

Strategic Development of Business Models

Implications of the Web 2.0 for Creating Value on the Internet

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There is virtually a consensus that, to remain competitive, firms must continuously develop and adapt their business models. However, relatively little is known about how managers can go about achieving this transformation, and how, and to what extent, different types of business models should be adapted. To illustrate the differential effect of environmental changes on different business model types, this article draws from the '4C' Internet business model typology to elaborate on how a recent wave of changes on the Internet – the emergent Web 2.0 phenomenon – is affecting each of its four business model types. We argue that Web 2.0 trends and characteristics are changing the rules of the 'create and capture value' game, and thus significantly disrupt the effectiveness of established Internet business models. Since systematic empirical knowledge about Web 2.0 factors is very limited, a comprehensive Web 2.0 framework is developed, which is illustrated with two cases and verified through in-depth interviews with Internet business managers. Strategic recommendations on how to what extent different Web 2.0 aspects affect each business model type are developed. Executives can use the ideas and frameworks presented in the article to benchmark their firm's efforts towards embracing the changes associated with the Web 2.0 into their business model.

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Introduction

Developing and adapting their firm's business model has become a major task for many executives in their efforts to cope successfully with technological progress, competitive changes, or governmental and regulatory alterations.¹ So researchers are increasingly interested in how environmental turbulence interacts with business model change, and in investigating the effect of volatile markets on the processes by which firms seek to adjust their operations and adapt their product portfolios to remain competitive.²

As one of the most influential environmental changes within the last two decades, the introduction and proliferation of the Internet provides an ideal setting for studying business model development. Although research on the effect of Internet developments on business model change is still in its infancy, a key insight from this literature is that the Internet is prototypical of the kind of 'high velocity environment' in which successful business models need to be frequently adjusted to new challenges.³ Despite this important finding, guidance for managers on how to go about assessing the relevant aspects of environmental change, and their specific effects on their own business models, has been very limited. Most extant studies have remained rather abstract in their recommendations on how to approach environmental analysis and how to match it to firms' business models: this is where our article aims to make its contribution. We discuss the relative impact of various Internet changes for different types of business models, providing concrete managerial implications on how various Internet business models are affected by specific shifts in the competitive and technological landscape.

As an empirical context, we focus on the Web 2.0 phenomenon, a new wave of Internet developments that is likely to lead to fundamental changes in how both Internet and traditional business models function. Recent Web 2.0 developments include, for example, the increased pervasiveness of social networks and relevance of user-generated content, facets on which this article elaborates. A reconfiguration of established Internet business models seems advisable in order to meet the needs of new and radically shifting Internet user behavior.⁴

This paper seeks to address this managerial challenge by developing a comprehensive framework of Web 2.0 characteristics and success factors that allows managers to identify key trends for their own Internet business model. In order to provide more fine-grained and managerially useful findings, the main objective of this article is to illustrate the differential effect of the Web 2.0 on various Internet business model types, and to give managers clear guidance on how to adapt them in response to changing technology and user behavior.

Conceptual background

Firms are increasingly confronted with fundamental environmental alterations, such as new competitive market structures, governmental and regulatory changes, and technological progress, which often require managers to significantly adapt one or more aspects of their business models. Successful adaptation of an established business model to new environmental conditions closes the gap between the organization's existing resources and capabilities and the basis of its competitive advantage in the industry as it evolves.⁵ The strategic renewal of business models in response to environmental shifts has a substantial effect on the long-term prospects of the firm. While such transformations are associated with many difficulties - including sensing the need to change, identifying adequate approaches to revamp the business model, and overcoming inertia in implementing and accepting new structures - numerous authors have noted that being unable to adapt in the face of significant environmental change has proved deadly for many firms.⁶

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Many of the most significant environmental changes in recent decades can be related to the proliferation of the Internet, which has changed the way business is conducted in many ways, e.g. through disintermediation, the global distribution of digital goods and services, and computer-mediated communication with customers. As a result, many traditional brick-and-mortar businesses needed to adapt their value creation logic to remain competitive.⁷ Recently, the developments associated with the Web 2.0 phenomenon have created radically new ways for customers to interact with companies operating on the Internet, so that such companies need to check how well their current business model matches the new environmental conditions. Teece emphasizes (in this issue) that specific business models which will be successful in the Web 2.0 context are likely to differ significantly from traditional Internet business models, and companies will be forced to overhaul their existing business model in order to stay competitive.⁸

However, there has been very limited research on how business models evolve, either in general or specifically in response to the new developments related to the Web 2.0: this is where our article intends to make its contribution.⁹ More specifically, we aim to illustrate how various dimensions of environmental change associated with the Web 2.0 have distinct implications for different types of business models, and how managers can go about adapting various aspects of their business models to match the new environmental conditions. To achieve this goal, we start by discussing a typology of the most common existing Internet business models, which will serve as a frame of reference for analyzing the impact of the Web 2.0 on specific business models types. As there has been little systematic work characterizing the Web 2.0, we go on to develop a framework integrating the most relevant aspects of current Internet developments, using empirical insights drawn from our survey of managers' opinions to evaluate the practical relevance of these factors. After discussing how these Web 2.0 characteristics affect various business model types, managerial implications are presented to help Internet company managers assess the impact of Web 2.0 characteristics on individual facets of their business model. The article concludes with a discussion of the Web 2.0 phenomenon and the study's broader implications for our understanding of business model adaptation.

