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TRANSFORMATION OF INTERNET-BASED COMPANIES' BUSINESS MODELS: 7 YEARS AFTER THE DOT.COM BURST

Christophe Garonne (Euromed Marseille Ecole de Management, Domaine de Luminy Marseille, France) - christophe.garonne@euromed-management.com

Félix Weygand (Euromed Marseille Ecole de Management ; Ecole de Journalisme et de Communication de Marseille, Université de la Méditerranée, Marseille, France) - felix.weygand@euromed-management.com

This paper determines and compares the business models of the largest Internet-based companies which survived the dot-com failure in 2001, with some nascent start-ups in the high technology industry which were created after the burst. Drawing on the framework developed by Mahadevan in 2000, the evolution of business models of the largest companies from 2000 to 2007 is examined before being compared with the business models of the nascent start-ups. The results show that nascent Internet-based start-ups have a more diversified model of revenue acquisition than large companies and that due to the changes in the Digital Economy, market structures definitions provided by Mahadevan have become blurred.

Keywords: Digital Economy, Business Models, Internet based SMEs

1. Introduction

Since 2004, a new wave of Internet based companies has emerged throughout the world trying to capitalize on new technologies commonly called Web 2.0's technologies (McAfee 2006). "Web 2.0" or the "Digital Economy" is the latest terminology in force to describe the new utilizations of digital solutions based on a convergence between technology, economy and public acceptance. The large diffusion of the Internet protocol with broadband access and mobile communication (technological side) is combined with a generalized acceptance, growing interest and utilization of the eCommerce (economical side). (Brynjolfsson & McAfee 2007; Brousseau & Curien 2007) As a result, capitalization of ventures evolving in the Digital Economy has been growing exponentially over the last 2 years: in 2005 eBay bought Skype for US\$3.1 billion and in 2006 Google acquired YouTube for US\$1.65 billion. At a first glance, it may appear that this period presents some similarities with the first Internet Bubble (1998-2000). In the first semester of 2007 alone, almost US\$500 millions have been invested in Web 2.0 new ventures around the world¹ which represents a 6% increase since the 1st semester 2006. The steepest growth in investments on Web 2.0 has occurred in Europe and Israel with a 100% increase since the 1st semester 2006 (US\$52million). The largest part of these investments has been realised in the US (75%) followed by Europe (12%) and China (10%).² On average, start-ups of the Web 2.0 have retrieved US\$4.6 million around the world.

These elements raise some questions on the profitability and the modus operandi of companies involved in the Digital Economy, especially on their business models.

A set of 3 research questions is to be addressed by this paper along with the use of the Mahadevan business models' framework (2000).

- The first question concerns the evolution of the business models:
 - Are the business models of companies evolving in the Digital Economy in 2007 different from the business models of the companies in the previous period?
- The second question concerns the actual positioning of the survivors of the dot-com bust in the Digital Economy in 2007:

¹ <http://www.journaldunet.com/ebusiness/internet/actualite/0709/070921-investissements-societes-web-2.0.shtml> accessed on the 21st September 2007

² Ibid.

What is the actual positioning of these companies in the framework developed by Mahadevan in 2000?

- The last concerns the positioning in the Mahadevan's framework of a number of nascent start-ups involved in the Digital Economy today.

A twofold research methodology will be used to address these questions: firstly, the framework developed by Mahadevan in 2000 is to be applied to assess the position and evolution of large Internet-based companies in 2007 and then, the same criteria will be applied to a number of nascent start-ups involved in the Digital Economy in 2007.

This paper consists of 5 sections. The second section provides an overview of existing literature and empirical studies on business models in the Digital Age since 1998 to the rising Web 2.0 phenomenon. The third section introduces the case and provides information on data, variables and research methods. Section 4 describes the empirical results of the sets of questions and their potential limitations while section 5 provides a conclusion on the validity of the Mahadevan's framework in 2007 and some recommendations for future research.

