"Just Another Distribution Channel?"

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Abstract. The telecommunications-centric business model of mobile operators is under attack due to technological convergence in the communication and content industries. This has resulted in a plethora of academic contributions on the design of new business models and service platform architectures. However, a discussion of the challenges that operators are facing in adopting these models is lacking. We assess these challenges by considering the mobile network as part of the value system of the content industry. We will argue that from the perspective of a content provider the mobile network is 'just another' distribution channel. Strategic options available for the mobile communication operators are to deliver an excellent distribution channel for content delivery or to move upwards in the value chain by becoming a content aggregator. To become a mobile content aggregator operators will have to develop or acquire complementary resources and capabilities. Whether this strategic option is sustainable remains open.

Keywords: Mobile operators, content providers, industry structure, business models, technology convergence, strategic options.

1 Introduction

In the late 1980s and early 1990s mobile telecommunications became synonymous with "a license to print money". The introduction of competition in the mid 1990s challenged this perspective, but due to the spectacular growth in demand the market could easily accommodate multiple providers. Moreover, innovation such as the use of prepaid cards unlocked new market segments, the younger generation and the consumers at the so-called 'bottom of the pyramid' [1].

More recently the profitability of the mobile business model has come under pressure due to, e.g., intensity of competition, market saturation and license fees. One response has been to expand the service portfolio from voice only to voice and data. The unplanned but very welcome success of SMS provides a leading example. However, SMS resembles voice as the messages are individually charged. The data-driven business model as we have come to appreciate it in the fixed network domain,

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is characterised by a flat fee depending on the data rate. While the prospect of growing data volumes is attractive to the mobile operator the prospect of becoming a 'bit pipe' provider has less appeal. Ideally a sustainable competitive business model is built on some aspect of unique resources or capabilities, or some aspect of 'captive audience' [2].

An alternative strategic avenue that is being pursued by mobile operators is to move up in the value chain by offering value-added services. The technological developments from analogue to digital encoding of information and the use of the TCP/IP protocol stack as part of the Internet has made this transition possible. This has resulted in a plethora of academic contributions on the design of new business models and service platform architectures, e.g., Van de Kar [3], Bouwman, De Vos, et al. [4], Bouwman, Zhengjia, et al. [5] and Ballon [6]. However, a discussion of the challenges that operators are facing in adopting these business models is lacking.

The purpose of our research is to explore these challenges through assessing the impact of convergence on the business models in the telecommunication and content industry. The research is aimed at assessing the strategic options for the mobile operator as part of the value network of the content provider. Thereby assessing the attractiveness for a mobile operator of becoming a content aggregator. In our research we apply a comparative, longitudinal approach.

This contribution is organised as follows: first, we provide a short description of the business model development in the mobile telecommunication, film and television industry. We identify the core resources and key capabilities of each business model and assess how the various assets can become complementary in providing mobile content services. In section 3 we assess the integrated value network that evolves as a result of converging technologies. In section 4 we discuss the strategic options for the mobile operator within the content industry. In section 5 we provide our conclusions.

2 The Development of the Industries

Although technological convergence creates a cross-over between the once separate telecommunications and content industries, the business models are distinct, based on the development of totally different sets of resources and capabilities.

Telecommunication Industry Development – Business Model Evolution

The (mobile) telecommunications provider has a unique set of resources and capabilities. On the one hand there are the infrastructure assets and on the other hand the direct customer relationships, which includes a billing relationship. In the business model of the telecommunications industry the operator has no involvement in the content, in fact by law operators are obliged to transfer the communication transparently, without tampering with the content. Fig. 1 reflects the related value chain in its basic form. The communication (C) is two-way symmetrical, as it takes place in two directions, and is one-to-one, i.e., between the A- and B-subscriber. Typically both parties have a subscription for the use of the network.

The telecommunications business model has been optimized since the invention of the telephone in 1876, resulting in the so-called voice-driven circuit-mode paradigm.

