

# Centralized Content Portals: iTunes and the Publishing Industry

*Matthijs Leendertse; Leo Pennings*

TNO Information and Communication Technology, Department: ICT & Policy  
Brassersplein 2, 2600 GB Delft, the Netherlands  
e-mail: matthijs.leendertse@tno.nl; leo.pennings@tno.nl

## Abstract

This paper addresses new questions around media performance as a result of the rise of centralized content portals such as iTunes or MySpace. We first describe the rise of centralized content portals in different media industries, and discuss how these portals are creating a dominant position for themselves by using lock-in strategies. Then we describe the concept of media market performance, and discuss two important media performance concepts: access and diversity. Using scenario analysis, this paper describes three learning scenarios that outline the effects of different configurations of centralized content portals on behavior of publishers, users and advertisers, and through that content on access to and diversity of content.

**Keywords:** content portal; iTunes; access model; scenario analysis

## 1 Introduction

Centralized content portals are platforms that allow third party content suppliers to offer their digital content products to consumers. These platforms are typically developed by firms that are not rooted in the content industry, and as a result are based on business models that do not necessarily revolve around content itself. Mobile operator portals for instance have been developed by mobile operators to facilitate content owners to sell content to users of mobile devices, with the intention of promoting their mobile internet services. NTT DoCoMo has been very successful with this concept in Japan with over 47 million subscribers in February 2007. The i-mode ecosystem allows mobile phone users to access a mobile portal where third party content providers that – abiding the standards of NTT DoCoMo – offer their content to end users. This content is charged on the mobile phone bill and NTT DoCoMo takes a cut of the revenues. Within Europe and the US, mobile operators have tried to mimic NTT DoCoMo's offering, but never succeeded in attracting significant groups of users.

One of the most prominent examples of centralized content portals in our part of the world has been Apple's iTunes Store. The stellar success of the iPod and its easy to use music software iTunes prompted Apple to start selling music through its iTunes Store. This centralized content portal is integrated in the iTunes software. With this integration between hardware, software and a centralized content portal, Apple proved to record companies that digital music could be monetized. One of the strengths of the iTunes Store has been the seamless integration of software (iTunes) and hardware (the iPod), allowing for purchases in the iTunes store to be immediately transferred to the iPod when the user connects its iPod to the PC. The sale of music is not particularly profitable for Apple as most of the revenues have to be transferred to the right holders, mostly to record companies. Apple's profits come from selling the hardware (iPods).

So what do these centralized content portals have in common? First and foremost they increase the ease of finding, selecting, purchasing and distributing digital content for end users. Second, these portals are usually not designed around the requirements of content suppliers. Third, these portals tend to exclude rival services. In other words, users of NTT DoCoMo's i-mode service or iPods are disabled or discouraged to access rival centralized content portals. The integration of hardware, software, payment mechanisms and in the case of mobile operator portals also network connectivity, effectively locks users into a centralized content portal.

## 2 Natural Tendency Towards Dominant Platforms

“What you see on the internet is very much the 'Highlander Theory'. There can be only one. There's only one search engine, there's only one big book retailer, one big online auction house, and so on. That's not necessarily a bad thing, as long as it's able to supply a super hot service at a reasonable price” (Greg Eden of AIM Digital in the Guardian Newspaper of August 17, 2006).

Media markets have a natural tendency towards concentration. The Dutch Media Authority labelled this tendency as the law of 3; in each media market (e.g. television, news or book publishing) in the Netherlands there were 3 large media companies competing [1]. Within the digital media sphere, there is not so much a tendency towards concentration in terms of content creators or packagers, but more in the sphere of facilitating services. Microsoft Windows is by far the dominant operating system; Google by far the dominating search engine (in particular in Europe) and iTunes dominates the paid for music downloads market. As Eden notes, indeed there can only be one.

