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IMPACTS OF WEB 2.0 ON BUSINESS MODELS IN MASS CUSTOMIZATION

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Abstract

Web 2.0 includes technological and behavioral trends that provide an enlarged added value potential for electronic commerce. This additional potential can be characterized by increased interactivity and multi-mediality, higher degree of standardization and better access to online content. These characteristics determine essentially the development of business models and economic concepts like e.g. Mass Customization. In this context, the raising question is how the increased added value of Web 2.0 affects business models in Mass Customization. This paper introduces an adoption framework that can be used to reason about possible impacts of Web 2.0 elements on different product types and process steps in Mass Customization.

Keywords: Web 2.0, Business Models, Mass Customization, Electronic Added Values, Adoption Framework

Introduction

Even though the term Web 2.0 has been in dominant topic in the media for almost two years and new emerging business models such as YouTube, Flickr and MySpace managed to generate giant transaction values, the term is still vaguely defined. Trends mentioned in the context of Web 2.0 are for example user generated content describing behavioral changes in the use of the Internet, the long tail characterizing the growing variety on the Web and openness discussing new ways and philosophies on leveraging the opportunities of electronic networks.

The development of electronic commerce (e-commerce) – and therefore also the development of Web 2.0 – is of great importance for the development of Mass Customization (MC). However, a meaningful framework for analyzing the influences of Web 2.0 on business models in MC is missing so far. A core characteristic of MC is the increasing user integration within the value creation process with the aim of producing highly individualized products. Simultaneously, companies adopting MC often face an increasing product complexity and thereby increasing production costs. Regarding this, the potential arising from Web 2.0 for MC scenarios seems to be huge. Due to the outstanding importance of e-commerce for MC, the impacts of Web 2.0 on new business models will be analyzed in the context of MC scenarios. For structuring the Web 2.0 influences to different phases of value creation in MC, the MC macro process (Rautenstrauch 1998) will be adopted. Furthermore, the Web 2.0 influences will be analyzed for different types of products. As a focal point an adoption framework will be introduced that combines the influences of Web 2.0 on business models in MC dependent on different product types and the particular value creation step.
First, the conducted research approach is described and basic definitions for the three main concepts business model, Web 2.0 and MC are provided. The following section introduces an adoption framework and gives examples how to use it for analyzing the impact of Web 2.0 on business models in MC. The use of the adoption framework is exemplarily shown by applying it to different business models based on four product types. Finally, conclusions are drawn and an outlook on future research is given.

Research Approach and Basic Definitions

Although there are successful Web 2.0 business models in place, no well-founded analysis exists that is able to explain the relationship between characteristic elements of Web 2.0 and their impact on the value proposition of business models. Therefore, research questions addressed in this paper are: How can Web 2.0 be defined based upon known concepts of e-commerce? What is the benefit of Web 2.0 and how can it be measured? What is the impact of Web 2.0 on business models in MC? To answer these three questions we will first review current literature in order to extract elements considered characteristic for Web 2.0. Then, we will apply an existing assessment method for identifying added values in electronic offers to Web 2.0. Finally, we will integrate this method into an adoption framework that allows specifying added values dependent on different product types and business process steps in MC.

Due to the increasing complexity in the field of business model concepts Pateli and Giaglis (2004) developed an analytical framework categorizing research and knowledge on business models into eight sub-domains concerning definitions, components, taxonomies, conceptual models, design methods and tools, adoption factors, evaluation models, and change methodologies. As such frameworks are especially suitable to guide research in disciplines where theories are still missing (Palvia et al. 2003) we will adopt this categorization to describe the contribution of our approach. We can identify two sub-domains to which our approach mainly contributes: conceptual models and adoption factors. Conceptual models deal with specification of dimensions for business model analysis and respective representational formalisms (Pateli and Giaglis 2004). This is done in the proposed approach by defining characteristic attributes of MC business models and by introducing relevant factors that influence their success. Our main contribution lies in the field of adoption factors by providing a framework for ex ante analysis of success factors for business models based on added values. This adoption framework integrates an assessment method for identifying added values in modern information and communication technologies and allows for reasoning about the impact of technological and behavioral elements of Web 2.0 on business models in MC. Therefore, we are able to identify MC business model types with high potential for successful application of Web 2.0.