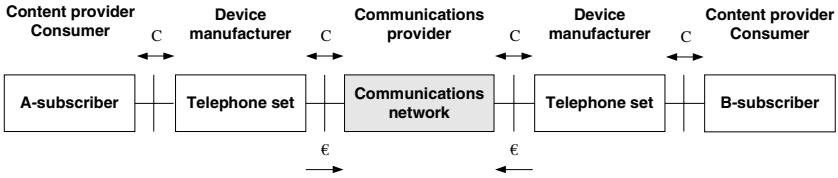

Fig. 1. Value chain of the telecommunications provider

Key attributes of this paradigm are vertical integration, the charging based on time, duration and distance; and the intelligence being located within the network.

With the ARPA[1] developments starting in the 1950s a new data-driven packet-mode paradigm has emerged to become epitomized by the Internet and characterized by the use of the TCP/IP protocol that allows the decoupling of applications from the underlying communications network. In principle all types of applications voice, data, video, images can be supported by all types of networks using twisted pair copper cable, coax, optical fibre, or radio waves. Key attributes of this paradigm are a horizontal structure, a flat-fee charge based on the data rate provided, and the intelligence being located in the terminals connected to the network.

The packet-mode paradigm is now subsuming the circuit-mode paradigm as telecommunications providers are migrating the core network infrastructure to become All-IP. The mobile operators started the transition with GPRS in 1999 now rapidly transitioning towards HSPA, providing packet access in the Mbit/s range.

As part of the business model the mobile operator owns a unique combination of resources and capabilities to serve the 'communications consumer on the move', i.e., the mobile network and operational infrastructure. Moreover, the consumer typically has one mobile subscription and, hence, represents a captive audience while on the move. The customer relationship includes billing. Operators that own and exploit both fixed and mobile network infrastructures have the benefit of a more extended captive audience, both on the move and at home.

Film Industry Development – Business Model Evolution

The content industry emerged with the film and the cinema in the 1890s. The generic value chain is depicted in Fig. 2 [7]. This model is one way and one-to-many: the film distributor initiates the production of the film and uses a distribution channel (enabled by physical transport) to provide the film to the cinemas, where the consumers come together to view the content [7, 8].

The proceeds from the viewers flow back, via the cinema operators to the distributors. In this business model the film distributor carries the production risks. The film distributor distributor has a strong relational network in the world of film production and deep knowledge about the demands and tastes of the consumer. The film distributor may own the film studio, otherwise the distributor has become very light on physical assets as the cinemas are mostly independently owned.

[1] ARPA: Advanced Research Projects Agency; US Government agency through which the early developments that have led to the current day Internet were funded.

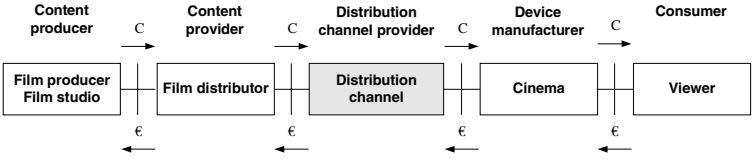

Fig. 2. Value chain of the content provider

Television Broadcast Development – Business Model Evolution

In the 1930s a new content industry segment emerged with the introduction of television, as a next step in the evolution from radio broadcasting in the 1920s [9]. Through the use of powerful radio transmitters content is broadcast to consumers. For the first time consumers can stay at home to watch content, films as well as TV-programs initiated and funded by the television broadcasters. The generic value chain model of the TV-broadcaster is depicted in Figure 3.