2. Theoretical framework

Research on start-ups, eEconomy, the influences of IS and IT technologies on business have interested academics and practitioners alike for a long time and, as a result, the body of literature available on business models and/or on eBusiness models is rather substantial. However, no definitive answer or definition of the business model has been delivered so far, especially for the business models of the so-called "Digital Economy". (McAfee 2006; Brynjolfsson & McAfee, 2007; Brousseau & Curien, 2007). On the other hand, general literature on business models is growing, with a focus on the links between business models and the Internet. (Afuah & Tucci, 2001; Gordijn & Akkermans, 2001a 2001b; Papakiriakopoulos *et al.*, 2001; Petrovic *et al.*, 2001; Weill & Vitale, 2001; McGann & Lyytinen, 2002; Ostwalder & Pigneur, 2002 ; Rappa, 2003; Vasilopoulou *et al.*, 2003; Pateli & Giaglis, 2004; Lambert 2006; Garonne & Weygand, 2007). Literature on the business models may be classified in the following 4 categories:

- studies focussing on defining the business models by describing its components
- studies explaining the specificities of the eBusiness models

- typologies
- studies explaining the reasons behind the first dot-com bust in 2001 and research describing the key success factors to be implemented when developing a business model for an Internet-based new venture.

The Mahavedan's work (2000) used in this study is included in part 2.1 as it describes the components of the business models and also in part 2.3 as it provides one of the earliest typologies of the Internet business models.

2.1. Components of a Business model

The first studies realised at the end of the 1990's focussed on the elements to be included in a business model to provide a definition of the notion. According to Timmers, (1998) business models of Internet-based companies relied on 3 elements: the IT architecture enabling the exchange of information, products and services; the benefits that can be retrieved by the different actors involved; and the sources of revenue. Many researchers have capitalized on Timmers' work and have included other elements in the business model such as the role of IT (Bagchi & Tulksie, 2000 ; Klueber, 2000), finance, product innovation and customer relationships (Osterwalder & Pigneur, 2002). Then, Weill and Vitale defined a business model as "a description of the roles and relationships among a firm's consumers, customers, allies and suppliers that identifies the major flows of product, information and money, and the major benefits to participants" (Weill & Vitale, 2001)

Different authors have provided their own definition of business models emphasizing on specific components such as Rappa (2003) who mentioned the value chain or Amit & Zott (2001) who focussed on the governance of transactions to create value.

Finally, several definitions of business models have also been provided without mentioning their core elements by Linder & Cantrell (2000), Klueber (2000), Applegate (2001), Petrovic *et al.* (2001); Magretta (2002). They describe the business model as a system or as "a story that explains how an enterprise works". Magretta (2002)

Mahadevan (2000) described the different market structures a company may choose to operate on the Internet.

2.2. Specificities of the eBusiness models

In the Digital Economy, innovative products and/or services using cutting-edge technologies are launched into the market without extensive testing leading to high risks and uncertainty. In addition, the markets for these innovations are largely unknown and so are the expected revenues. (Aldrich & Fiol, 1994 ; Loch *et al.*, 2005 ; Shane & Stuart, 2002) As a result, business models established at the nascent stage are based on unreliable estimates. (Champion & Carr, 2000 ; Drucker, 1985 ; Druilhe & Garnsey, 2004 ; Porter 2001 ; Stoica & Schindehutte, 1999) Those “beta” business models should be modified to closely fit with the economic environment newly discovered as the product/service is adopted -or not- by the market. The company is then engaged in a constant trial-and-error process to develop the best business models. From this situation derive many pitfalls: continuous change of business models, increasing difficulties to retrieve funds from potential investors or customer deception.

Moreover, those first models may have a strong impact -positive or negative- on the future of the company and may be bundled with the first mover advantage -or disadvantage- (Porter, 2001): a less efficient business model may impact the development of the firm on the long run by acting as an impediment to investment in R&D, to create barriers to entry, or to size new opportunities or markets. In addition, the trial-and-error model may send wrong signals to the stakeholders and investors (ie: continuous change of Business Models + Digital Economy + start-ups + high tech= highly risky investment) (Andries *et al.*, 2005).