The 4C Internet business model typology

A *business model* reflects the operational and output system of a company, and as such captures the way the firm functions and creates value. It can be thought of as consisting of several sub-models or domains, specifying which resources go into a company (sourcing domain); how they are transformed (value generation domain) into marketable products or services (value offering domain); how the products and services are transferred to the customer (distribution domain) and how revenues are generated and obtained from business partners (revenue domain).¹⁰

A coherent typology can help classify business models, to make their study and analysis easier and more structured. The 4C typology (based on Wirtz) is intended to be straightforward yet holistic and exhaustive, covering the vast majority of classical business activities on Internet markets. The objective was to root it in a parsimonious set of classificatory dimensions and conceptual criteria so as to derive a relatively small number of archetypes while still ensuring small within-group differences. The resultant framework delineates four basic types of prototypical Internet business models: *Content*, *Commerce*, *Context* and *Connection* (see Figure 1).¹¹ It is important to note that many Internet ventures employ several of these types at once, in hybrid or integrated versions. Nonetheless, identifying these archetype Internet business activities is still useful, allowing managers of hybrid/integrated firms to appreciate their specific characteristics and to combine these insights to draw implications most suitable for their specific situation.

- First **content-orientated** business models are used by firms - such as The Wall Street Journal Online - that focus on the collection, selection, compilation, distribution, and/or presentation of online content. Their value proposition is to provide convenient, user-friendly online access to various types of relevant content. While many of the firms pursuing this type of business

<p>Content</p> <p>Definition: Firms collecting, selecting, compiling, distributing, and/or presenting online content</p>	<p>Value proposition: Providing convenient and user-friendly access to various types of content</p> <p>Revenues: Mostly online advertising (but increasingly subscription and pay-per-use)</p>
<p>Commerce</p> <p>Definition: Firm initiating, negotiating, and/or fulfilling online transactions</p>	<p>Value proposition: Providing a cost-efficient exchange place for buyers and sellers of goods and services</p> <p>Revenues: Sales revenues, commissions</p>
<p>Context</p> <p>Definition: Firms sorting and/or aggregating available online information</p>	<p>Value proposition: Providing structure and navigation for Internet users to reduce intransparency and complexity</p> <p>Revenues: Mostly online advertising</p>
<p>Connection</p> <p>Definition: Firms providing physical and/or virtual network infrastructure</p>	<p>Value proposition: Providing the prerequisites for exchange of information over the Internet</p> <p>Revenues: Online advertising, subscription, time-based billing, volume-based billing</p>

Figure 1. The 4C Typology of Internet Business Models

model depend on indirect, transaction-independent revenue streams - in particular online advertising - content-oriented businesses are also increasingly pursuing direct revenue streams, particularly for premium content.

- **Commerce-orientated** business models focus primarily on the initiation, negotiation, payment and delivery aspects of trade transactions using online media. Commerce-oriented firms, such as Amazon and Dell, offer cost-efficient transactions for buyers and sellers of goods and services. Companies focusing on this type of business model use electronic Internet-based processes to substitute or support traditional transaction functions and arenas, creating direct revenue streams in the form of sales revenues, as well as indirect revenue streams such as commissions.
- **Context-oriented** business models - represented by firms such as Google - primarily structure information already existing on the Internet, rather than creating new content. Their aim is to increase transparency and reduce complexity so as to help Internet users navigate through the abundance of websites and identify those that fit their specific needs. Their business models mostly rely on indirect, transaction-independent revenue streams, such as online advertising.
- **Connection-oriented** business models aim at providing the network infrastructure that enables users' participation in online networks, either on a physical 'interconnection' level (where companies such as Earthlink provide the physical communication between an end-user and the Internet) or a virtual 'intraconnection' level, where providers offer Internet communication services such as emailing or instant messaging. While interconnection business models usually

generate revenues directly on a subscription, time or volume basis, intraconnection business models are primarily based on indirect, transaction-independent revenue sources.

Web 2.0 characteristics

Environmental disruptions can cause fundamental changes in the business model landscape status quo, and particularly in Internet markets. Prior research has coined the term ‘high-velocity environments’ to characterize such dynamic business markets, where changes in demand, competition, regulation and technology have often been both repeated and discontinuous, necessitating frequent adjustments to keep business models successful.¹² A recent new wave of significant changes in the ways Internet users and companies utilize the World Wide Web coined the umbrella term ‘Web 2.0’ in 2005, and has since attracted great interest in the business press. But despite the hype, there is still a great deal of confusion about the specific meaning of the term, which Tim Berners-Lee (Director of the World Wide Web Consortium) reflects in saying ‘*nobody even knows what it means*’.¹³ Indeed, the literature lacks a systematic analysis of the broad characteristics and trends associated with the Web 2.0, even though such a framework would clearly be useful for Internet firms in offering a clearer picture of the new challenges and opportunities involved, as well as indicating ways in which their current business models should be strategically adapted. We therefore aim to develop such a framework by drawing from relevant literature and subsequently illustrating key facets by examining two cases of prominent ‘pure’ Web 2.0 players, and confirming the relevance of those facets with data from depth interviews of Internet firm managers.

Despite the hype, there is still much confusion about the Web 2.0

...‘nobody even knows what it means’

We propose four broad factors as being fundamental to the Web 2.0 phenomenon - *social networking; interaction orientation; personalization/customization* and *user-added value* — which we elaborate on below. Clearly, some of these aspects are not completely new, but technological progress and the evolving Internet user mindset mean they are having an increased impact on contemporary Internet businesses.¹⁴ Within these broad dimensions, we also identify some key sub-factors: while these are specific, they are also — inevitably — quite closely linked, and not always easy to delineate discretely.