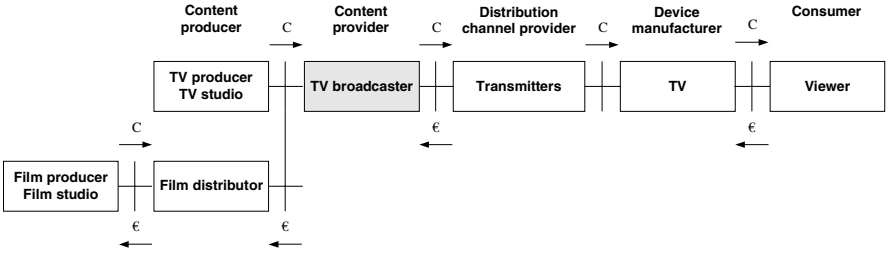

Fig. 3. Value chain of the TV broadcaster

In the Netherlands, as an example of the development in Europe, the government provides licenses to broadcasters with the objective to provide a 'pluriform' programming. Consumers initially paid for a RTV-license, the proceeds were used to fund the broadcasters and the program production. In the late 1980s commercial broadcasters operating from abroad forced a change in the regulatory regime, resulting in TV advertising being allowed and commercial broadcasters being permitted to operate within the Dutch jurisdiction [10].

The TV becomes an alternative distribution channel for the film industry and film is a source of premium content for the TV broadcaster. The royalty payments are determined by the reach of the broadcaster and the viewing rate.

In the 1970s the video cassette recorder (VCR) is being introduced. Next to new functionalities, this device introduced a new distribution channel for the film producer and represents a 'bypass' channel for the TV-broadcaster and the cinema operator.

For TV-users outside the range of a domestic transmitter or TV-users interested to receive foreign programs the launch of satellite services provides for an alternative distribution channel since the 1970s. In essence satellite services are provided according to the business model of a TV-broadcaster, using a different distribution channel requiring a different antenna and the use of a set-top box [9].

Through the set-top box Pay-TV becomes a new element in the business model. The satellite broadcaster has the opportunity to aggregate both film content and TV-content from different sources and may initiate the production of its own content, e.g. procure the rights to 'air' sports events, to be bundled in a branded channel (viz. Canal Plus and Sky). The satellite broadcaster has the benefit of having a captive audience with a large geographical coverage, which through the set-top box can be segmented geographically.

An important change in the terrestrial distribution channel occurs with the emergence of cable systems for the local distribution of the RTV-signals. In the 1970s these municipal CA-TV systems started to emerge in the Netherlands [10]. CA-TV operators introduced a new element in the business model of TV as they can aggregate channels and select which channels will be passed on for further distribution. By Dutch law the cable operators have an obligation to pass through the public broadcasting channels and are required to provide a minimum number of channels.

Depending on the reach and the type of program the operator may have to pay the film producer or TV-broadcaster for the right to pass on a movie or program.

With the introduction of digital transmission on the cable systems combined with the use of a set-top box the cable broadcaster can offer multiple bundles of channels, which may be local or regional and provided for free or for a fee. In this digital case the consumers are representing a captive audience.

Each of the broadcasters has a unique set of resources and capabilities. Albeit, the TV-broadcaster may only have a license to use transmitters at certain locations and at certain periods of time. The cable broadcasters typically own and exploit the cable infrastructure. The satellite broadcasters lease transponder capacity at satellites owned by consortia of telecom or broadcasting operators.

In terms of relational assets the broadcasters have strong networking relationships with the TV-producers, film distributors and other providers of (premium) content. Through viewing statistics and viewing panels the broadcasters obtain valuable insights in the preferences of the consumers. Programs are bundled and channels offered to meet the needs of specific consumer segments. By providing a portfolio of programmes for a fee, the cable and satellite broadcasters obtain direct feedback on consumer preferences.

3 Analysis of Technological and Industry Developments

The Internet becoming accessible to general public in the beginning of the 1990s [11] forms the start of the technological convergence of the telecommunications and the content providing industries. This convergence is taking place at the 'distribution channel' and at the 'device' level. The result of these developments is depicted in Fig. 4 in the form of a value network for content provision. In the following sections we discuss the impact of technological convergence on three aspects in the value network: the distribution channel, content provision, and devices.

