
Mobile telephony and broadcasting: are they compatible for consumers

Robert G. Picard

Jönköping International Business School,
Jönköping University, P.O. Box 1026,
SE-551 11 Jönköping, Sweden
E-mail: robert.picard@jibs.hj.se

Abstract: This paper explores the potential for audio and video services streamed to mobile handset from the perspective of consumer behaviour. The author argues that consumer choice rather than technology or supply side activities will determine the success of the services and that demand for mobile broadcasting services will come primarily from consumers who are currently using mobile audio and video services with other technologies. The author argues that increased attention needs to be placed on pressing issues as mobile communications capabilities increase and that a wide range of factors will influence consumer demand for mobile services.

Keywords: mobile services; B2C; broadcasting; streaming; business models; consumers.

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Biographical notes: Robert G. Picard is Hamrin Professor of media economics and Director of the Media Management and Transformation Centre, Jönköping International Business School, Jönköping University, Sweden. His research focuses on economic structures of media markets, demand for media products and services, and business models and strategies of media operations. Picard is author and Editor of eighteen books, including *Digital Terrestrial Television in Europe*, *The Economics and Financing of Media Companies*, *Media Firms: Structures, Operations, and Performance*. He is Editor of the *Journal of Media Business Studies* and was Editor of *The Journal of Media Economics* for a decade.

Digitalisation of telephony and broadcasting has made it technologically possible to offer both terrestrial and satellite broadcast-like services to mobile telephones, personal digital assistants, and similar equipment. Development and introduction efforts are currently underway, particularly in Asia and Europe, to provide audio via terrestrial and satellite telephony systems and to distribute television broadcasts and video using similar methods.

The concept of combining telephony and broadcast content is not new. In 1922, for example, the American Telephone and Telegraph Company announced plans to connect radio stations to telephone circuits so listeners could receive broadcasts via telephone [1].

The idea had earlier interested Alexander Graham Bell and other inventors and operators of telephone services.

Its reapplication to mobile telephony has been made possible by improvements in technology, increased spectrum availability, and declining prices for terrestrial and satellite services.

Such factors themselves, however, will not be the determinant of successful introduction of mobile telephony-based broadcast reception. Although the technologies present possibilities, it is markets that decide whether to accept or reject them [2], so the most important factors will involve consumer behaviour and their willingness to acquire the technology, to use it, and to pay charges for broadcast services.

1 Mobile telephony and mobile broadcasting

To understand the consumer potential for broadcast services via mobile devices, one must first recognise that the underlying products and services on which it is based are not new, but rather contemporary applications using new technologies.

Mobile telephony developed out of radiotelephony, which primarily served naval, military, police and fire services after its development in the early twentieth century. Later it was applied toward commercial use for ships, taxis, and freight distribution companies [3].

The development of an effective modern mobile telephony system by Nokia altered the traditional conception of radiotelephony and caught giants of that industry, including Motorola and Ericsson, by surprise. Nokia has radically transformed the conception of mobile communications and created an entirely new consumer product industry in which it is now the dominant player [4,5].

Mobile telephony has become the base for a variety of types of mobile communication, including messaging, fax, internet access, notification services, and now broadcast services. From the telecommunications management perspective, mobile telephony reduces costs of wiring a service area but requires significant investments in receivers and transmitters and a complex infrastructure of control equipment.

Terrestrial mobile telephony is based on use of radio frequency, a very scarce resource, for which governments are increasingly charging high usage fees. Because of the needs from tracking handsets as they move from cell to cell, mobile systems require more control systems than wired systems in order to maintain the connection as a handset moves from cell to cell. This presents special problems as the richness of messages increase, but telecomm engineers are finding a variety of ways to solve that issue. Many of these issues with fixed and mobile telecommunications are bypassed when communication is switched from a terrestrial network to a satellite-based network.

On the broadcasting side, mobile radio broadcasting reception has been possible since the beginning of regular broadcasting. Automobile radio first became available in the late 1920s, but was not offered as auto manufacturer accessories until the 1940s. Practical widespread consumer use of mobile radio began after the development of the transistor in 1950s that replaced tubes that tended to break in mobile environments. The transistor radio, which was popularised in the late 1950s, gave broadcasting reception true mobility because it could easily be carried in a pocket or purse and required less space and battery power in automobiles [6,7].

Mobile television reception began with portable sets first developed in 1959 but became effective in the late 1970s when integrated circuitry allowed reduction to the size of a paperback book.