Social networking

Social networking - commonly described as structures of human online interactions — is involving dramatically increasing numbers of participants.¹⁵ Social networking services are often built around certain topics and aim at connecting friends, or involve assessments of products and services. Users employ social networks for various reasons, including self-reflection, image building, entertainment and access to relevant information. Social networking trends are associated with a set of four sub-factors: *social identity, social trust, virtual word-of-mouth, and increased consumer power*.

- **Social identity** refers to Internet users increasingly seeking for a sense of ‘belonging’ to specific web interest groups and wanting to manage their image in these online environments. A recent study among 237 students found the ‘need to belong’ among the key drivers of social network participation. The Internet has become an increasingly relevant social environment that offers users positive, significant and lasting interpersonal relationships, together with the possibility of gaining social approval. Ethnographic analyses suggest that activities such as blogging symbolize the individual quest for creative self-expression and identity. In extreme cases, social networks such as the virtual world Cyberspace can constitute a parallel online identity for users, which is even sometimes

transferred to the offline world. Actively shaping their 'online image' has become an important motive for many social network users.¹⁶

- **Social trust** represents a related concept - the confidence that people will reciprocate beneficial behavior in their interactions with others – which has been increasingly evident in projects like Wikipedia, where many people participate and control (and ultimately trust) information provided by anonymous Internet users. A recent representative study of 6,347 Internet users found that two-thirds considered online reference works as highly relevant to their daily life, making them an increasingly trusted source of knowledge. The social trust concept is also important with respect to product reviews and customer opinion platforms such as ciao.com, with consumers increasingly basing their purchasing decisions on opinions and information provided by other users, rather than trusting the marketing information offered by companies.¹⁷
- **Virtual word of mouth** is another closely related concept, which can be defined as the informal information transfer between different parties via electronic applications such as blogs, review websites or even e-mail. Ethnographic research investigating virtual word of mouth found that online communities tend to develop loyalty and heavy usage by socially reinforcing consumption.¹⁸
- **Increasing consumer power** can be seen as a side effect of the rising interactions within the base. Firms' awareness of user opinions - and thus their influence vis-à-vis firms - is increasing substantially: more than 40% of consumers interviewed by Wirtz, Burda and Raizner rated customer power as high or very high.

Interaction orientation

Interaction orientation concerns the firm's ability to manage effectively the rising customer demand for a more intense and authentic dialogue between firm and customer.¹⁹ Interaction orientation is manifested in four important aspects: *customer centrality*, *interaction configuration*, *customer response* and *cooperative value generation*.

- **Customer centrality** puts customers center stage and views them as the focal point of all business activities. This represents a radical shift in the organizational gestalt for many companies, whose overall organizational structure will need to be reconfigured to facilitate user interaction process.
- **Interaction configuration** pertains to the way this interaction process is structured – it concerns what information is exchanged, and with whom, and for what reasons.
- The **customer response** capacity of a firm refers to its ability to manage the dialog with its customers, and develop capabilities to allow it to react and respond to individual customer feedback while simultaneously codifying the acquired information in order to improve future customer dialog.
- The **cooperative value generation** concept is a closely connected capacity that captures the ability of a company to integrate customers into business transactions as equal partners, enabling the company to gain first hand information on how to improve products, services and processes so as to develop and sustain a 'customer-led' competitive advantage.

'if students cannot customize a technology device to their style, it does not interest them'

Customization and personalization

Customization and personalization have been discussed in the e-business/information systems literature for quite some time now, but the traditional view of this concept needs to be extended

in the Web 2.0 context, given the changing Internet user behavior described above. While *personal customization* is still apparent, *group customization* and *social customization* are gaining in importance.

- **Personal customization** is a concept that offers Internet users the possibility of reconfiguring (e.g., changing the look of) websites according to their specific needs and preferences, and is becoming increasingly vital for Web 2.0 applications and platforms. One teacher involved in Internet education noted: ‘*What I am starting to see is that if students cannot customize a technology device to their way, their style, then it does not interest them*’.²⁰
- **Group customization** Increasing connectedness and ease of information dissemination now enables whole groups to build and enforce new configurations. For example, the French Internet company lafraise.com lets amateur designers upload their own T-Shirt designs, which are then rated by other Internet users and a professional jury. 500 of each of the most frequently chosen/best rated T-Shirt designs are produced, and the designer receives an award (about US\$ 1,000). Order data shows that most users who rated a specific design highly also placed orders for the T-shirts.
- **Social customization**, the third phenomenon in this category, refers to Internet businesses offering specifically customized products to distinct social layers. For example, the platform Second Life - which describes itself as a ‘virtual world community’ – has more than 15 million user accounts worldwide, and offers a huge range of upper class virtual products at (almost) real world prices.

User-added value

This concept has been one of the most intensely discussed aspects of the Web 2.0, and covers a whole range of phenomena, including *user-generated content* and *user-generated creativity*, as well as *user-generated innovations* and *revenue*.

- **User-generated content**, including the creation of profiles, whole websites, and media such as video and audio files (such as those found on YouTube), is a trend that has forced a whole range of institutions and businesses to integrate new applications to meet second generation Internet user demands. More than 40% of the surveyed consumers in Wirtz, Burda and Raizner’s study agreed that user-generated content was a crucial complementary information source for a whole range of topics. Another empirical study found that almost 50% of Web 2.0 users in the 13-24 age group considered user-generated content to be among the most relevant entertainment sources.²¹
- **User-generated creativity**. Besides generating content, the Web 2.0 Internet user tends to proactively bring in a whole new perspective on established processes and approaches, so that users create innovative ideas for the future development of companies. The introduction of open source programs and APIs has supported this radical and fast increasing behavior, which allows the Internet user to become a critical part of product and process innovations. For example, the increasingly frequented Nokia Beta Lab lets users bring in their creative ideas to solve concrete problems and develop new products, designs and technologies.²²
- **User-generated innovation** also becomes apparent when looking at the huge amount of innovations taking place in the ‘open software’ industry around the world.²³
- **Sources of revenue** for firms are a further consequence of the Web 2.0, as second generation Internet user activities enable companies to optimize and broaden their product range. The increasingly popular Microsoft XNA Creators Club project allows users to develop their own video games for devices such as the Xbox, and share them with others, receiving in return a proportion of Microsoft’s sales profit.²⁴ Apart from this type of ‘win-win’ situation, companies can benefit from active users in various other ways. The ability of such structures to attract new users, and the consequent value they add, have become important value drivers for many Internet companies.