Media technology that is used to distribute digital media to consumers can be divided into 4 main categories: PC based online services, digital television based services, Game Consoles and Mobile Platforms [2]. In all 4 categories we find evidence for the Highlander theory: a natural tendency towards a dominant standard:

- PC based online services: here content is downloaded over the open internet, and is typically accessed on a PC but also on audiovisual equipment using the PC as the central server. Apple pioneered this market with its iTunes Music Store and established a dominant position on the market for paid for music downloads. We can see the publishing industry is following this strategy. In 2006, Sony launched the 'Sony Reader', a device that allows users to access digital text through a device that provides an experience similar to paper. Sony copied Apple's strategy for digital music, and bundled their Sony Reader with their so called 'Sony Connect Store' offers access to (premium) e-publishing products. This store is integrated in the software that synchronizes the content on the end user's PC with the Sony Reader, again similar to iTunes.
- Digital Television based services: the digital television platform is increasingly used to distribute content other than video. Subscribers to a digital television service can only use the set top box of their supplier, and hence only access the (often third party) content these DTV suppliers offer. In other words, the digital television platform of the supplier (e.g. a cable or satellite company) is effectively the dominant standard for content for subscribers of that platform.
- Game consoles: all three so-called next generation game platforms – Microsoft's Xbox 360, Sony's PlayStation 3 and Nintendo's Wii – feature an internet connection and have some sort of content offering beyond traditional gaming. Nintendo's Wii for instance, offers a news channel where stories are linked to a map of the world and end users can search for content by scrolling the globe. Content for now is provided by the Associated Press and the service is offered for free. On its Xbox 360 platform, Microsoft offers a vast array of television and movie content to its US based clients and outlined plans to distribute the service in other territories as well. As owners of game consoles typically do not own game consoles of other brands, these users can only use the platform of Sony, Nintendo or Microsoft.
- Mobile platforms: mobile devices are increasingly sophisticated and have increasingly access to mobile data networks such as UMTS or WiFi 802.11. One of the main advantages of mobile products is that it can easily recycle existing content into a market where people are more willing to pay for access to information. However, yet again there are dominant standards emerging. For instance, many operators have mobile operator portals through which third party content can be searched, purchased and downloaded. The strongest asset of mobile phone companies with regards to mobile content is their payment system and payment relation with their consumers. Third parties that want to are dependent on the mobile phone company, that holds a near monopoly. Vodafone for instance discourages its subscribers from using other mobile content than offered through their Vodafone Live! mobile operator portal by charging for all data traffic outside the Vodafone Live! domain.

That begs the question as to why the rise of such dominant Highlander-esque portals is an important topic.

### 3 The Power of Lock-In

“The European Commission can confirm that it has sent a Statement of Objections to major record companies and Apple in relation to agreements between each record company and Apple that restrict music sales: consumers can only buy music from the iTunes' on-line store in their country of residence. Consumers are thus restricted in their choice of where to buy music, and consequently what music is available, and at what price. The Commission alleges in the Statement of Objections that these agreements violate the EC Treaty's rules prohibiting restrictive business practices (Article 81)” [3].

As the quote above demonstrates in the case of the European Commission against Apple and several record labels, dominant content portals can damage the interests of citizens. Suppliers of these content portals – be they Apple or Vodafone – can for instance determine pricing, availability, ranking, disclosure and usage restrictions on the content sold through their portals. This case of the EC against Apple is one of many. The Norwegian

Ombudsman for instance declared on January 24th 2007 that the iTunes Music Store is illegal because it only allows purchased music to be played on Apple's iPod devices. Rivalling MP3 players cannot be used to play the purchased content, effectively locking-in customers to their proprietary system. Such a lock-in strategy intends to prevent buyers from turning to alternative suppliers. For suppliers such strategies seem advantageous because lock-in allows them to raise prices without having to invest in innovation or product quality. Consumers however are dependent on one supplier, and their interests are potentially endangered. In addition, competitors of Apple are effectively restricted from engaging in competition at all, raising questions with regards to competition policy.