Several authors have specifically described the eBusiness models and their relationships with technology. (Gordjin & Akkermans, 2001b; Papakiriakopoulos *et al.*, 2001 ; Weill & Vitale, 2001 ; McGann & Lyytinen, 2002 ; Osterwalder & Pigneur, 2002; Vassilopoulou *et al.*, 2003)

Another specificity of the Digital Economy is that many services are offered through the Internet at no cost. The main challenge for the start-ups of the Digital Economy is to transform the use value into monetary term. However, convincing the final user to pay a fee for a service that may be freely available on the network is only possible if the final user perceives that a new and specific value is added to the service. As the

willingness of the final user to pay for a service provided through the Internet is low³, companies engaged in business have looked for alternative revenue streams such as advertisement, click per use, click per thousand, sale of customer data, intermediary... As a result, these companies may offer free services to the final user on a continuous basis while retrieving some revenues from diverse sources and by doing so, developing a profitable business. (Dang Nguyen & Penard, 2004)

2.3. Typologies

Classifications of business models by using different criteria have been developed since the beginning of the Internet Bubble in 1998. Timmers, the first to propose a typology of the business models used on the Internet was followed by Mahadevan, (2000); Tapscott *et al.*, (2000); Linder & Cantrell (2000); Kaplan & Sawhney (2000); Alt & Zimmermann (2001); Applegate & Collura (2001); Rappa, (2003); Weill & Vitale (2001); Pateli & Giaglis (2004) Other business models typologies have been elaborated with a specific emphasis on software industry (McKelvey 2001) or biotechnologies (Bigliardi *et al.*, 2005; Mangematin *et al.*, 2003; Willemstein *et al.*, 2007).

3 different models can be derived from these typologies (McKelvey 2001):

- a. A model which is based on the ownership of the technical solution and on the total control of the knowledge and economic values created.
- b. The second model is a hybrid where the company commercializes a product and/or service and as a result has a control over the economic gains but the development and the knowledge created are done in association with the company and the communities of practice.
- c. In the third model, all the knowledge and the development are elaborated by the network members. This business model is an “ideal business model” for developers do not benefit economically from the innovative product/service developed.

³ The final user has a low willingness to pay for a service that may be freely provided by other companies on the Internet. This is especially the case for the media industry. Ex: The New York Times ended online subscriptions in September 2007 and offers the entire content of the journal freely on the web. A similar move has been done by the Financial Times in 2007. The NYT expects to compensate the loss of the US\$10 million a year provided by the 227 000 paying subscribers by generating more traffic through its website to increase advertising revenue. www.nytimes.com/2007/09/18/business/media/18times.html

Companies that operate in these 3 different models may be classified in 2 groups:

1. Companies created in R&D laboratories that developed an innovation protected by a patent. They use their patent and their temporary monopoly situation to exploit economically their innovation. (ex: biotechnology, micro electronic industries...) (Model A)
2. Companies created on an open source innovation where no patent exists but where the innovation developed meets a high degree of interest in the public. These companies will have trouble defining an economically viable business model. (Models B&C) By trial-and-errors, they develop hybrid business models. Generally speaking, Web 2.0 new ventures belong to this group, and this is the case for the sample of companies we intend to study in this article.

With the notable exception of the biotechnologies, no further work seems to have been done on this theme since 2001, inducing that typologies or taxonomies are no longer on the research priorities agenda or that no significant changes has occurred in this research area. Mahadevan's typology was also selected for this reason and we intend to study the validity of this model in 2007.

2.4. Reasons for the dot-com failure in 2001 and key success factors

Preliminary studies realised during “the Internet Bubble” period (1998-2001) (Applegate 2000 & 2001; Champion *et al.*, 2000; Porter 2001) focused on examining the reasons behind success of failure of companies in this unique period.

Literature on eBusiness models suggests that authors tried to identify the most important key success factors for companies engaging on eBusiness such as technology (Barua *et al.*, 2001); management (Wathne *et al.*, 2001); network (Doyle & Melanson 2001) and wealth creation (Bouwman & van Ham 2003). Some studies looked at the key success factors from a holistic point of view (Vasipoulou *et al.*, 2002; Amit & Zott 2001; Duh *et al.*, 2001; MacInnes 2005) while some considered the influence of the marketing strategy on the business model (Maitland *et al.*, 2005). However, new technological phenomenons such as the Web 2.0 have not been the subject of much academic research so far (Floyd *et al.*, 2007), the article from Brynjolfsson & McAfee (2007) being a notable exception.⁴

As a result, it seems that almost no academic research has been published as yet on the business models of the companies using technologies based on web 2.0.