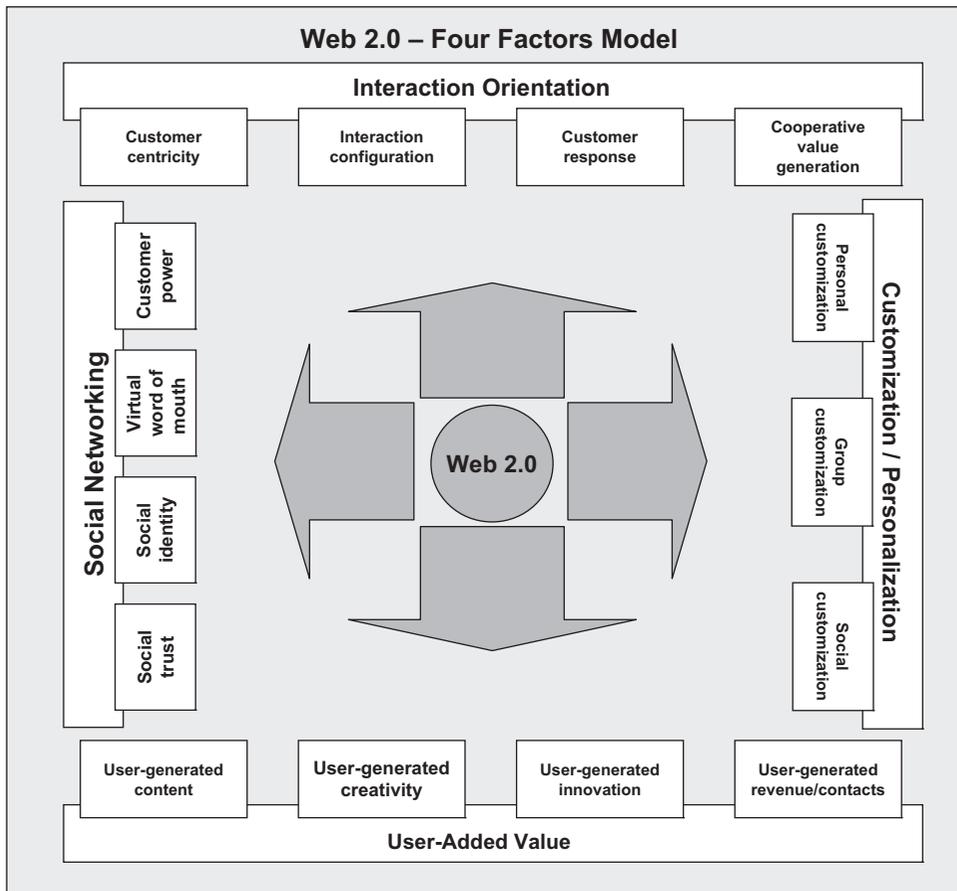


Figure 2. The Web 2.0—4 factors model

Figure 2 illustrates the factors associated with the Web 2.0, and its framework provides the background for the empirical analyses that follow. Specifically, we discuss two cases of ‘pure’ Web 2.0 players, and how the factors we describe are reflected in those companies (see Exhibits 1 and 2). Subsequently, we elaborate on our in-depth interviews with managers from Internet firms to verify these factors, and to further develop their implications for established Internet business models.

Data from manager interviews

Our interviews with 22 managers from Web 2.0-related Internet companies had two objectives: first, to further confirm the relevance of the four factor model summarized in Figure 2; second, to gain more fine-grained insights into the most important implications of the Web 2.0 for established Internet businesses. (The appendix details our research approach.)

Ranking of Web 2.0 factors

We found considerable support from our interviewees for the relevance of the dimensions depicted in the four factor Web 2.0 model. On a seven-point scale ranging from 1 (very unimportant) to 7 (very important), the mean scores for all four first-order factors were over 5 (see Table 1), implying that the managers agree that the four Web 2.0 characteristics are key success factors. In relative importance, *social networking* was the most important (mean: 5.76), followed by *interaction orientation* (5.62), *user-added value* (5.08) and *customization/personalization* (5.02). While these differences were not substantial, they still allow for an examination of the relative importance of the four dimensions.

Exhibit 1 The Case of MySpace

MySpace is one of the most frequently visited online communities worldwide. It was founded in 2003 by Chris DeWolfe and Tom Anderson with the intention to offer free Internet data storage. However, shortly after kick-off, the business model was modified to meet the growing user need for personal web sites and social networking. The enormous success of the business convinced Rupert Murdoch to acquire MySpace in 2005 for about US\$ 580 Million.

The dimensions of the Web 2.0—4 factors model are an integral part of the MySpace success story. First, *interaction orientation* is reflected in the strategic orientation of MySpace. The configuration of MySpace clearly focuses on user-to-user interaction, and specifies no restrictions for this interaction except for a general code of behavior.