Lock-in strategies have existed for a long time within the media industry, mostly in the form of subscriptions, and are on the increase due to new media technologies. The most common lock-in strategies are contractual agreements, taking advantage of durable purchases that demand complementary compatible purchases in a later stage, supplying products that demand brand-specific training, developing propriety information and database standards that are not compatible with other databases, becoming the specialized supplier for specific products and offering loyalty services. [4, p. 117]. Most of these strategies involve increasing the costs for consumers to switch to an alternative supplier. This is especially apparent in markets where suppliers have the exclusive rights to a particular technology or system. Because digital media products involve many different layers of the communication system, suppliers can develop proprietary technology to take advantage of this. It is therefore not strange that within digital media, we see this tendency towards centralized content portals that effectively lock-in their users. The next natural question is how we can assess the effects of these portals.

#### **4 Assessing Consequences of Centralized Content Portals**

So how can we assess the effects of such centralized content portals on digital media markets? Within media economic theory, these effects can be studied by using media market performance criteria. The concept of market performance comes from welfare economics, where performance is traditionally assessed by economic indicators such as allocative efficiency and industry profitability ratios [5, 6]. Media economic scholars have adapted the notion of market performance to assess media markets. Rather than focusing solely on economic indicators, media market performance is assessed by social, political and cultural indicators such as media diversity, freedom of expression, access to media outlets and services are the most prominent [5, 7-9]. Media market performance could be described as an assessment of mass media from a public interest perspective [5, p. 62].

It is important to outline that market performance refers to the outcome of the total market, and should not be mistaken with the performance of individual firms or other actors. "Performance is, first and foremost, appraised with reference to a market, which comprises all the interacting buyers and sellers as a whole, rather than to individual economic agents such as firms" [10, p. 4]. The normative approach to market performance proposes several performance indicators to assess whether markets deliver what society wants [6].

Media policy based on media performance is based on media performance assessment, and typically concentration within the media is not greeted with great enthusiasm. The rise of centralized content portals that effectively lock-in consumers raises new questions around familiar media performance criteria, most notably access and diversity.

#### **5 Access**

Accessibility has also been an important criterion for media regulators, and has become more prominent in debates on the future of media policy. In contemporary media policy, access to communications is an central concept [8]. Access to communications can be defined as "the possibility for individuals, groups of individuals, organizations and instructions to share society's communications resources" [11, p. 204]. Access can be looked upon from different perspectives, such as access to markets or consumers or access to content by users. An important access performance indicator for users is affordability of content [8]. With an abundance of content available, access to that content is becoming increasingly important. Issues such as media education for groups that do not have the skills to access this content, households that do not have access to new media devices and infrastructures, but also economic accessibility as some content can only be accessed through payment.

Also, the availability of content is an important indicator of accessibility. For content suppliers, access to markets is an important factor. When for instance Apple would prevent some record companies from selling their content through iTunes, a large part of the digital music buying audience is shielded off from this content. This is not only detrimental to the record company in question, but also to the audience as it limits their access to

content. With regards to publishing products, in particular news, educational and professional content, accessibility is an even more important issue. In light of the democratic and socio-cultural functions that media have apart from economic functions [12], it is important that citizens of democratic societies have access to information. When for instance a centralized portal for news content would be as dominant as the iTunes Store, restricting access of content suppliers to this platform could seriously undermine the democratic process.

In addition to publishers of information, access to these platforms is also important for advertisers. We see that many platforms are replacing traditional advertising outlets as the main facilitator of advertisements. Online, we see that Google is now dominating the advertising industry using its AdSense and AdWords advertising network. Within the digital television domain, we see that cable companies and IPTV providers moving towards the advertising market as well, taking over the roles of traditional broadcasters [13].

## 6 Diversity

Diversity is perhaps an even more important media market performance criterion in Western countries. The adjectives to diversity in government reports usually reflect the desired media performance: cultural diversity, opinion diversity, regional diversity, genre diversity, ethnic diversity etc. The concept of media diversity could be defined as the heterogeneity of the media [14, 15] McDonald and Dimmick [15] argue that diversity is a two dimensional construct: [1] a set of categories within a given distribution (e.g. content categories) and [2] the allocation of elements to these classifications (e.g. how many programs are devoted to the content category news).