3. Data and research methods

3.1. Data and research population

To answer the research questions, we examined two sets of data. The first set of data was collected through an online survey among 10 start-ups involved in eBusiness located in Southern France. These start-ups have been operating for a few years but are representative of a second generation of entrepreneurs involved in the Digital Economy. Authors have selected these companies according to the following variables: the companies (a) are involved in eBusiness, (b) invest a significant part of their revenue in R&D, (c) have developed a hybrid business model, and (d) have to be located within the “Secured

⁴ On the 3rd of August 2007, a research done on Ebsco Host (limited to academic journals) with Web 2.0 as part of the title has produced 24 hits only...with none top tier journals on the list (except the MIT Sloan and the articles of Brynjolfsson and McAfee).

Communication Solutions” cluster.⁵ These companies are representative of the Multimedia/High technology industries as defined by the local Chamber of Commerce in 2005.⁶ Those companies have: between 1 and 40 employees, been in business for 1 to 6 years and have revenue between € 100000 and € 3.4 million in 2006. The survey was realised during the second half of October 2007. As companies were selected by the authors, the response rate was 100%.

Name of Company	Description of the company	Modes of Business	Changes in Business Models since the Creation of the Company	Market Structure
A	Anti-spam solution	B2B B2C	No	Product/service provider
B	Open source software development	B2B	Yes	Product/service provider
C	Webcity magazine	B2C	Yes	Portal
D	Mobile applications	B2B B2C	Yes	Product/service provider // Market maker
E	Online music learning tool	B2B B2C	Yes	Product/service provider
F	Open source software development	B2B	Yes	Product/service provider
G	Mobile communication services	B2B	Yes	Product/service provider
H	Virtual mobile desktop	B2B B2C B2G	Yes	Product/service provider
I	Web agency	B2B	Yes	Product/service provider
J	Mobile applications	B2B B2C B2G	Yes	Product/service provider

Table 1. Description of the Start-Ups Involved in the Study in 2007

The second set of data was chosen according to the following criteria: companies have to have been in continuous operation since the first Digital Economy (1998-2001) and have to be on the Top Ten list elaborated by ComScore Inc., Mediametrix regarding their traffic volume in August 2007. The objective is to study companies which have shown flexibility and strategy since the 2000's to be among the top websites today. As some of those companies are listed on the stock exchange, the composition of their business models was also examined using Annual Reports for FY 2006. Companies chosen are: Yahoo! Sites, Google Sites, eBay, Amazon Sites, Ask Network, Wikipedia sites.⁷

⁵ Clusters such as Secured Communication Solutions were decided and launched by the French Government in 2005 to increase the R&D and the cooperation between large and small companies. This cluster's ambition is to be active and influent internationally. www.pole-scs.org

⁶ www.pacac.cci.fr accessed on March 12, 2007

⁷ Companies such as Yahoo! Sites are composed of different companies. The ranking elaborated here takes into account all those parent companies.

Other companies listed on the Top 10 such as Time Warner Network, Microsoft Sites, Fox Interactive Media and Viacom Digital have been excluded from this research for they are not “Internet pure players” since they are traditional mass media companies using the digital economy as an extension of their traditional businesses. However, a shift in power between the traditional and digital branches of the media industry occurred between the years 1995-2000. Future research may investigate how this change has impacted the business models of the mass media industry.

We have purposely chosen to compare well known and “old” Internet operated companies with young and nascent locally-based start-ups to detect similarities or differences in their business models (ie: do the young start-ups copy the Top companies or are they developing and trying new models specifically based on the Web 2.0 phenomenon?)