Personalization/customization of user profiles is a crucial element of MySpace's business model. Members can design their web presence according to their personal preferences and individually add specific applications (such as music playlists, photo books etc.). Furthermore, MySpace is particularly appealing as a platform for special interest groups, reflecting the group personalization/customization aspect.

Another very important factor of MySpace's value proposition is *social networking*. Users are invited to connect with friends, relatives, etc., and thus create their own individual social network. As a result of a growing need for social identity, reference mechanisms and invitation possibilities, MySpace has grown massively over recent years. Its user base — currently roughly 240 million and the revenues generated from advertisements on the site, are constantly growing.

The *user*, the critical core of the MySpace business model, *adds value* in many different ways. Not only does every additional individual profile contribute to MySpace's positioning through indirect ad revenue, but due to the considerable amount of user-generated creativity, new music, videos, pictures, and other user-generated content, MySpace also enables a platform for amateur commerce supporting the long tail phenomenon.

In summary, MySpace, as a pure and very successful Web 2.0 player, utilizes all aspects of the Web 2.0—4 factors model. Obviously, the user is the most critical resource in the business model. Therefore, MySpace is developing its business model constantly with respect to customer needs and preferences: for example, it recently began offering a new application service (API) which enables users to create their own posting application.

Looking at the rankings of the sub-factors of the four dimensions, the most prominent sub-factor in the social networking category was *virtual word-of-mouth* (mean: 6.29); in interaction orientation, *customer centrality* was the highest rated (6.38); *user-generated creativity* (5.33) was seen as the most important sub-factor of user-added value, and *personal customization* (5.30) as the most relevant element of customization/personalization. None of the sub-factors was ranked below 4.67, which supports their importance as elements of the four factor Web 2.0 model.

The ranking of Web 2.0 factors and sub-factors presented here can serve as a general guideline to allow an Internet firm's environmental fit with the Web 2.0 to be assessed in terms of its completeness, and managed in terms of prioritization and resource allocation. Thus, in starting to analyze the relevance of Web 2.0 characteristics to their firms, managers should generally devote most attention to the *social networking* and *interaction orientation* dimensions which our interviewees judged as being most relevant. Within these, at a more fine-grained level, an analysis of the two most relevant sub-factors - *virtual word-of-mouth* and *customer centrality* should be given highest priority in identifying the best measures to improve the company-environment fit. The ranking can be used both for benchmarking and as a compass for action: benchmarking against the ranking

Exhibit 2 The Case of Wikipedia

The Wikipedia project, launched by Jimmy Wales and Larry Sanger, is currently the largest and most popular general reference work on the Internet. Since the beginning of the encyclopedia project, more than a quarter of a million registered members and an unknown number of non registered volunteers have worked cooperatively to create almost 10 million articles worldwide.

In terms of *interaction orientation*, Wikipedia's business model builds its entire activities on the idea of voluntary, cooperative *value generation with the user*. Wikipedia not only allows every web user to edit and create content, but also has a specific core of long-standing members to control and reedit the created content if necessary. These long-standing users also engage in an interaction process with other users to explain certain changes to content production, and therefore provide *consumer/user response* when needed.

The *user-added value* concept is at the core of the project Wikipedia. *User-generated content* is the starting point for the activities of Wikipedia. The simple idea that the more users start writing on Wikipedia the faster the information will grow has proved right; over the last couple of years Wikipedia's user-generated database has been growing massively which, in turn has resulting in new user-generated contacts supporting the growth of new writers and editors for Wikipedia.

In this regard, *social networking* is very important and apparent at Wikipedia through the huge amount of *social trust* given by almost every web user to information provided by people within the web community.

The concept of *customization and personalization* is also apparent at Wikipedia, especially for registered members, who can modify and change their account settings and welcome page to their specific preferences. This includes for example specifying their preferred software application to work on Wikipedia, the appearance of the latest document changes, etc.

In summary, the Wikipedia project combines the proposed four Web 2.0 factors, placing the user at the heart of their activities. This is not surprising given that *user-generated content* is the most critical resource for Wikipedia.

can illuminate both a firm's strategic advantages as well as any strategic 'gaps' relative to its industry segment competitors, while the ranking can also help the firm identify the course it should steer to improve its position. (While our interviews revealed these as the most generally significant factors and sub-factors, their relative importance may vary between different types of business models. (These two elements of our research are aligned more specifically in a later section.)

Exploratory results regarding trends and success factors

Having gained support for our four-factor Web 2.0 model from our respondent managers, we analyzed the qualitative responses about Web 2.0 trends and tools. Across the board, study participants noted that social networking had significantly gained in relevance:

Social networks have become crucial tools to stay in touch on the Web 2.0. Using those social networks, Internet users connect to other people in fundamentally different and more intensive ways.

In particular, several managers mentioned that social networking is increasingly developing from a 'fun tool' into a business networking instrument, allowing professionals to interact and establish new contacts. Other participants stressed that more and more firms are presenting themselves via social networks, trying to use them as platforms to reach out to their customers. Another aspect mentioned repeatedly was the way social networking platforms generate lock-in effects: once a critical mass of relevant users is acquired, they tend to stay in the network, since established contact lists and comments are not easily transferable.