Distribution Channel. With the transition from analogue to digital encoding of all types of information (voice-data-image-video) and the introduction of packet-mode communication using the TCP/IP protocol stack technologically different infrastructures

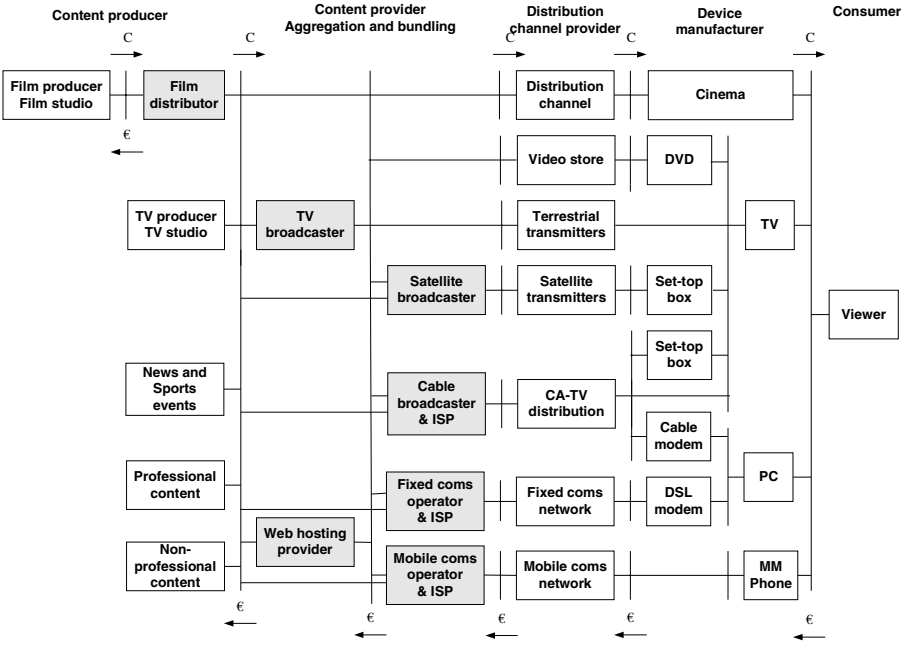

Fig. 4. Value network for content provision

are able to provide the same type of services. The telecommunications networks supporting packet-mode communication, both fixed and mobile, can stream digital RTV-signals using IP. By upgrading cable networks to two-way communication they can provide next to RTV signals, broadband Internet access, and voice communication through IP (VoIP).

Both types of communication networks can in principle support the same categories of services. Albeit, the difference in underlying infrastructures leads to difference in the attributes of the services being provided. For instance the telecommunications networks are not optimized for broadcasting and, hence, are capacity limited in conveying TV-signals in real-time. The use of peer-to-peer protocols, such as Bittorrent, is aimed at alleviating this problem.

This difference also explains the strong interest of, e.g., KPN the Dutch incumbent telecommunications provider to obtain a DVB-T license to provide digital terrestrial RTV-broadcasts.[2] While the service is offered on a stand-alone basis, it provides KPN an opportunity to offer 'triple-play' services in competition with the cable broadcasters. KPN also exploits the DVB-H network for mobile TV.[3] As KPN also has a mobile communications branch, it can provide in principle 'quadruple-play' services, an offer which the cable broadcasters can as yet not match.

[2] DVB-T: Digital Video Broadcasting-Terrestrial. Standard for digital broadcasting of RTV signals using radio transmitters.

[3] DVB-H: Digital Video Broadcasting-Handheld. Based on DVB-T, optimized for handhelds.

As a result of these technological developments cable broadcasters and communications providers have become competitors in converging markets.

Content Provision, Aggregation and Bundling. Through the Internet, professional as well as non-professional entities have the opportunity to distribute content to consumers. This distribution is facilitated through application hosting organisations. YouTube is an example of content hosting for non-professionals.

The wealth of information also confuses the user who may be enticed to receive content in a more convenient manner. The BBC iPlayer is an application that provides easy access to content from the BBC. The initiative by Apple Inc. to create the iTunes web store is aimed at creating an eco-system around its own platform of products and represents a closed system for content retrieval (music, games, video) at a (reasonable) fee. Thereby Apple assumes the role of professional content hosting provider.