This paper will not focus on the technologies of mobile telephony and broadcasting today, except to note that they present economic issues that affect investments, operating costs and – ultimately – sustainability of enterprises. The new technologies for mobile broadcasting and reception are, however, clearly providing the potential for a range of new services. Among these are business-to-consumer (B2C) services in entertainment, such as mobile music and mobile video [8].

The technologies need to be understood as not merely providing new capabilities but also as inducing change in the way users communicate and work [9]. Changes clearly occurred with fixed telephony, affecting the role of women, ideas of distance, family, and business markets [7] and the ways that people used portable radios and changed their lifestyles and the types of content desired [10].

Mobile telephony-based broadcasting will also create changes and the willingness of consumers to accept those changes in their lives will be a central factor in whether new mobile broadcast services are successful. The importance of understanding consumer behaviour with regards to mobile services is being increasingly recognised [11] and attention of research will be focused in that direction.

2 Mobile broadcast reception: consumer perspectives and business models

Consumer choices, not technology or supply side strategies, will determine the success of mobile telephony broadcast services. A fundamental factor in demand is that the mere availability of broadcasts via telephony will not provide a service previously unavailable. Consumers can currently obtain broadcasts in mobile environments by portable radios and portable television sets that are readily available. So there must be good reason for them to switch and use the new services.

Emphasis is given to these points because a significant understanding of consumer behaviour has been absent in the past from most analyses of new information and communication technologies and services and their introduction in recent years. Two major problems are evident in the views of consumers in many of these analyses. First, there is an assumption of universal interest in the new products and services. Second, there is an assumption of universal adoption at some point. Both ideas are highly suspect because no media or communication device has ever achieved 100% adoption and nothing in consumer behaviour theory or research supports either idea [12].

Many proponents of new information and communication technologies seem convinced that because their technologies can serve good purposes, they will be automatically embraced by the public. The problem is that there are a range of impediments to success of ICT technologies brought on by competing interests in the technologies [2] and because the individual choices of consumers determine what consumer resources are devoted to new media. Ultimately, consumer choices will influence choices of marketers and advertisers, which are critical to many market-based business plans for digital media [13,14].

Thus, if new information and communication technologies are to be successful, consumer needs must be central parts of the strategies of their developers. One must be able to answer questions such as: What will consumers get which they are not getting now? How is the technology or service relevant to their lives? How does it improve their lives or help them? Why is it valuable to them? Why should they use and pay for the new service?

Consumer acceptance of media and communication products and services is determined by the extent to which they serve consumer wants and needs, the willingness of consumers to invest in hardware and software, their willingness to pay service charges, and their willingness to use their time differently. Thus, understanding consumer behaviour is a critical issue in the successful introduction of mobile broadcast services.

When consumers consider new media and ICT, a number of other factors are critical in their choices: whether the new technology is an improvement in providing functions on existing communication devices, whether the product or service is desirable, whether it is compatible with existing technology they own, the amount of use they anticipate will be made of the new technology, what types of switching costs would be involved (would one have to repurchase video recordings in a new format, for example), their level of belief in success of the technology, and the temporal and financial resources that are available. All of these factors will play roles in determining the success of the new broadcast services.

3 Consumers and mobile telephony-based broadcasting

If one considers consumers and mobile telephony-based broadcasting services, one rapidly comprehends that consumer behaviour relative to mobile broadcasting is inextricably linked to the way consumers currently use telephony and broadcasting and whether they will be willing to have the two blended. Issues of technology functions and functional blending are critical to success of new information and communication technologies.

At a fundamental level, the primary function of the telephone is to overcome time and distance constraints on physical interpersonal communications, allowing individuals to communicate simultaneously at a distance. The primary function of broadcasting is also to overcome time and distance; however, it is primarily designed for one-way mass communication.

Efforts to blend the two functions by providing broadcast services through mobile telephony devices must overcome these functional differences as well as conceptual differences in the minds of consumers. In cases of other consumer goods in communications, consumers have tended to maintain strong preferences to make most use of separate technologies and use blended technologies as a less preferential choice. Thus, it is uncertain the extent to which they will accept the functional blending of mobile telephony and broadcasting.

A second consumer issue arises because mobile telephony broadcast services must provide value to consumers that is presently absent if they are to be successful.

The basic value of telephony is the ability to communicate with others. This is enhanced by mobile telephony in that one is not limited to communication in a fixed location. The value of telephony to consumers is also affected by market penetration – that is, the number of persons, companies, or institutions they can call – and

by services that can be received via telephony. The basic value provided by broadcasting is entertainment and contemporary information. The broadcast receiver itself provides basic value through access to that content and provides additional value for portability and design.