3.2. Variables and research method

Mahadevan’s framework (2000) was chosen to compare the largest Internet-based companies by consumer activity (ie: number of unique visits) with recent start-ups for the following reasons: it is one of the most comprehensive frameworks developed during the first Digital Economy (before the bust) and many authors capitalised on its work later on; it provided some insights and recommendations that may be interesting to test today with the surviving companies of the period and with the nascent companies to determine if changes have occurred in the way companies are using Internet to do business. Mahadevan’s article was followed by the burst of the Internet bubble in 2001 and a 4-year period described by the Yankee Consulting Group as the “Telecom Nuclear Winter” where Internet based companies experienced extreme difficulties to find financing. Since 2005, investments on Internet new ventures are rising again. As a result, Mahadevan’s framework may be a convenient tool to better understand the new situation: If the new surge in investments and companies development relies on principles similar to those in the 1998-2000 period, then, Mahadevan’s framework is still effective to describe the business models; if the reasons are different, then, the new models will not be mirrored by Mahadevan’s framework and a new grid will have to be developed.

Crucial changes have occurred in the Digital Economy at the macroeconomic level since 2001:

- New technologies have emerged such as the wireless and mobile Internet
- Diffusion (more people have access to Internet around the world) and appropriation (people have a better understanding on how to use Internet) of these new tools and techniques are much higher in 2007. As a example, Internet users worldwide were 384 million in 2000; 725 million; 1 billion in 2005; 1,2 billion at the end of 2006.⁸
- People are now using Internet both for their leisure and professional activities⁹.
- People use technologies called Web 2.0 primarily for leisure activities or during their free time.

Mahadevan distinguishes 3 types of “market structures” in which the company may operate on the Internet: “the portals, the market maker and the product/service providers”. Portals are a funnel to direct customer to specific websites and as such, portals have a direct link with product/service providers. “A portal engages primarily in building a community of consumers of information about products and services”. (Mahadevan 2000) Portals can be either B2B or B2C.

Market Maker is similar to a portal regarding the creation of a community of customer/suppliers of products and services but has also some specific characteristics: they act as a facilitator of business transactions between the buyer and the seller; they have to provide a “value to suppliers and customers through a system of implicit or explicit guarantee of security and trust in the business transaction”. (Mahadevan 2000) As a result, market makers are predominantly oriented B2B.

Product/service providers may be defined as online boutiques which sell product/services to customers. They are B2B or B2C.

Those 3 types of market structures are then combined with the following 3 interlinked critical streams that form the business models: the value, the revenue and the logistical streams. Value stream includes the following elements which create “the value” for the companies operating on the Internet: virtual communities (they generate knowledge, value and share them with the other group members), dramatic reduction in transaction costs (the cost of providing product and price comparison on a website is almost zero), gainful exploitation of information asymmetry, value-added market making process (such as

⁸ Information Economy Report 200: The Development Perspectives, United Nations Conference on Trade and Development, United Nations, New York & Geneva, 2006.

⁹ For instance, ComScore Inc. , one of the largest companies measuring activity on the Internet, does not differentiate Home, Work and University users Internet anymore.

security and trust). According to Mahadevan those value streams are not mutually exclusive but organisations develop a business model based on a dominant value stream. Mahadevan distinguishes 6 revenue streams which can be defined as “ the realisation of the value proposition in the short term” (Mahadevan 2000): “Increased margins over brick and mortar operations, revenue from online seller communities, advertising, variable pricing strategies, revenue streams linked to exploiting information asymmetry, free offerings”. Finally, logistic streams deal with the position of the Internet based company on the supply chain. 3 types of logistic streams exists: Dis-Intermediation (a dramatic reduction in the supply chain to deliver a better responsiveness to customer while decreasing the costs); Infomediation (a search engine is necessary to conveniently use the always increasing volume of information accessible on the Internet); meta-mediation (“the process that goes beyond aggregating vendors and products and includes additional services required for facilitating transactions”).

4. Results, discussion and limitations

For each set of data, a framework based on Mahadevan article was designed and companies were positioned on the grid according to their business models and market structures in 2007. Table 2 presents the grid for the 10 selected start-ups while Table 3 displays the positions of the largest Internet-based companies by unique visitor in August 2007. Business models of the 2 sets of firms are presented in separate groups before providing an analysis of the common characteristics.