Business Models

Almost ten years after the first boom of IT-centered business models there still is no common definition of the term business model as well as its structure and frame. Even the specification of a business model’s constituting elements varies to a large extend in different approaches (Osterwalder 2004, Stähler 2002). Anyhow, analyzing the approaches to business models elements, some similarities in structure and frame can be found (cf. Ostenwalder et al. 2005, Tapscott et al. 2000, Mahadevan 2000, Hamel 2000, Afuah and Tucci 2002):

1. Added value and value proposition specify what value the business adds for customer or partners, e.g. suppliers. Besides the question of what value proposition is targeted, a business model has to answer the question of how the targeted value proposition can be gained (in case of a new market entry) or defended against competitors (in case of an existing model).

2. The revenue model answers the question of how added value can be turned into revenue. It contains the core elements revenue sources that define the origin of the revenue and revenue triggers that define the basis of the revenue, e.g. transactions. As the price is building the core link between generated value and the revenue, pricing models are another core sub-element of the revenue model.

3. The architecture to deliver value describes how added value is generated and what resources are necessary. This component is analyzed and structured from various perspectives and contains most of the sub-models and elements that have been identified in literature, reaching from resource model, production model, distribution model to customer relations models.
4. The cost model structures the monetary consequences of the means deployed to deliver the added value described in the cost model. Revenue and cost model answer the question of economic value.

From the above elements, a business model can be defined as: a model explaining what added value a business generates for its customers or partners, how it is generating revenue from this added value and how it is delivering this value at the restriction of generating long term profits. At the beginning of either business model development or analysis, the value proposition has to be identified as it will provide a basis for the business. Factors that influence the value proposition have direct impact on the success of business models. Therefore, we will focus on the description and explanation of a business model’s value proposition in the following.

New technologies enable new ways to create added value for customers or partners, thus especially for IT-centered business models, several approaches can be found to structure added values enabled by the Internet (c.f. Mahadevan 2000). Bazijanec et al (2004) developed an approach driven from the properties of modern information and communication technologies like the Internet and mobile devices. They derived so called electronic added values (EAV) that are suitable to explain the benefits given by internet-related technologies:

- **Reduction of temporal and spatial limitations:** The Internet reduces limitations of access and storage. Information can be accessed at any time and any place through the Internet without noticeable time delay. This enables online transactions and even online delivery in the case of goods and services that can be digitalized (e.g. music, video or electronic airline-tickets). It also allows an unrestricted number of participants in combination with low entry costs for consumers and businesses, leading to de facto unlimited space, time and access.

- **Standardization and unrestricted access:** Standards allow a further reduction of technical limitations. Standardization for communication, presentation and application development allows integration and common interfaces as well as joint developments. Applications benefit from this added value, it further allows data and process integration and reduces inconsistencies caused by handoffs. Due to this standardization, connection to the network is possible without having to buy expensive access technology. Also, the number of participants is not restricted as everyone can offer and use information or services on the Internet transparency of markets increases.

- **Multi-mediality:** The Internet allows enhanced presentation potential such as animations, motion pictures, voice or sound. This multi-mediality can be used to stimulate users’ transactions as it facilitates the transport of an emotional message. Additionally, it provides capabilities for visualization and interrelation of information. It even allows the development of new media and entertainment formats.

- **Interaction:** The instantaneous transport of data over the network and the possibility to identify single network nodes in order to respond to previous requests allows interaction between Internet users. Thus, direct and personalized interaction is possible, e.g. for forms of communication or configuration. The network effect even allows simultaneous communication between multi users, e.g. through chat rooms, user comments or tags.