The concept of media diversity can be deconstructed into three distinct forms of media diversity: source diversity, content diversity and audience exposure diversity [16]. Source diversity refers to the number of media outlets (TV channels, newspapers) and the ownership structures of these outlets and is traditionally measured using economic measures for competition such as the HHI index or Competition Ratios. Content diversity refers to actual media supply, and is mostly assessed by content analysis studies. These studies typically classify media content into predefined categories, for instance into content categories. Most policy research around diversity assumes that audiences provided with a diversity of content options also consume a diversity of content. However, the mere availability of diverse information does not necessarily equal exposure to diverse opinions and information. Without audience exposure to diverse content, availability of content has no effect on the political and socio-cultural functions of media. Exposure diversity is defined as “the diversity of content or sources consumed by audience members” [16]. Many indicators for media diversity have been formulated, as listed below:

- Media should reflect the various social, economic and cultural realities of the societies in which they operate, more or less proportional.
- Media should offer more or less equal chances of access to the voices.
- Media should service as a forum for different interests.
- Media should offer relevant choices of content at one point in time and also variety over time. [17].

With the increased importance of centralized content portals, it is important to reassess to what extent these diversity indicators are being met.

## 7 Scenario Methodology

To hypothesize the effects of different configurations of content portals, we conducted a scenario exercise. The main purpose to develop scenarios is that they should paint distinct different pictures of the future with unique implications for strategic decision-making [18, 19]. We use secondary sources and media economic theory to develop the scenario lines [20]. In our case, we wanted to develop scenarios that explain the effects of open or closed and commercial and non-profit content portals on access to and diversity of e-publishing products. Therefore, we developed three sets of conditions for the scenarios, each with their own unique configuration of content portals:

1. One dominant content portal similar to the iTunes Music Store, owned by a provider of e-publishing hardware (often referred to as e-readers);
2. Several interoperable open content portals that have been developed by commercial search engines and software companies;
3. A web full of Wikis with freely accessible co-created content, in tandem with securely sealed off walled garden of traditional publishers.

In each of the scenarios we established the so-called rules of interaction [21]. These rules outline how the important actors respond to the above mentioned conditions. The actors that we included in the scenarios are based on the value chain: content creators, content packagers (publishers) and content distributors [12]. In addition, we included advertisers as an important actor for the simple reason that many consumer based publishing products are dependent on advertising revenues. Based on this, we developed a linear story line that depicts not only the conditions and rules of interaction, but also the consequences for access to content and the diversity of content. In order to keep the scenarios clear, the broader conclusions are discussed in a separate concluding paragraph. We choose a time path of 5 years for the scenarios, placing them in the year 2012. This time path was selected because the technological progress is advancing at such a rapid pace that looking further into the future (e.g. 10-15 years) would be near impossible.

These scenarios aim to help policy makers to assess the performance of future e-publishing markets based on content portals, and support the policy-making process. Policy is based on beliefs around the future benefits of content. That is why policy makers often conduct ex ante policy assessments, whereby the effects of different policy options are weighed [22]. Managers within e-publishing companies can use these scenarios to evaluate the strategic position of their organizations under different configurations of content portals, and can hence formulate counterstrategies [21].

## 8 Scenarios

Please find below three scenarios, in which we discuss the effects of different configurations of content portals on the behavior of the main market actors, and hence on accessibility and diversity of content. The scenarios do not try to describe utopist visions, or intend to prescribe one future as the best. Assessment of these scenarios is a normative matter for policy makers and an economic / strategic question for commercial publishers.