Business Model Building Blocks	Market Structures		
	Portals	Market Makers	Product/Service Providers
Value Streams			
Virtual Communities	C	D	ABDEFGIJ
Dramatic Reduction in Transaction Costs		D	DH
Gainful Exploitation of Information Asymmetry			
Value-Added Market Making Process		D	
Revenue Streams			
Increased Margin over Brick and Mortar Operations			DEHIJ
Revenue from Online Seller Communities		D	BDFG
Advertising	C	D	J
Variable Pricing Strategies	C		ABDEFIJ
Revenue Streams Linked to Exploiting Information Asymmetry			
Free Offerings	C	D	BDEFJ
Logistical Streams			
Dis-Intermediation			ABDEFGJ
Infomediation	C		HI
Meta-Mediation		D	

Table 2. Summary of the Business Models of the Start-Ups in 2007
Adapted from Mahadevan (2000)

	Market Structures		
Business Model Building Blocks	Portals	Market Makers	Product/Service Providers
Value Streams			
Virtual communities	Yahoo! Sites / Google Sites / Ask Network	eBay / Amazon Sites	Ask Network / Wikipedia sites / Amazon Sites
Dramatic Reduction in Transaction Costs	Yahoo! Sites / Google Sites / Ask Network	eBay / Amazon Sites	Ask Network / Wikipedia sites / Amazon Sites
Gainful Exploitation of Information Asymmetry	Yahoo! Sites / Google Sites / Ask Network	eBay / Amazon Sites	
Value-Added Market Making Process	Yahoo! Sites / Google Sites / Ask Network	eBay / Amazon Sites	Ask Network
Revenue Streams			
Increased Margin over Brick and Mortar Operations			Ask Network / Wikipedia sites / Amazon Sites
Revenue from Online Seller Communities		eBay / Amazon Sites	
Advertising	Yahoo! Sites / Google Sites / Ask Network	eBay / Amazon Sites	
Variable Pricing Strategies			Ask Network
Revenue Streams Linked to Exploiting Information Asymmetry	Yahoo! Sites	eBay / Amazon Sites	
Free Offerings	Yahoo! Sites / Google Sites / Ask Network	eBay / Amazon Sites	Wikipedia sites
Logistical Streams			
Dis-Intermediation		Amazon Sites	Ask Network / Wikipedia sites / Amazon Sites
Infomediation	Yahoo! Sites / Google Sites / Ask Network		Wikipedia sites
Meta-Mediation	Yahoo! Sites / Ask Network	eBay / Amazon Sites	
Table 3. Summary of the Business Models of the largest Internet based companies (based on ComScore Media Metrix release for August 2007) <i>Adapted from Mahadevan (2000)</i>			

According to Mahadevan the logistical stream was a clear division between the 3 market structures. However, this division does not seem that clear anymore neither for the start-ups nor for the largest companies. Both start-up D and Wikipedia capitalise on dis-intermediation by providing information on mobile phone/online encyclopaedia (respectively) and infomediation by offering a search engine on their own website that can retrieve and filter information on a particular topic for the customer at the same time (for both start-up D and Wikipedia). Amazon utilizes both dis-intermediation (by shrinking the supply chain in its traditional business of delivering culture products) and Meta-mediation (by offering a secure marketplace where transactions between sellers and buyers are facilitated)

The shift toward a consolidation of the market structure is apparent and business borders are no longer well defined between the main players on the market.

End-users' pressure to benefit from state-of-the-art online services without the willingness to pay for them has dramatically affected the Internet landscape since 2001. Internet players have been forced to change their business models to include more free options or to offer their entire services for free. As a result, advertising revenues have become the keystone of their business models. This shift in paradigm has had 2 major effects:

- a. The fierce competition between the different actors led them into a pursuit to gather the largest "virtual communities".¹⁰ This is the first step to increase the notoriety of the company in order to generate an important traffic to attract potential advertisers. This traffic may then be converted into revenue and thus limiting the potential loss due to the abandonment of subscription fees;
- b. Market Structures definitions have become blurred. Amazon for example, capitalises on its notoriety as a product/service provider to develop a large traffic which in turn, has enabled Amazon to develop a marketplace to offer value added to their final customers and to other resellers. As a result, differences between Portal and Market Makers and the definitions of the market structures components are no longer clear.

¹⁰ Aaron Kessler of Piper Jaffray, an investment bank, said Internet companies "are buying users instead of revenue and profitability" International Herald Tribune, "Dot-com fever stirs a sense of déjà vu", 16 October 2007.