The benefit of each EAV is not measured directly. It may be assessed by measuring the increase of efficiency, effectiveness, flexibility as well as the degree of innovation and a user’s aesthetic-emotional value (cf. Bazijanec et al. 2004). For each dimension quantifiable measures are provided, e.g. number of different users reached by a Web site. As we are primarily interested in qualitative analysis in the first place we will not further discuss suitable measures for EAVs. We rather use the general structure of EAVs for our analysis simply stating that a higher absolute value of a certain EAV leads to a higher benefit of the business model. Additionally, the value proposition of a business model may be made up from several of these EAVs adding up to the overall value of a business model. Figure 1 shows a radar chart that allows an integrated graphical view on all four EAVs.
Web 2.0

The term Web 2.0 came up in 2004 and gained much attention in the Web community. However, as O’Reilly (2005) states, “…there’s still a huge amount of disagreement about just what Web 2.0 means, with some people decrying it as a meaningless marketing buzzword, and others accepting it as the new conventional wisdom”. Overall trends and effects showing up in different Web 2.0 mind maps and listings on the Internet are namely user generated content, standardization, openness, rich user experience, remixability of data, and participation (Angermeier 2005). The web and all its connected devices are regarded as one global platform of reusable services (Omidyer 2006, O’Reilly 2005), partly even equating the whole term to statements like: “Web 2.0 is an attitude, not a technology” (Davis 2005). A prominent example for Web 2.0 application is Google Maps where all mentioned trends can be observed: rich user experience is given as users are able to switch from map view to satellite or even to hybrid view. Directions and detailed maps overlay the base map so one has all information at a glance. Users are able to create personalized maps and discuss them with others, e.g. when planning a trip. It is possible to add context information (e.g. comments or even pictures) to such maps. Traffic information can be obtained from other online services by using standard interfaces for data exchange. Maps and directions can also be shared with other applications, e.g. as download to devices like PDAs or navigation systems, or as online service within Web portals.

Although there are already many Web 2.0 applications, only few authors analyze Web 2.0 and its effects on e-commerce scientifically. In order to provide a definition Treese (2006) discusses four characterizing elements of Web 2.0: interactivity, social networking, tagging, and Web services (Treese 2006). Millard and Ross (2006) compare Web 2.0 systems with important technical challenges that have been identified by the hypertext research community in the past. These challenges include issues related to composite structures, versioning, collaboration and search (Millard and Ross 2006). The result is that Web 2.0 especially supports content search, dynamic content, annotations, personalization and extensibility. There is little support for versioning or structural search. Therefore, it can be summarized that systems based on Web 2.0 are not suitable to build up a structured network but provide a more flexible, lightweight, and responsive approach for a Web-based platform.

In order to structure the indicated variety of elements associated with Web 2.0 a first distinction between technological and behavioral elements can be made. Whereas technological elements describe technical trends and advancements, behavioral elements characterize trends and effects concerning the use of the Web as a platform. Technological elements enable and improve Web usage, behavioral elements further encourage it. They reflect a changed attitude of users towards the Web and cover different social motivations like self-realization, network effects, or aesthetic-emotional benefits.

Technological elements can be divided into four sub-categories: physical access, contextual access, presentation standards, and open interfaces. Physical access includes broadband access, higher storage capacities, increased processing power, availability of multiple devices and mobility networks. Techniques like faster search and caching algorithms as well as tagging and tracking approaches improve contextual access of Web resources. Presentation and media standards, e.g. AJAX, CSS or Flash movies, allow rich user interfaces but also rendering for multiple devices. Finally, open interfaces like Web Services
provide access to functionality and data over the Internet. Behavioral elements include three categories: content exchange, content generation and collaboration. Content exchange, like file sharing or mashups, describes the online exchange and re-use of existing data whereas content generation describes phenomena like blogs or wikis where users, voluntarily and free of charge, generate content to share it with other users. Collaboration covers all user action of the Web that targets at e.g. networking, dating or joint development of software.