These different models reflect the battle between open and closed business models for content provision, whereby the latter may be more attractive to content providers who invest in content production and distribution for-a-profit.

Devices. The use of the Internet is enabled though intelligent terminals, such as the PC and laptop, as well as mobile devices such as PDAs and multifunctional mobile phones. All these devices can be used to view video content. Which device is being used at a certain point in time is largely a matter of convenience, linked to the desired degree of mobility by the consumer and the perception of quality. The form factor of the device plays also a major role, as is the mode of viewing (primary, back-ground).

Interestingly, computers have also a large storage capability, which provides for a time-shift function, hence, content can be downloaded and stored for later viewing. This implies a replacement for the VCR and to a lesser extent a replacement for the more recently introduced DVD.

Results of Technological Convergence. The result of technological convergence is a multiplicity of distribution channels being available for content providers to reach the consumer. Moreover, consumers have access to content through multiple devices.

The value of the content being provided determines which (combination of) distribution channel(s) is used by the content providers. The model that has emerged suggests that new films are first distributed to the cinemas and subsequently provided for TV viewing and ultimately made available on DVD. Also a broadcasting model is emerging whereby news and sports are first provided in real-time through the traditional broadcasting networks, to be made available subsequently for delayed viewing via the Internet.

The multiple distribution channels suggests that consumers will be able to find and access any type of content that is either in the public domain or accessible for a fee in the private domain of content providers. The traditional role of selection and bundling of programs by broadcasters would seem to become redundant and challenged by new content re-distribution initiatives, such as Joost (which is web based, using a Popcorn Hour set-top box in combination with advertising).

4 Discussion: Position of a Mobile Operator in the Content Industry

In this section we come back to the main research question: what are the options for mobile communications provider facing an industry trend towards content?

The starting point for the discussion is that the technological changes that have affected the fixed communication network (from circuit-mode to packet-mode) will affect the mobile communication sector in a similar manner; resulting in a change in the revenue model from unit fee to flat fee and a change in the service delivery model from vertically integrated to a more open and diverse model. This calls for a strategic re-orientation by the mobile communications provider.

Management literature suggests that strategy should be aimed at achieving a good fit between the firm and the environment. This may be achieved by the firm adapting to the environment (applying an *outside-in* approach) or the firm exploiting its resource base to shape the environment (applying an *inside-out* approach). Adaptation to the market may require reshaping or extension of the resource base [2]. Moreover, Porter argues that a firm has three generic options to achieve strategic advantage: (1) strive for overall cost leadership across the industry; (2) applying differentiation in delivering uniqueness perceived by the customer; (3) focussing on a particular market segment [12]. Reviewing the position and perspective of the five major actors in the industry will lead us to conclude on the options available to the mobile operator.

Mobile communication provider perspective

The strategic position of the mobile operator has improved with the market penetration of mobile becoming higher than fixed. Moreover, mobile is not only an extra communication channel, but increasingly a substitute for fixed lines.

Constraining the mobile operator position in content provision is the design of the communication networks as two-way and one-to-one. Broadcasting networks, on the other hand, are designed for one-way, one-to-many content distribution. While special protocols, such as Bittorent, make content distribution in the Internet more feasible, as yet they do not allow for large scale cost effective real-time distribution.

An alternative terrestrial communication infrastructure is available for digital broadcasting using DVB-H, which makes TV-broadcasting to handhelds possible, albeit with a limited number of channels. Moreover, the availability of DVB-H is constrained due to limited availability of licenses, which is due to limited availability of RF spectrum. See also Braet and Ballon [13], and Curwen and Whalley [14].

The need for convenience suggests that consumers will require DVB-H to be combined with mobile functionality in one handset. This again suggests a greater interdependency between the network providers and the device manufacturers.