Questionnaire (for start ups) and annual reports (for the largest companies, FY 2006) were utilised to answer the following 3 questions formulated in Part 1.

1. The evolution of the business models: Are the business models of companies evolving in the Digital Economy in 2007 different from the business models of the companies in the previous period?

It is interesting to note that all the largest companies provide free offerings for their customers but only 6 out of 10 start-ups are doing so. Reasons for not doing it are “large infrastructure and R&D costs and the customer’s willingness to pay for an efficient anti spam solution” for start-up A; a “B2B only service oriented” for start-ups G and I. No answer was provided by start-up H on this question. A similar distortion appears in the advertising revenue which is used by all the largest companies except Wikipedia but only by start-ups C, D and J. Start-up A offers a spam control solution and for ethical reasons can not use advertising fees. A B E F G H I are all B2B product/service providers in rather specific areas and for diverse reasons do not want to provide third party advertisements on their websites.

All revenues streams described for the Market Makers such as revenue from online seller communities, advertising and revenue streams linked to the exploitation of information asymmetry (with the auctions) are utilized by eBay and Amazon sites while start-up D retrieves revenue from online seller communities and advertising only.

In 2007, advertising constitutes the largest part of the revenues of portals like Yahoo! Sites; Google Sites; Ask Network and start-up C. Yahoo! Sites is also able to collect some revenue by exploiting the information asymmetry on its Yahoo! Properties websites dedicated to travel and shopping. Google is the only portal of this study to retrieve almost 100% of its revenues from advertising fees. The advertising revenue stream is usually divided between “impressions” when an advertisement appears in pages viewed by users and “click-through” when a user clicks on an advertiser’s listing. On the other hand, Google Sites experience a “dramatic reduction in transaction cost” by delivering online scientific documentation such as the service provided by Google Scholar, or the digitalization of books.

Globally, the start-ups have a more diversified model of revenue acquisition, especially the Product/Service providers. Start-ups A B C D E F I J have implemented variable pricing strategies meaning that they deal with different kind of actors across different markets. Start-ups B D F G benefit from online seller communities revenues. However, only start-ups C D and J retrieve revenue from advertising when this segment is the most lucrative and the most represented in all the largest companies. However, since the difference in traffic with the largest companies is colossal, diversification of revenues is crucial for the sustainability of the start-ups even if this diversification is by itself time consuming and may constitute an obstacle to further growth by dispersing the start-up resources and core activities.

Wikipedia is an awkward case as it is a non-for-profit association. However, Wikipedia was included in this study due to its 9th position on the ComScore ranking and its uses of numerous items in the Mahadevan's framework. Wikipedia is the first non-for-profit association to ever reach this audience level on the web and it may also constitute a totally new form of business model or it may prefigure the future of the gratuity trend on the Internet (based on the involvement of the virtual communities at its strongest and on the open source software development). The company is funded by donations in cash and in kind.

2. The second set concerns the actual positioning of the survivors of the dot-com bust in the Digital Economy in 2007: What is the actual positioning of those companies in the framework developed by Mahadevan in 2000?

For the largest companies, the positioning is more complex: Yahoo! Sites, Google Sites and Ask Network are classified under Portal; eBay and Amazon Sites under Market Makers; Ask Network, Wikipedia and Amazon Sites under Product/Service providers. As a result, 2 companies are listed under 2 different market structures: Ask Network as a Portal and a Product/Service provider; Amazon as a Market Maker and a Product/Service provider.

Ask Network (formerly Ask Jeeves) was listed as a Portal by Mahadevan in 2000. In 2007, Ask Network is also a Product/Service provider for it sells different types of products

(shoes, electronics, cosmetics, etc.) over the Internet through several websites. The combination of portal and product/service provider allows economies of scale and a diversification of the sources of revenues.

Amazon was also listed as a Portal by Mahadevan in 2000 but since then, Amazon has created a marketplace where buyers and sellers interact. This marketplace fits the 2 elements of a Market Maker as described by Mahadevan: Amazon has a “high degree of domain knowledge” of the culture products and this marketplace “provides value to both suppliers and customers through a system of implicit or explicit guarantee of security and trust in the business transaction”.