Although behavioral trends are often dependent on technological trends they additionally add value to Web usage. In order to identify and assess added values generated by the introduced technological and behavioral elements of Web 2.0 the concept of EAVs will be used. As EAVs provide a fine-granular approach, all mentioned elements of Web 2.0 are mapped to at least one of them. Table 1 shows which EAVs can be realized by certain Web 2.0 elements.

Better access and storage is mainly achieved by technological advancements in the fields of physical and contextual access. Access to information is also facilitated by content exchange and generation. Additionally, content exchange reduces access restrictions on certain types of information. Unrestricted access may also be achieved by standards for content presentation and open interfaces. Collaboration activities like open source programming improve standardization of data and functionality. As storage of and navigation through the continuously growing volumes of data are possible, small sites that make up the bulk of the Internet’s content can be found and accessed. Content exchange and collaboration sites encourage users to interact and lead to a higher diversity of online offers. Valuable data for other users may also be automatically generated by tracking and analyzing user behavior. Physical access and rich user interfaces add value in form of multi-mediality. Frequent use of online media through content exchange and generation leads to a higher impact of multi-mediality as well as further development of suitable technologies.

<table>
<thead>
<tr>
<th>EAV</th>
<th>Access &amp; storage</th>
<th>Standardization &amp; unrestricted access</th>
<th>Interaction</th>
<th>Multi-mediality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web 2.0 elements</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technological</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical access</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Contextual access</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Presentation and Media Standards</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Open Interfaces</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Behavioral</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Content Exchange</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Content Generation</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Collaboration</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Given these technological and behavioral characteristics of Web 2.0 an enlarged added value potential can be noticed compared to the previous stage of Web usage and technology that can be termed as Web 1.0. Figure 2 shows this increase of each added value graphically. The increase of added values is lower for standardization than for the other types because Web standards have been available in Web 1.0 for several years but haven’t been used as extensively as in Web 2.0. Especially the behavioral elements of Web 2.0 realize interaction-related EAV. Therefore, the highest increase can be noticed in our perception.
As impacts of the interactivity development for social focused business models such as virtual communities and effects of the multi-mediality development for media sites such as YouTube are quite evident, the influence on e-commerce business models is little analyzed. An area in e-commerce that leverages the emerging diversity out of the increasing space and access, product modifications through interaction is MC. Thus, in the following section, the concept of MC is introduced with a view to identify the potential of Web 2.0 on business models in MC scenarios. Furthermore the section serves as a basis for the introduction of an adoption framework that represents the added value through Web 2.0 for MC products and processes.

**Mass Customization**

MC requires a synthesis between mass production and the production of highly specialized and individualized products. It aims at the production of individual products with high quality at cost factors typical for mass production and comparable short delivery time (Pine 1993, Pine et al. 1993). Only recently, however, Mass Customization has emerged as a new paradigm that challenges the traditional trade-off between mass production and mass marketing versus customization and one-to-one marketing. The oxymoron ‘Mass Customization’ was coined by Davis (1987) in his book Future Perfect and refers to the process by which companies apply manufacturing and information technology and management methods to tailor goods and services to customers individual needs, at the low cost of standardized mass produced products (Davis 1987, Kotler 1989, Pine et al. 1993).

In order to analyze the impacts of Web 2.0 on MC, it is necessary to analyze the value creation process of MC scenarios. Creating a customized product differs significantly from producing mass products particular by placing the product configuration to the beginning of the production process. Figure 3 depicts the *MC macro process* as introduced in Rautenstrauch (1998) as a basis for describing the value creation process in MC scenarios. The process starts with the configuration of the desired product by the customer. After that, it is necessary to check which parts or assemblies can be produced by the manufacturer and which must be acquired. For parts that must be acquired individual attributes may possibly also have to be taken into account. In such a case, the manufacturer becomes a customer with individual requirements with regard to certain suppliers. The same may happen to some of these suppliers with regard to their suppliers.

