafone Stake
UK	2000	Vodafone	100%
Netherlands	2000	Libertel/Vodafone	70%
Germany	2001	Vodafone Mannesmann	99%
Italy	2001	Omnitel Vodafone	76.1%
Greece	2001	Panafone	55%
Portugal	2001	Telecel/Vodafone	50.9%

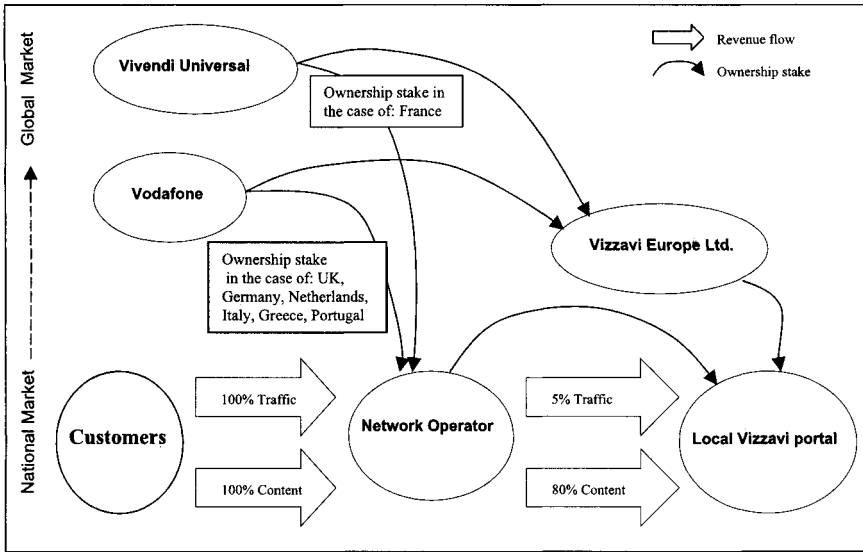


Figure 1: Vizzavi Ownership Structure and Revenue Model
 (prior to August 2002 Vivendi divestiture in Vizzavi)

The complexity of the ownership structure is replicated in the revenue model, which has two components. First, operators and Vizzavi split the portal-generated traffic revenue 95/5. Traffic is generated by accessing free information located at the portal or through the use of premium content such as ringtones, logos, games and downloads. The premium content was available only to those who subscribed to the individual services. The revenues from the end users for these services were to be split 20/80 between operators and Vizzavi.

The revenue model in the original agreement stipulated that the portal and mobile operators were to split the gross margin 50/50. A revised model was explained as an adjustment to reflect a greater emphasis on premium content as both a source of revenue and an integral part of mobile services. Although the change guaranteed Vizzavi a greater share of the revenues from premium content subscriptions, it lost a share of the traffic revenue presumably driven by the quality of its content.

The ruling by the EU canceled any hopes that Vizzavi may have had for being the exclusive portal for Vodafone and Vivendi’s mobile outlets. Forced to compete with other portals Vizzavi gave exclusive deals to some content providers (i.e., Google) and obtained exclusive deals from others (i.e., Universal’s artist Sting).

In the end, despite changes in the revenue model and cost cutting measures to improve its performance, the venture did not last. In August 2002, Viven-

di under pressure to reduce its debt sold its 50% stake in Vizzavi to Vodafone. Vodafone subsequently integrated Vizzavi into its group and has relabeled it Global Content Services.

3.3 Discussion

In this example one sees that power between network operators and content providers shifts in an attempt to strike a balance between the extremes of the network and content paradigms. In the Vizzavi example, revenue is being shared with the content providers as opposed to the early stages of WAP where network operators required content providers pay for access to their networks (Kar, 2002). Since Telia began offering revenue sharing for SMS service providers and the i-mode model was successfully implemented, revenue sharing has gained popularity and power is shifting toward the content providers. Despite this trend, the behavior of Vodafone and commentaries by Geng and Whinston (2001) and Funk (2002) suggest that this transfer of power is at the discretion of network operators.

The example also represents a case of tight coupling and its implications for business models. On the one hand the tight coupling through an elaborate ownership structure resulted in a somewhat elaborate business model for Vizzavi. As a mobile portal the tight coupling with Vivendi provided them with access to their parent company's content, although not uniformly on an exclusive basis. As with any joint venture, Vizzavi can be either the beneficiary or the victim of its parents' status. In this case the tight coupling did not produce the anticipated advantages which eventually led to Vizzavi's demise.

This interdependency to quickly expand with little concern for the relationships between operators. Although Vizzavi, a portal, and content providers are not directly comparable, one can conclude that the sharing of traffic revenues for Vizzavi was possible due to their relationships with the operators, while it is unlikely that content providers will manage traffic-dependent revenue agreements.

The last issue considered is dynamics in power. As the move away from the network paradigm that existed with WAP service suggests, power is shifting toward content providers, expanding their options. However, as is demonstrated by the case of Vizzavi, power within a network can also change and require revision of the business model. The power defined by the added end-customer-value can be eroded by exogenous factors like large debt that can swing the balance of power back toward the network operator. Thus, it is likely that over time, as various players gain experience, develop value, or gain a

better understanding of their options that models developed within a network will change.

Finally, the consideration of the balance of power, tight and loose coupling, and dynamics in power will all have implications for content providers. While some operators such as Vodafone have taken a centralized approach to content approval and distribution other operators, such as those using NTT DoCoMo's i-mode model, have opted for a decentralized approach. Deciding which scenario is beneficial for the content provider will require an understanding of the potential level of coupling between the two parties, the power they have vis-à-vis a particular operator, which will likely be based on the value they provide to the overall mobile data service, their personal connections, and finally an informed view of what the changes in the balance of power are likely to bring.

4 Conclusion

The development of mobile commerce business models, although informed from experiences with e-commerce, takes place in a unique environment with new sources of user-value delivered through services that are offered through networks of diverse firms. Due to the diversity of these networks the distribution of power is likely to be unstable. The implications are diversity and instability in the business models. Changes in business models will be observed on an industry-wide basis, as portals, content providers and middleware developers quickly expand across markets around the globe. Changes will also be seen within networks as the roles and relations among partners change.

This fluidity in business models can have positive effects for the industry as long as end-users remain unaffected. The possibility to gain power and attain a more favorable negotiating position may provide a strong incentive for innovation. Since the mobile commerce industry is young and has short time-to-market cycles, these processes appear to be complementary.

Although business models are derived from a wide variety of influences, the focus here has been on inter-organizational networks and their accompanying power distributions. Other plausible explanatory factors that may explain the behaviors observed here include changing asset and stock valuations, technological trends, and broader corporate strategies. Thus there is a need for future research that explicitly compares these factors to allow for better understanding of the relationship between the mechanisms of inter-organizational networks and the business models through which they offer products and services.

Endnotes

- ¹ For an example in the e-commerce realm see Gallagher et al. (2001).
- ² Compare, for example, the mobile commerce business models proposed by Tsalgaidou and Pitoura (2001); (content providers, mobile portals, gateway providers, service providers) with the atomic e-commerce business models identified by Weill and Vitale (2001). Also note, for example, the warning by Anckar and D’Incau (2002) that firms involved with mobile commerce do not assume that high levels of mobile phone penetration signal a high level of acceptance for m-commerce, as some e-commerce actors assumed high levels of Internet and personal computer (PC) translated to an acceptance of electronic commerce.
- ³ Source: CTI 2001 and various corporate websites.

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