## 9 IPUB (Proprietary Standard)

The year is 2012. After the stellar success of the iPod, Apple has ventured into other content markets as well. In 2008, the company launched a hard disc based text reader dubbed the iPub. Within 4 years, this device has captured 85% of the market for digital reading devices. Yet again, Apple proved that user friendly hard- and software can significantly increase end users' appetite for digital content. In all major cities, people are reading their iPubs in public transport, in restaurants and increasingly also in schools and offices. Traditional publishers are now selling their content directly to the iPub, making use of its Wimax wireless connection. Digital newspapers or magazines are directly downloaded to the iPub when the user has a subscription. The iTunes store can be accessed on both the PC / Mac and on the device itself and offers the largest collection of e-publishing products in the Western world. In terms of sales, the iTunes store has overtaken Amazon.com, Barnes & Noble and Bol.com as the largest reseller of e-publishing products in both the US and Europe. The iTunes store provides copyright protected e-publishing products that can only be viewed on an iPub. In terms of prices, Apple has set fixed prices for different product types so that users are confronted with a simple to understand pricing mechanism. Books for instance can be priced at €5, €10, €15 or €20 in the German iTunes store. These prices are set by Apple, and individual suppliers that want to sell their products using the iTunes store have to abide their pricing scheme. Apple gets a fixed share of 20% on all sales. In exchange the company deals with all the handling, the platform and the payment mechanisms. Because of the dominant position of Apple's iPub on the e-reader market, Apple controls the dominant platform for premium e-publishing products. Other OEMs have significantly less power, and are therefore not able to attract content owners, let alone dictate pricing and format standards to them.

Traditional publishers dominate the premium e-publishing products in iTunes. They have signed agreements with Apple to distribute their products, and sometimes demand certain special features such as additional promotion in iTunes and exclusion of certain rival products. Smaller or even individual content creators such as journalists or writers lack the bargaining power of the large publishers. As a result, they pay higher royalties to Apple for selling their e-publishing products and find it difficult to negotiate special deals or promotional activities. Although Apple promotes itself as a corporate responsible company, it remains a commercial company and money logic dictates that Apple will give priority to the large publishers, and put the squeeze on their smaller rivals.

Publishers can also use the iTunes store to provide ad supported content for free. Because Apple does not earn money on freely distributed content by its cut on each purchase, it charges for delivery of ad supported content to end users through its platform.

The dominant position of the iTunes Store for e-publishing products makes it a walled garden in which Apple dictates standards with regards to content packaging, price setting, copyrights technology and disclosing and distributing content. Large publishers have preferred access to the iTunes Store and are more heavily promoted by Apple. Smaller suppliers find it more difficult to access this platform. As a result, many niche e-publishing products are not present or hard to find in the iTunes Store. It is primarily the mainstream content that is promoted, similar to the music offering in the iTunes Store. Already in 2006, the Guardian newspaper reported that: "(...) iTunes does sell a reasonable volume of niche music, but as a mainstream music retailer, it markets to and mostly attracts mainstream music fans" [23]. Four years after the introduction of the iPub, the same has happened for e-publishing products. Sure, the iTunes store contains a diverse range of content, but effectively the content offering contains of mainstream mass media e-publishing products. Consumers that do not own an iPub or do not have a iTunes Store account are barred from many e-publishing products as these are exclusively available on the iTunes Store. Many publishers use the iTunes Store as their sole or prime distribution platform for e-publishing products, not in the least because Apple's pricing policy allows them to set relatively high prices for their e-publishing products. The relatively high prices combined with the enormous reduction in printing and distribution costs make an interesting business case for publishers.

## 10 Interoperable Content Portals

It took some time, but in the three years from 2009 up till now, e-publishing has finally matured. Several open content portals have been developed that are used by a myriad of content suppliers. These platforms are truly cross-medial, i.e. they can be accessed on the open internet, on mobile devices and on e-readers with network connectivity. Search engines and software providers are the main drivers behind these open platforms. These facilitators use their content portals to push their payment systems and advertising networks. Google, Paypal (eBay) and Nokia Software are the three leading providers of such platforms in Europe, and offer a payment system for purchases of e-publishing products. These payment systems can also be incorporated in other websites, so content providers can also offer, sell and distribute content through their own portals.