![Figure 2: Enlarged added value potential through Web 2.0](image)

![Figure 3: MC macro process (Rautenstrauch 1998)](image)

Acquisition is followed by the production of individual products. Ad hoc generated bills of material and work schedules provide the data basis for production. This implies that long- and mid-term overall planning in the usual sense is unsuitable for
MC, since realistic parameters cannot be determined due to high uncertainties with regard to products that must be produced in a longer planning period. The process is completed through the physical distribution.

Although the changes taking place by applying MC strategies refer to all steps of the aforementioned MC macro process, the relevance of the replacement of the product configuration to the beginning of MC macro process and therefore the changes taking place at the customer interface has to be emphasized. Since customers expect raising individualization of products, a growing influence of customers in the value creation process is necessary. For enabling advanced individualization and customer integration the development of Electronic Commerce (e-commerce) and the advancement of the Internet and its growing performance is vitally important. For example, Lampel and Mintzberg (1996) considered electronic networks involving buyers, producers and suppliers as an essential prerequisite for the implementation of MC (Lampel and Mintzberg 1996). Most authors in the field of MC and e-commerce agree in this, as for example (Lee et al. 2000, Piller et al. 2004, Ansari and Mela 2003).

However, when analyzing the impact of e-commerce techniques like Web 2.0 on MC potential, also the kind of product or service for which it is applied is of particular importance (Kumar 2004). It seems apparently, that a business model based upon full digitalized products can take greater profit from e-commerce innovations than a non-digitalized product can. For a structured analysis of the differences based upon the product types we introduce a classification of product types arising from (Bazijanec et al. 2004). Products can be divided into digitizable products and non-digitizable products. Digitizable products are those, where all steps of production can be done by data exchange whereas non-digitizable products represent products whose production process contains physical products or parts. Digitizable products can be divided into action and information. The category information represents the offering of data, e.g. news services. Activities that process, manipulate, transform, select, or systematize data are contained in the category action. Activities that use digitally encoded data (e.g. online translation services) or those who classify, search, select or mediate offers (e.g. search engines) or that combine several other offers to one, probably with the use of personalization, belong to this category. Non-digitizable products can be tangible (e.g. classical goods like automobiles) or intangible (e.g. classical services like financial services). Table 2 illustrates the four aforementioned product types.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Attribute</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digitizable-product</td>
<td>Information Media</td>
<td>News services</td>
</tr>
<tr>
<td></td>
<td>Action</td>
<td>Search engine</td>
</tr>
<tr>
<td>Non-digitizable product</td>
<td>Intangible</td>
<td>Financial service</td>
</tr>
<tr>
<td></td>
<td>Tangible</td>
<td>Automobile</td>
</tr>
</tbody>
</table>

According to these product types, a diverse utilization of MC can be observed. The MC paradigm is particularly well suited to electronic marketplaces, where digitizable products can be tailored to the individual customer’s needs at virtually no incremental cost. By giving the buyer the opportunity to select from a wide range of alternatives over different attributes, the seller can provide a customized product or service to each individual buyer, while maintaining the marginal production cost at a negligible level. Like many examples in the e-commerce environment demonstrate, MC has reached a strong dispersion for digitizable products. In contrast, MC for non-digitizable products has not been as widely developed. Though there are many examples of individually configurable non-digitizable products nowadays, individualization comparable to digitizable products cannot be ascertained. Reasons for this purpose can be identified in problems like e.g. complexity and raising costs that companies have to face when applying MC. However, also for companies producing non-digitizable goods, the development of e-commerce techniques enhances the potential of using MC cost-effectively and economically. For example, information technologies implemented at each of the business process levels can enable the capturing of precious information on the visitor/buyer such as his or her demographic profile, preferences and biases. The seller can then on the one hand leverage this information to add value to the customer’s exchange process. On the other hand, the additionally gathered information can be used for reducing complexity by producing better matching products. In other words, cost effective customization can occur at every level of the e-commerce business processes (Basu and Muylle 1999). In this way, prohibitive switching costs can be built and the company can achieve a sustainable competitive advantage by differentiating itself relative to its competitors, based on the information it has on the customer (Basu and Muylle 1999).
Adoption framework for Web 2.0 impacts on MC business models