For mobile providers to become a `distribution channel of choice` for providers of mass market content they will have to find more effective ways to distribute content to consumers. Three principle options are open: (1) to stimulate the industry at large to develop effective multicast protocols within the mobile networks; (2) upgrade the network to higher data volume capacity, allowing large numbers of simultaneous users to receive the same content on a ‘unicast’ basis; and (3) to use a separate broadcasting technology such as DVB-H.

The implementation of option (1) resides within the realm of the mobile communications industry and the parties involved are already aligned towards that (longer term) goal; however, the potential for multicast in cellular networks is limited. Option (2) is part of the development path towards 4G (LTE), but may not be sufficiently scalable [15]. For the implementation of option (3) the mobile provider is dependent on the regulator. Considering that the regulator (or policy makers) may perceive RF spectrum as a scarce resource, they may wish to distribute RF capacity equitably and/or reserve spectrum for new entrants. This may result in the exclusion of established mobile providers from obtaining a DVB-H license. Alternatively, an operator with a DVB-H license may be forced to share its network with other providers. For policy makers and regulators it will be important to understand the emerging 'rules of the game' in the electronic communications industry to appreciate what policies may be effective in sustaining the Telecom Reform goals of increased choice, lower prices and increased quality.

Content provider perspective

With the transition to high speed packet access, with data rates into the Mbit/s range, the mobile network has become capable of streaming content to the consumers with adequate quality levels. Hence, the mobile distribution channel has become a contender for the distribution of content to consumers. This means that the availability, quality and functionality offered by the network are becoming important for content providers when deciding on their distribution strategy.

From the value network depicted in Fig. 4 we conclude that the mobile network is one of many ways content can flow from producers to consumers. For the content providers the mobile network appears as 'just another distribution channel'. However, the mobile infrastructure has a unique position in the value network: the mobile network is the only distribution channel for the consumer 'on the move'.

But, alternative channels become accessible as soon as the consumer becomes nomadic or stationary. Moreover, modern mobile devices have a large storage capability; hence, content can be downloaded using the fixed network ahead of time and be viewed while on the move. Hence, real-time needs, convenience and price will be important criteria for consumers in deciding on the use of the mobile channel.

The digital mobile channel is of special interest to provide real time context-aware content. However, despite its potential value early experiments have as yet not led to a 'killer application'. See for instance De Reuver and Haaker [16].

The digital handheld is of special interest as it is becoming the 'preferred device' for consumers. This device can be reached in multiple ways depending on the available connectivity options, and the conscious versus the spontaneous use of the device. The former suggest downloading of the content using the cheapest network in advance; the latter suggests streaming while on the move.

Which distribution channel the consumer chooses is influenced by the mobile provider, but not necessarily prescribed. Creating price parity with alternative communication channels is a strategy that underscores the principle of convenience.

Content providers might be willing to prefer content aggregators using the mobile channel (but not necessarily on a exclusive basis) as mobile subscribers represent a well defined audience.

Mobile communications providers have a direct customer relationship including secure billing. This represents a capability that is of importance to content owners. Nevertheless, content providers may opt for more universal billing arrangements, being transparent to the type of distribution channel being used [17].

The use of the mobile network for content distribution does not directly lead to improved revenues for the mobile provider since there is no carriage fee involved. The mobile communications provider can generate additional revenue by assuming a content aggregator role being paid for by consumers, content providers or advertisers.

Content aggregator perspective

Content aggregators have typically been associated with a specific distribution channel (TV broadcasters, cable broadcasters, satellite broadcaster). Today we find aggregators exploiting the Internet (Apple iTunes, Joost). Aggregators have typically exploited the specific combination of the distribution channel, the device being used, and the way the content is being consumed (e.g., as 'coach potato'). Aggregators are funded through the linkage with the infrastructure (e.g., DVB-C and DVB-S subscription fees) or advertising income (e.g., TV-broadcasting).