International open source standards are used for content packaging, copyrights and metadata in order to optimize interoperability and retrievability of e-publishing products over various portals. Content owners can easily distribute their content to the different portals, and the open character of these content portals ensures that also small publishers can find their way to end users. As content is organized along the lines of standard metadata sets, the size of the publisher does not influence the degree of retrievability on the large portals. However, these larger publishers also have an extensive online presence themselves, which makes up almost 40% of their turnover in the e-publishing domain. For these publisher websites they often prefer to use the payment system and advertising networks of facilitating companies over proprietary systems.

The large content portals for their part are used by a large variety of publishers, from individual authors to multinational media conglomerates. Standardized open platforms with standardized copyright protection reduce transaction costs [24, 25]. Since the size of a firm depends foremost on the question whether it will pay to bring an extra exchange transaction under the organizing authority of a firm [26], lower transaction costs as a result of standardization would dampen the economic case for organizing transactions within a firm. In other words, the *raison d'être* for large publishing houses as content packagers is becoming rather questionable. More and more content creators bypass the publishing houses and directly market their products using open content portals.

Because these platforms are open, several non profit organizations are also accessing the market. This results in a negative price spiral. For instance, the rivalry between the free news e-publishing products of public broadcasters such as the BBC and ZDF and those of commercial newspaper has driven most quality papers to an advertisement supported free e-newspaper model.

The large content portals use the traditional motto of telecommunication providers that they are not interested in the message, but only in the facilitation of the message. This content agnostic view has allowed them to incorporate a myriad of content suppliers from various backgrounds, such as political parties, student organizations, individual authors or educational publishers. As a result, end users have access to a very diverse pallet of e-publishing products.

The high level of competition between suppliers drives down prices of e-publishing products, which in turns increases dependency on advertising revenues. This benefits the advertisement networks of the companies behind these content portals, such as Google's AdSense and Nokia's Ad Accelerator. Especially the smaller publishers do not have the means or the know-how to sell advertisements for their products, and can easily tap into the systems of the large advertisement networks. We predict that in April 2017, 5 years from now,

advertisements will make up 70% of the income of e-publishers. Because the suppliers of centralized content portals monitor user behaviour on the portals, but also their reactions to certain types of information, they can greatly increase the effectiveness of advertisements in e-publishing products, which has a positive effect on demand for and prices of advertisements in e-publishing products.

## 11 iWiki-publishing

It is hard to imagine that only 5 years ago, Wikipedia was primarily an online encyclopedia. We have come a long way since then. The managing board of Wikimedia declared on January 4<sup>th</sup> 2012 that the Wiki format has now become the dominant method of publishing for digital text, photo and audiovisual content. Although the large publishing companies still play an important role with their print and online propositions, in terms of digital content Wikis are the undisputed market leaders in Europe, the US and East Asia in all major digital content categories, but especially when it comes to news content. Recognizing the importance of the Wiki movement, iWiki-publishing has been added to the Wiki and Oxford Dictionaries as:

*“i-wi-ki-pub-lish-ing Pronunciation [ai- wee-kee-pub-lish-ing] –derived from a verb. Meaning: an e-publishing product that has been created on or for an open platform and is continuously subject to changes from visitors”.*

As there is no central organization that creates or packages iWiki publishing products, there are no business models around this type of content. When Wikis were still relatively unimportant in the media industry, many non-profit organizations started to use this mechanism. Public broadcasters were particularly instrumental in promoting the Wiki concept, and en masse started to use Wiki from 2008 on. As a result, there is a large variety of iWiki publishing products and these are not only free, but also void of advertisements. The servers and sites that host the Wikis are maintained by donations from individuals. These servers and sites are non-profit foundations with a democratically elected managing board. Wikis are always non-profit, because it is impossible to divide the proceedings of co-created content over all the co-creators.