So what value will be created by new mobile telephony broadcast systems? What will consumers gain from them?

Mobile telephony-based broadcast reception provides the ability to receive entertainment and information in a mobile environment. This is not unique, of course, and is already provided by portable radios and television. So this cannot be considered a new, significant value in itself.

The true value created is the additional value provided by a single device that combines telephony with broadcast reception – removing the current need to carry additional reception devices – and improved reception of audio and visual signals because of digital broadcasting.

The question is whether these are significant enough to gain significant consumer interest. The answer depends upon consumers' perceptions of the desirability of receiving broadcasts using mobile telephony technology – which I believe will be positive and is not a serious issue – and the costs of acquiring equipment and services, which will be more problematic. The business models developed for the services will thus be crucial to success or failure.

4 The central role of business models

The new services will be operated as commercial entities in the market economy. The basic requirement of a market economy is the existence of a market, that is, consumers willing to consume the product or service. A truism – apparently forgotten in many of the new media industries in recent years – is that sellers must have a product worth acquiring, that there must be buyers who want to purchase, and that the product must be offered at a price buyers are willing to pay. Although the truism seems trite, the history of new media indicates that many companies did not comprehend this basic business logic and that the lack of comprehension was responsible for a good deal of the difficulties the industry has faced.

In recent years, literature on business strategies for new media and the operation of firms for commercial gain has begun to emerge from business scholars, economists, and practitioners. Although generally supportive of ICT and new media, they have taken a more critical and realistic view of the technologies and their potential for success and failure. These studies have begun to lay out the necessities and requirements for successful introductions and operations of new media. Central to these studies has been the analysis of new media business models and strategies.

Effective business models encompass how a business operates, its underlying foundations, its value-creation processes, its cost structures, the resources upon which it is dependent, its creative and production elements, its distributive activities and mechanisms, and its exchange activities and financial flows. They include a description of the potential benefits for the various business actors and the sources of revenues.

Theoretical and applied analyses have investigated business models for new media activities and a number of significant contributions have appeared. Attention has been focused on telecom service business models [15,16], internet strategies [17,18], e-commerce [19], and online content providers [20].

A basic element of the models is that the firms must have revenue streams to survive and grow. The primary sources can be consumers, advertisers, e-commerce activities, or a parent company that operates the new medium as an extension of existing products or services. There are many different means in which a business model can be constructed to provide necessary revenue.

A much-tried method is the transfer of the advertising-support model from established print and broadcast media. The result has not been highly successful. Despite internet use nearing an average of 25% across Europe, for example, online advertising expenditures represent less than 2% of total European advertising expenditures [21].

The linkage of telephony, internet, and credit card payment processing create significant opportunities for a wide variety of mobile commercial transactions [22]. Exploitation of business opportunities based on mobile communications require companies to change the ways they think about customers and customer services and to alter internal processes [15]. It may be possible to combine mobile telephony broadcasting with some forms of m-commerce, particularly for music, that can create a workable business model.

Fundamental issues relating to demand for mobile telephony-based audio and video broadcasting, however, create significant uncertainty around consumer funding. Recent studies of European users of mobile communication show that they prefer mobile to fixed telephony, but have limited interest in mobile services other than personal communications [23].

The successful experience of DoCoMo in Japan, however, indicates that demand for additional mobile services varies widely in different markets [24]. Indeed, forecasts for individual markets vary widely based on differences in mobile technology market penetration, strategies of telecom operators, technology available, and services planned [25].

A good deal of the uncertainty involves market size and system issues. This occurs because costs for services are related to the amount of traffic on a telecommunications system, its capacity, the technology it employs, and its operating costs [26–28].

Capabilities are related to use and high use systems tend to have more capacity, speed, and newer equipment. Capabilities are also related to population density because marginal costs for providing service rise as density decreases. This induces telephony companies to provide different levels of systems capabilities within their service areas. Capabilities are also related to competition because investments in more capabilities are made more rapidly as telecommunications firms seek competitive advantages through more services.

Ultimately the capabilities and amount of use are translated into the prices charged to consumers. Demand for service is further included by the payment structure for services and these differ widely worldwide in terms of the payments required for basic access to telecommunications systems and for actual use of the system and services.

Creating effective business models for streaming content is challenging because it involves a complicated value chain of interdependent actors that needs coordination to provide full-service solutions in which the users' costs must be restrained [29].