Table 1. Ranks and means of Web 2.0 factors and subfactors

Web 2.0 factor	Social networking			
Mean	5.76			
Web 2.0 sub-factor	Virtual word of mouth	Social identity	Social trust	Customer power
Mean	6.29	5.67	5.57	5.52
Web 2.0 factor	Interaction orientation			
Mean	5.62			
Web 2.0 sub-factor	Customer centricity	Customer response	Interaction configuration	Cooperative value generation
Mean	6.38	5.72	5.67	5.35
Web 2.0 factor	User-added value			
Mean	5.08			
Web 2.0 sub-factor	User-generated creativity	User-generated revenue/contacts	User-generated content	User-generated innovation
Mean	5.33	5.32	5.00	4.67
Web 2.0 factor	Customization/personalization			
Mean	5.02			
Web 2.0 sub-factor	Personal customization/personalization	Group customization/personalization	Social customization/personalization	
Mean	5.30	5.05	4.70	

Social networks are developing from ‘fun tools’ into business networking instruments .. more and more firms are using them as platforms to reach out to customers [and exploit their] lock-in effects

Along with the trend of social networking, interaction orientation has gained a significantly more important role for online businesses in the Web 2.0 context. One respondent commented:

It has never been more important [for Internet firms] to take user interests at heart and to be available for receiving and responding to customer feedback and inquiries 24/7. With customers getting used to significantly increasing service levels, firms not able to effectively manage the customer touch-points will ultimately fail.

Some managers noted that automation will become more important in creating higher interaction orientation, but predicted that fully automated sites would have difficulties as customer expectations for immediate, personalized responses had risen significantly. Another group of managers considered the link between interaction orientation and the quality of the core offering, stressing that, while firms’ ability to orient themselves to interact with individual customers successfully will play an increasingly important role in differentiating them in the future, they still needed to offer superior products or services.

Participants also mentioned *user-added value* as a key Web 2.0 trend:

For me, a major change in the business environment is user-generated content and the ability to leverage customers as a key ‘input to production’. This is the power we have been talking about delivering on the Web for more than ten years, and it’s finally here.

There was widespread agreement that the rise of the user as an active participant in the value creation process of Internet businesses was a key factor in the shift from earlier web models to second generation ideas and methods. Several participants expected user participation to become a key driver of website traffic, both via generation and consumption, while others emphasized how user support could enhance firms' credibility. Further comments pertained to the incentives involved in creating user-generated value - while there was agreement that the ultimate motivation needed to be intrinsic, some participants indicated that websites offering explicit incentives to users to generate value for the firm might benefit most.

Finally, study participants invariably emphasized the importance of personalization of the Internet firms' offering, as the following comment illustrates:

Times have changed from an era when personalization was a 'nice-to-have' feature to an era where all pages on the Internet must be personalizable to satisfy individual customers' needs.

Many participants stressed the crucial role of personalization in differentiating firms' offerings. A group of managers talked about how personalization can increase switching costs for web-site users, and thus enhance customer retention, while another set of comments concerned the way personalization is realized in Web 2.0 business models. Whereas personalization was formerly actively carried out by the users (e.g., by explicitly defining desired design and content areas), in the Web 2.0 personalization is more about automatically feeding users the information they want, based on data obtained through observing their previous behavior.

Adapting established business models to the Web 2.0

To gain specific insights to help managers to adapt established business model to the Web 2.0 context, we asked participants to identify the most important tools firms needed to help them respond to and embrace the four major changes associated with the Web 2.0 most effectively. A number of activities were mentioned repeatedly as being valuable for adapting various Internet business models, which are summarized in Table 2, arranged according to the various Web 2.0 factors.

Participants consistently described three activities as being helpful in making effective use of the *social networking* trend. First, they recommended implementing networking tools - such as blogs, forums and chats - on the firm's own website. Second, respondents emphasized that firms needed to observe what was posted about them on large social networking platforms, especially those that include user reviews - some even recommended allocating employees full-time to checking and responding to postings on social networks. Finally, several participants stressed the importance of presenting the company on the most important social networks. Facebook, for example, was mentioned as a social network that allows firms to create a company-specific 'wall' where users can post messages about specific topics for other users to see. Initiating such 'network plug-ins' could help firms become part of social networks.

Internet users now expect an immediate response to their inquiries, 24/7 ...[and] need clear incentives to engage in interactions

Respondents also mentioned three key activities to increase a firm's *interaction orientation*. First, they emphasized how Internet users now expect an immediate response to their inquiries, 24/7. Second, firms should be aware that users need clear incentives to engage in interactions:

Users need a reason to come back and interact. So there needs to be a value/reward: either the user raises in status, there is a prize to be won or the company pays money or gives rebates to the users who interact.

A third way respondents recommended to increase interaction was to encourage negative as well as positive feedback, which might not only make it easier for users to initiate interactions, but could also result in a more positive overall image of the firm.

Table 2. Activities for embracing the Web 2.0 in existing Internet businesses

Factor	Activity
Social networking	<ul style="list-style-type: none"> • Build your own social networking – e.g. by creating blogs, forums and chats for your website • Check and comment on postings on networks (e.g., review platforms) • Present your company on relevant social networking platforms
Interaction orientation	<ul style="list-style-type: none"> • Be highly responsive and available 24 hours • Provide users a reward for interaction (social status, prizes, rebates) • Encourage positive <u>and</u> negative feedback
User-added value	<ul style="list-style-type: none"> • Integrate the following tools on your website: user reviews, user-generated information (wikis), media uploads (videos etc.) • Offer incentives • Use metadata that tracks clicks, recommendations, behavior etc.
Customization/personalization	<ul style="list-style-type: none"> • Make good use of available user information as a base for customization efforts (e.g., build track profiles based on customer history) • Focus on making customization/personalization easy to use

In terms of encouraging *user-added value*, there was remarkable commonality across participants' responses, and we can distinguish between infrastructural and analytic ways of increasing user-added value among the tools suggested. The infrastructure approach to fostering user-added value included integrating user reviews, user-generated information (wikis), and media uploads (videos etc.) on the firm's website, while the analytical solutions involved making use of metadata that tracked clicks and user behavior (such as recommendations) which in turn allows firms to draw conclusions about user preferences and behavior. Managers again emphasized the importance of offering explicit rewards to foster user-added value.