The use of the digital mobile channel, the handheld device, and the viewing modalities allow, if not require, a dedicated aggregator role. Given the business model, a mobile channel aggregator will aim at reaching the largest possible number of consumers. Any form of exclusivity will only be of interest if the market size is attractive enough. Aggregation for the mobile channel may be combined with aggregation for the DVB-H channel, depending whether DVB-H substitutes or complements the mobile channel. Typically the aggregator will target high demand segments of the market first, next it will develop a portfolio over multiple segments. Aggregators need to find a source of revenue for a sustainable business model, advertising is one of the options (e.g., Joost). This analysis suggests that aggregators may collaborate with mobile operators but will aim to remain independent.

Mobile communication providers may wish to link up with mobile channel aggregators in providing content to their customers, albeit as said, exclusivity will most likely not be granted. For the mobile provider two options to achieve exclusivity are open: (1) to fulfill the aggregator function through in-house development; (2) to acquire a mobile content aggregator.

To implement the first strategic option mobile providers will need to develop new knowledge and skills, distinct from the skill set available and required for network operations. Parties that have had an aggregator role in the recent past might have the benefit of some knowledge and skills still being available (e.g., KPN-Casema, DT-Kabel Deutschland). Mobile providers will need to find an appropriate target firm to implement the second strategic option.

In the implementation of this strategy the mobile provider may opt to position the service free of charge to its customers, to stimulate network subscription and usage. Positing the service at a premium would place it at a disadvantage compared to similar services generally available over the Internet. To implement the aggregator function the mobile provider will have to resolve the funding issue through advertising, or accept the function as a cost to be offset by growth in subscribers and network usage.

Device manufacturers perspective
For device manufacturers the imperative is to offset market saturation with a device replacement strategy. This calls for devices with new designs, new functionality, and a portfolio of devices allowing more narrow targeting. With the introduction of the iPhone by Apple Inc. the device has become part of an ecosystem that includes content aggregation. The development of DVB-H functionality in mobile devices may be a strategic necessity in the cooperation with mobile communication providers, to avoid a potential deadlock in the development of this technology.

Consumer perspective
In the development of communication and broadcasting the role of the consumer has changed. In a competitive environment the end-user has a wide range of choices and ultimately decides on business success or failure. While mobile communication providers may provide exclusive aggregation services to its customers, it will not be able to offer these exclusive of other aggregators being accessible to its customers. Moreover, consumers may opt for aggregators specializing in terms of content.

5 In Conclusion

Having reviewed the position and perspective of the five major actors in the industry with respect to the delivery of content, two major strategic options are available to the mobile operator faced with technological convergence towards All-IP and a market trend towards content provision.

From an *inside-out* perspective, whereby the resource base of the firm is being leveraged, a mobile operator may aim at becoming the 'distribution channel of choice' for content delivery. This strategic option is in line with the resource based view and assumes a cost leadership role in data transport within the mobile industry, thereby aiming at achieving the largest possible customer base.

In applying an *outside-in* perspective, i.e., in following the market in the development towards content provision, a mobile communications provider may 'move up the value chain' to become a specialized provider in the delivery of content. This option equates to differentiation delivering uniqueness perceived by the customer. This strategic option may be implemented in three steps:

1. Optimising the network for content delivery, i.e. implementing multicast and increasing network capacity,
2. Engaging in aggregation of mobile content,
3. Engaging in shaping content for mobile delivery.

This strategic option requires the firm to either create or acquire new knowledge and skills related to the function of a mobile content aggregator.

In implementing this option we advice the mobile provider to apply a portfolio strategy, whereby the two different sets of resources become part of two different operating units, i.e., not to aim at a tight integration of the two distinct businesses.

As the cost leadership option, aimed at becoming the 'mobile distribution channel of choice', falls within the realm of the current resource base, a successful implementation can be envisioned.

Combining the role of mobile communications provider and mobile content aggregator as described above implies expansion of the resource base of the firm with new assets, skills and capabilities. Whether this strategic option will lead to sustainable competitive differentiation remains to be seen, as the option is subject to economies of scale and scope, and as it implies competition in mobile data transport and in mobile content aggregation.

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