If mobile telephony-based broadcasting is to be successful it must be offered at a relatively low price because broadcasting in other forms is already received without payment. It will either have to be offered at a low price as an additional service, as part of flat rate pricing for telecom services, or a pay per service (which is most likely for pay per view video).

5 Discussion

A consumer perspective makes it clear that potential for mobile telephony-based broadcasting services exists primarily within the existing markets for mobile telephony and portable broadcast receivers, as illustrated in Figure 1. The strongest potential exists among consumers who currently use both mobile devices and portable receivers because the new services require little change in consumer behaviour.

Even within that primary potential market, however, there are consumers who will choose not be interested in the new broadcast services, unwilling to pay for the services, or delay acquiring necessary hardware until their current hardware is no longer desired or usable. As illustrated in Figure 2, the actual market is smaller than that of the primary potential market.

Figure 1 The primary potential market for telephony-based broadcast services

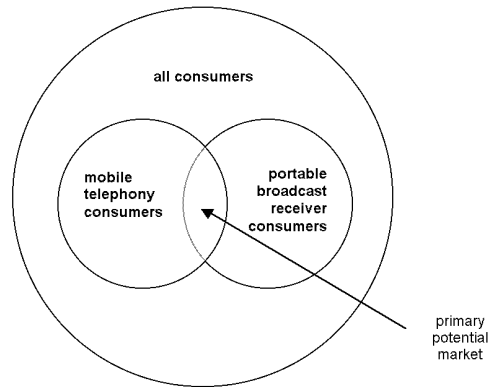
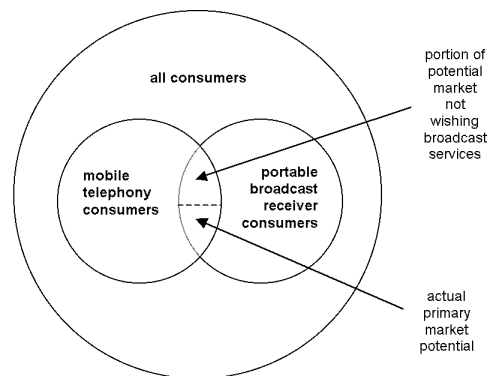


Figure 2 Actual market is smaller than the potential market



Outside of the primary potential market there are secondary potential markets of persons who are not yet consumers of mobile telephony or portable broadcasting. The market potential among these consumers varies widely. Persons who are not interested in mobile telephony for other communication purposes are not likely to acquire it for broadcast reception. Even if they desire broadcast reception, traditional portable receivers will be less expensive for both hardware and use and thus more attractive. Some persons who are mobile telephony users but not users of portable receivers, however, may select audio and video services as value-added services.

One also has to consider issues of when and where use will take place. Current uses of a variety of integrated information and communications technologies reveal clear preferences for uses of individual technologies at particular times and places. Users of both PC-based internet and mobile internet services, for example, show clear preferences for the advantages of the larger screen and speeds in fixed locations, but will substitute use in the mobile environment for e-mail, messaging, and limited internet use. But their primary use remains in the fixed environment.

In the case of mobile telephony-based broadcasting it is likely that its use will be primarily in locations where fixed broadcast reception is not available. Use is likely to occur primarily in mobile situations where larger speakers with higher quality reproduction are not available for listening or where larger screens are not available for viewing. In practice, this will tend to mean during travel time and out-of-home leisure time. This will tend to limit the primary use of telephony-based mobile broadcasting to specific times of day, with peaks in the morning and afternoon/evening on workdays, much like conventional radio broadcasting but earlier in the day than most television viewing worldwide. Such limitations on time and place of use will affect some markets more than others because they are linked to issues of lifestyle and culture.

Demand for the new services will also be affected by competition from other technologies. The integration of MP3 storage capacity and players into mobile telephones, for example, also provides audio to users. There are also questions about demand for more broadcast services, as seen in the demand failure of DAB satellite services in the US and the general lack of interest in terrestrial DAB in Europe.

The range of demand factors and their different effects make it impossible to make sweeping generalisations about the potential for success or failure of new and potential mobile broadcast services. Individual local market conditions will have to be considered.

Creating successful business from telephony-based broadcasting will be a far more difficult activity than merely developing a good technology or service, creating a business plan, and offering the broadcasts to consumers. It requires convincing them to part with their money for new hardware and the service.

If they are to become successful commercial activities, companies offering the products and services will have to devote significant attention to consumers and the market. They will need to recognise limits to acceptance of the new technologies and plan accordingly.

There is great potential for new information and communication technologies and services, but that potential must be viewed realistically, within the constraints of the market economies that are being asked to introduce and support them.

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