This leads us to the problem of iWiki-publishing. As there are no business models, it is hard to find sufficient funding for more specialized or professional content. Investigative journalism for instance requires relatively large investments, with journalists sometimes having to infiltrate organizations for prolonged period of time. The traditional print publishers are aware of this problem and offer their often more specialized content for free to subscribers of their printed material. They have created online walled gardens where subscribers can access the digital version and extras around the printed product. By doing so, these traditional publishers effectively defend their positions in print and lure users with a need for specialized content to their printed products. Product innovation for these more specialized forms of digital content such as investigative journalism are dependent on innovation in the portfolio of printed material that these traditional publishing houses have. Because they have a semi-monopoly on specialized content, prices for printed material are increased in order to make up for costs of their digital offering. This started at the beginning of the century with educational publishers that increased prices of text- and workbooks to cross subsidize investments in ‘free’ digital content [27], and has now spread to all e-publishing segments.

For advertisers it has become difficult to reach audiences of e-publishing products. They are restricted to the walled gardens of the traditional publishers, and these only give access to a large minority of the total audiences. Although these audiences are interesting for many advertisers (the average subscriber to printed publications are more affluent than the average reader of free iWiki-publishing products), e-publishing has become less interesting to advertisers than other media. This also benefits the traditional publishers, as they are often part of a larger media conglomerate that can utilize alternative media to lure advertisers to their platform. Nevertheless, access to high quality, specialized e-publishing content has become more difficult and content innovation is dependent on end users.

All in all, Wikis have greatly benefited access to content distribution platforms for individual authors and provide a diverse supply of digital content. However, the counter reaction is that specialized digital content is now more disclosed than ever and less affluent consumers might have difficulties to access this content.

## 12 Conclusions

The answer to the question to what extent different centralized content platforms are beneficial or detrimental to the e-publishing sector, is dependent on the subjective evaluation of the person who asks. Publishers have different interests than politicians, and we can be sure that politicians rooted in different political ideologies also

differ in their evaluation criteria. However, it is safe to say that centralized content portals will most likely change the way e-publishing products are packaged, disclosed and distributed.

In the first scenario, we found benefits for publishers that are allowed access to the iTunes store. Prices are relatively high, whereas the percentage that has to be paid to iTunes in return for facilitating the sale of e-publishing products small in comparison with for instance traditional bookstores. Consumers might evaluate this scenario less favorably, as they are locked into hardware and can choose from a pre-selected set of content for relatively high prices. Governmental agents might also be less than happy, especially given the lack of competition.

The second scenario might be less interesting for publishers, as it remains difficult for them to develop profitable services in a very competitive environment. Publishers that want to attract users must invest in quality and innovation, because only then users will be persuaded to pay for access to e-publishing products. Smart use of the networks of the facilitators might help smaller publishers to develop profitable business models based on the advertising market. Consumers have the best deal in this scenario, because they can select content from an infinite number of sources, and prices are very subdued. Regulators might also look favorable upon this scenario, as competition is high.

The final scenario is a more scientific approach, whereby knowledge is not created by any organization but by a collective of co-creators. Publishers won't cheer for this scenario, since it is near impossible to create profitable e-publishing products. Rather, e-publishing has become a by product for printed material. There is no such thing as a free lunch, so money has to come from alternative sources. For consumers it is also perhaps a less positive scenario as access to specialized content is somewhat restricted and the relevance and authenticity of content can be questionable. Governments should also consider to what extent this type of market, where digital content is either free or a by product, is desirable for their policy goals.

These scenarios intend to help policy makers and strategists within publishing companies think about the future impact of centralized content portals. Going forward more empirical research into the effects of these portals on media market performance is required. Especially the reaction of e-publishers to these portals should be further analyzed. The next step of the research would be to develop quantitative models that predict reactions of e-publishers to the rise of centralized content portals. This enables us to empirically test the validity of the predictions made in the scenarios.

## Acknowledgements

This paper has been written within the framework of the FLEET project, a multidisciplinary research project on Flemish e-Publishing Trends that is financed by IWT.

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