Competitive environment has changed since 2000. All the largest companies of this study compete again each other to increase their traffic and their revenue. They also try to extent their scope. Yahoo! Sites compete against AOL, Google and Microsoft on the portal segment but also with Amazon and eBay on the e-commerce operations. (Yahoo Annual Report 2006, p.14) Amazon is not only a product/service provider but has shifted toward Marketplace as well. As a result Amazon Sites is a competitor for both eBay and Yahoo! Sites.

3. The third set concerns the positioning in the Mahadevan’s framework of a number of nascent star-ups involved in the Digital Economy today.

According to Table 2, 8 start-ups are defined as Product/Service providers (A B D E F G I J H), 1 as a Portal (C) and 1 as both a Market Maker and a Product/Service provider (D).

9 out of the 10 start-ups capitalise on virtual communities to do their business and none exploit the asymmetry of information. Their revenue streams are evenly spread between revenue from online seller communities and variable pricing strategies except for the advertising which is under utilised as explained above. 7 start-ups have tried different business models since their creation. Half of the start-ups studied have an increased margin against brick and mortar operations and as a result, disintermediation is the most cited logistical stream.

Specific features:

Some start-ups are strictly pure Internet player such as start-up A which caters only for the online community through the web. As a result, start-up A can not benefit from a dramatic

reduction in transaction cost nor have an increased margin over brick and mortar operations.

Start-up B capitalises on virtual communities to further develop its open source software and as such B offers part of their services for free.

According to the survey D is classified as a market maker and a product/service provider. They create added-value for manufacturers of electronic devices and the final user as well by delivering an added-value product. D does not exploit information asymmetry but increases its margin over brick and mortar operation by selling its software and solutions online (through downloading).

E offers product combining online and offline support (a CD bought online is delivered to the final client who can then either use this product alone or in conjunction with a dedicated website)

The limitations of these results may be divided into 2 categories: the model utilised and the size of the sample. This research was based on the sole model developed by Mahadevan. An in-depth analysis of the business models may be realised by future research, combining descriptive and evaluation frameworks to measure the performance of the business models of Internet-based companies. A broader set of data should then be collected in order to extend the scope of this study and to verify, using quantitative methods (through multivariate analysis for example) the preliminary results exposed in this paper.

5. Conclusion

This paper investigated the business models of the 6 largest Internet firms by traffic in 2007 and 10 Internet-based new ventures located in Southern France. The business models' framework elaborated by Mahadevan in 2000 was used to compare and analyse the business models and market structures of these companies. As a whole, the Mahadevan's framework is still a valid and useful tool to describe the business models of the companies operating on the Internet. However, the study shows that the differentiation, elaborated in 2000 between the market structures, does not entirely reflect the reality of the Internet business in 2007. Some mergers have appeared especially between Portal, Market Makers and Product/Service Providers. Portals capitalise on all the value streams and as such, deliver a larger value added to the user in 2007 than they did in 2000. A new

category may be included in the Mahadevan framework to fit the hybrid model developed by Google. In this study, Google was categorized as a portal but this definition is not totally accurate. Google acts as an efficient search engine and retrieves almost the totality of its revenues from advertising while providing a totally free service to the final user. New trends have also been noticed for the main players and the start-ups alike, such as the key role played by the advertising as a source of revenue for the main players while the start-ups have an hybrid business model, combining different sources of revenues. An actualisation of Mahadevan's framework would better mirror the Digital Economy in 2007. The research findings of this study provide some new insights to the literature on business models. Academic papers have focussed on the description of the components of the business models, the specificities of the eBusiness models, the typologies and the key success factors. We chose to apply the existing research framework to 2 different sets of companies (new ventures and large companies that successfully went through the Internet bust) operating today on the Internet to determine if a change in modus operandi has occurred since 2001 in the "old companies" and if yes, was this change integrated by the new ventures? The answer is ambiguous. Changes have certainly occurred and the largest companies on the Internet today have increased their scope of action as stated in part 4. Start-ups have integrated these changes by a willingness to implement risk mitigation strategies by choosing hybrid business models. Larger scale research is needed to verify this hypothesis with an ad-hoc methodology.

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