Finally, managers noted two important activities pertaining to *personalization/customization*. Firms needed to make good use of every piece of information they have about their users, so as to offer automatic personalization that required little or no user effort, and could benefit particularly from creating track records based on user history. Firms also need to make personalization very easy to use in order to make it effective - as one respondent put it:

All personalization features are useless if they require the user to learn how to use them.

Aligning Web 2.0 characteristics with business model type

As noted above, we acknowledge that the individual Web 2.0 factors may differ in importance for different sorts of Internet businesses, and we therefore provide an overview assessing the match between each of the four Web 2.0 factors and the four business model types categorized in the 4C typology (see Table 3). This assignment is based on the ranking of Web 2.0 factors for Internet companies in general, and further differentiated based on conceptual considerations and real-life cases.

For the *content* business model type, all four Web 2.0 factors are of either high or very high relevance. Social networking has important implications for the value offering and distribution model of content-oriented firms. In particular, content platforms should consider implementing social networking tools (such as blogs and chats) that enable users to discuss site content online, which can serve as valuable complements to the core offering. Social networking is also an integral constituent of customer retention efforts as part of content businesses' distribution models. The interaction orientation factor also plays an important role in value generation and distribution models of such businesses. In each content generation phase - and during distribution - firms should be very open to customer feedback and be able to incorporate it instantaneously. User-added value is probably the most important Web 2.0 trend for content-oriented firms: not only can user-generated content become an increasingly crucial part of the sourcing model, but the value offering model can also benefit from harnessing user-generated

Table 3. Relevance of the Web 2.0 factors for individual business model types

Web 2.0 Factor				
Business model	Social networking	Interaction orientation	User-added value	Customization/personalization
Content	++	+	++	+
Commerce	—	++	o	+
Context	+	—	o	+
Connection	++	+	o	+

++: very high relevance; +: high relevance; o: medium relevance; —: low relevance.

innovation and creativity. Customization and personalization are clearly vital aspects for the way content is presented and distributed to the customers, and can improve the perceived value of the content offered.

In the *commerce* business model, the ability of a firm to orient its value generation and distribution processes to interact successfully with its customers will be of very high importance, so as to differentiate the firm from its competition. A superior interaction configuration and customer response capacity will help commerce firms ‘stand out’, and also build long-term relationships with their customers. A strong emphasis on personalization/customization can be another valuable source of differentiation as part of the value offering and distribution model of commerce businesses. These two levers of differentiation will be critical sources of competitive advantage for commerce business models as traded products and services become increasingly commoditized on the web.²⁵ ‘Lands’ End’ is an example of a commerce-oriented business that believes strongly in an orientation towards customer interaction and personalization. From early on, it has made continuous investments in innovative technologies that allow users to engage in real-time conversations with the firm and to personalize their shopping experience. ‘Lands’ End Live’ was one of the first online chat tools that allows users to talk directly with customer service representatives in an Internet shop. The site’s ‘Lands’ End Custom’ feature allows the customer to design clothing to achieve a better fit for their size and shape - and tastes - than off-the-rack clothing. Another prominent personalization feature is ‘My Virtual Model’ - a 3D model created from personal data specified by the user. Once created, the model can be used to try on items and outfits to get a better idea of how they will look together. All these efforts have resulted in high customer loyalty and contributed to make LandsEnd.com the world’s largest apparel Web site (in business volume).

Superior interaction configurations and response capacities will help commerce firms ‘stand out’ and build long-term customer relationships

Context oriented businesses primarily stand to benefit from embracing the Web 2.0 social networking and customization/personalization factors. It seems like a natural next step to incorporate social networking tools into their platform and combine them with state-of-the-art personalization features at personal, group and social levels. Yahoo! was among the first search catalogues to place a strong emphasis on personalization, most notably with its ‘My Yahoo!’ application. Yahoo’s development towards social networking tools is particularly apparent in its recent acquisition history, which includes the photo hosting service ‘Flickr’, the blog ping service ‘Blogs’, the tagging platform ‘del.icio.us’, the online video editing service ‘Jumpcut’, and the social networking platform ‘MyBlogLog’.

For the *connection* business model, we particularly stress the relevance of social networking as a key aspect of the value offering model. While traditional intraconnection models have focused primarily on one-to-one Internet communication services (such as email), connection firms need to be open to the increasingly used ‘many-to-many’ communication tools, such as chats and forums. At the same time, the value offering and distribution model of such firms can benefit significantly from personalization/customization, which can lead to major improvements in the usefulness of the services they offer, particularly in the intraconnection business model. For example, web.de – one of Germany’s largest email providers – has added several social networking and personalization features to enhance its webmail services including: ‘unddu.de’ (a social network that is showing massive growth); ‘MultiMessenger’ (a tool that integrates multiple instant messengers, online communities, and email accounts); ‘Foto-Album’ (a photo hosting service); and ‘My@dress’ (a feature that allows users to personalize the domain in their email address). A high interaction orientation can prove vital, especially for interconnection firms. With their increasing scope and inclusion of ‘triple play’ offerings, they sell products perceived by users as characterized by high technological uncertainty, and therefore firms need to be highly responsive to questions and concerns from both users and potential customers, in both the pre- and post-purchase phases.

Discussion

Clearly, a firm’s environment has a fundamental bearing on the kinds of business models that can create value in a given market context. As many industries continue to be in constant flux, it is important for managers to understand how they can address environmental changes and adjust their business model so that their firm can gain - or sustain - a competitive advantage. A large body of academic literature has emerged devoted to improving our understanding of how environmental changes interact with business model modification. Our article is intended to add to this stream of literature in two ways: on the one hand, we contribute specifically to the understanding of the Web 2.0 phenomenon and its distinct effects on the functioning of Internet business models; on the other, we believe our findings also have important implications for the study of business model adaptation in a more general sense.

Implications for understanding the Web 2.0

This article is embedded in the specific context of the recent wave of changes in how the Internet functions and is used, the emergence of which has been labeled ‘Web 2.0’. While this phenomenon has received much attention in the practitioner literature, it has remained under-investigated in scholarly strategy research: specifically, the question of how established Internet firms need to adjust their business models as a consequence of the Web 2.0 has remained largely unanswered. In response to this research gap, this article has focused on four specific Web 2.0 characteristics and how they affect the logic of existing Internet business models.

This is the first study (to our knowledge) that aims to derive a comprehensive set of key Web 2.0 features in a systematic fashion, and examine them empirically. Since there is considerable ambiguity about what the term Web 2.0 actually refers to, we believe we make an important contribution by conceptualizing and validating this highly relevant practical phenomenon. Perhaps even more importantly, we analyze the relative impact of different Web 2.0 trends and characteristics on different types of Internet models, which should help Internet firm managers assess the relevance of each factor for their own firm and ensure they can initiate the actions required to making their business model Web 2.0-capable. We also outline two cases of ‘pure’ Web 2.0 players, describing their origins, operations and novel features, and showing how their business models are representative of the Web 2.0 factors put forward in this research. We hope these details both help to illustrate the Web 2.0 characteristics we identify, and also highlight some of the factors behind the success of these prosperous players, enabling other firms to adopt some of their features.

Implications for business model adaptation

Apart from the implications pertaining to the specific Web 2.0 context, we also provide some important general insights into how environmental changes necessitate business model modifications. In particular, the various steps involved in adapting business models noted in this study could serve as a valuable blueprint for business model realignment in general.

First, our study highlights the importance of starting by gaining a detailed understanding of all relevant facets of environmental change. As each context differs, firms need to possess strong sensing capabilities to identify the relevant changes in their environments, which require both investment in research and business development as well as the routine evaluation of customer needs and of technological possibilities.²⁶ This implies that the entire firm, and not just the top management, needs to be involved in constant environmental scanning. In fact, not only organization-internal resources can contribute to an improved understanding of technological changes, but the firm's customers are becoming an increasingly important source of information about these changes, as evidenced by the growing relevance of user-added value and interaction orientation identified in our study. Our findings thus lend further support to the concept of 'open innovation,' which emphasizes the benefits of openness as a means of expanding value creation for organizations.²⁷

Customers are becoming an increasingly important source of improving firms' understanding of technological changes

Second, once detailed knowledge about relevant aspects of environmental change has been acquired, the next step is to match these facets with different domains of the firm's business model so that market opportunities and challenges can be translated into action plans aimed at modifying specific parts of the firm's business model. This step requires in-depth knowledge about the firm's business model, and we believe frameworks such as the 4C typology advanced in our research can help managers gain a highly structured perspective on the key components of their business models, which in turn helps them to take advantage of environmental changes more swiftly.

Finally, after successfully identifying important trends in their markets and redesigning their business model components accordingly, managers need to implement their new structure and establish modified organizational routines that best address the new environmental landscape. During this phase, managers need to act as change agents, promoting a positive attitude towards change and motivating employees to think of it as an opportunity for improving the firm's business model and achieving differentiation from competition.²⁸ Following these three general steps can provide a valuable structure to approaching business model adaptation, and thus help reduce the ambiguity associated with this managerial challenge.

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Appendix

We conducted in-depth field interviews with managers from 22 different U.S. and German Internet companies that had been identified as being associated with the Web 2.0 in relevant publications or conference presentations. Participants were contacted through social networking platforms (such as facebook, xing) and through the alumni network of a Californian university. This group comprised numerous highly knowledgeable key informants who were able to view the focal phenomena from diverse perspectives (including from different hierarchical levels) to avoid convergent retrospective sensemaking (see Table 4). The sample size was consistent with that recommended by scholars for exploratory research purposes.²⁹

Table 4. Characteristics of in-depth field interviews

Web 2.0 business category	No. of respondents
Product review website	1
Tagging	1
Online Communities	4
Blogs & RSS-Feeds	3
File Exchange & Sharing	5
Wikis	1
Pod-/Videocasts	1
Mash-Ups	4
Other	2
Job title	No. of respondents
CEO/Founder	8
(Senior) Vice President	4
Director	4
Product Manager	5
Other	1

Our interview guide was composed of three sections:

- First, we asked managers to elaborate on the most significant recent Web 2.0 trends and describe how successful Web 2.0 businesses differed from traditional Internet businesses;
- second, we asked how respondents thought established firms needed to change as a consequence of the Web 2.0;
- third, we asked the managers to rate the relevance of the factors and sub-factors summarized in our Web 2.0 framework (see Figure 2) by asking 20 closed questions covering the range of factors and sub-factors (such as ‘How important is the factor “social networking” for businesses operating on the Internet?’). All responses were anchored on seven-point scales (1=Unimportant and 7=Very important).

Data from the first and second parts of the interviews were analyzed using grounded theory coding (i.e., open, axial, and selective coding) to identify specific Web 2.0 trends and describe their specific characteristics.³⁰ The quantitative data collected in the third part of the interviews were analyzed by calculating means and standard deviations, to create a ranking of the relative perceived importance of the various Web 2.0 factors.

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