As explained before, opportunities of the enlarged Web 2.0 added values will depend on the product category and the step in the MC macro process. Therefore, to explain the concrete impacts of Web 2.0 on MC, the process steps of the MC macro process will be related to the product types introduced above. The resulting 16 fields (each product type in each process step) represent the basis, on which the influences of the identified EAVs of Web 2.0 on MC are researched. In other words, all four Web 2.0 EAVs are examined in all 16 fields resulting to 64 sub-fields. Figure 4 shows the resulting adoption framework that represents the added value through Web 2.0 for MC products and processes.

![Figure 4: Added value through Web 2.0 for MC product and process](image_url)

The adoption framework points up, that in all stages of the MC macro process the additional EAVs through Web 2.0 can be used, even if they are varying in type and strength. Starting from the different product types, the effects of the additional EAVs through Web 2.0 on MC will now be described.

Considering the product type information/media EAVs are beneficial in all process steps. Especially, configuration is facilitated because capabilities of Web 2.0 with regard to access, multi-mediality and interaction allow previewing a selected product, e.g. by reading an article abstract or viewing a movie trailer. Best configuration results are achieved if potential customers are not hindered by obligatory use of proprietary presentation formats or incomplete product descriptions. Ratings generated by other customers help to better assess product features and quality. An increase in interactivity also enables new opportunities for users to give advice on specific product configurations to other users or the producer, e.g. through tagging functionality. The same is true for the acquisition step as specific parts of the customized product have to be retrieved from suppliers’ sites. Interface and transmission standards play an important role to facilitate data exchange. The production step for information or media content can be fully automated if all product parts are accessible and can be put together using defined interfaces, e.g. putting all parts on a Web server and providing access over a web site. Finally, distribution requires user access for the selected digital channel and a compatible viewer or player for the downloaded content.

Digitizable products that provide some kind of action or service on the Internet also benefit from almost all EAV types. Since there is hardly a difference in the configuration of digital content and digital service this process step shows nearly identical characteristics with regard to multi-mediality, access and interaction. Only the benefit of standardization is not as high as for information and media products since no content is provided that is stored permanently on the customer’s side for offline access. The user typically needs one-time online access, e.g. for getting driving directions or translating a foreign language expression. Benefits in production and distribution are mainly derived from multi-mediality and access.

To point out some of the EAVs of Web 2.0 on digitizable products, the example of a customized news service is introduced next. In a customized news service a consumer will receive personal news according to his preferences e.g. with regard to topics, regional focus, timing, media type or preferred device. In the Web 2.0 terminology, information services, combining information from different third party sources, are called *mashups* (Gipson 2006). A so called customized mashup could e.g.
contain hourly business news on specific companies, personal stock updates, information about the local neighborhood and niche sports that usually would require research on several websites. In comparison to standard news websites, mashups tailoring news from multiple sources would add the value of being completely customizable to the consumer’s information needs and consumption habits. Growing interactivity, especially the behavioral change through Web 2.0 of switching from the consumption mass media to personalized services will be the core enabler for this business model. User ratings on specific information or information sources are a further leverage of Web 2.0’s interactivity trend. Using the gain in multi-mediality could even turn into personalized newscasts, combining sections from different news channels. Access through new, especially mobile devices, allows additional added values in the configuration and distribution phase. Through the Web 2.0 development mass newspapers, radio newscasts and TV newscasts can merge into one customized news service, allowing people to access new and more information with a much higher degree of relevance at a much shorter period of time.

As described above, non-digitizable products can be tangible (e.g. classical goods like automobiles) or intangible (e.g. classical services like financial services). For intangible products, EAVs are advantageous primarily in the configuration and acquisition phase particularly by increased multi-mediality. In the electronic configuration process configuration and consulting tools play a major role. Enlarged access and storage in combination with more intense usage of search engines allow consumers to find niche products, at the same time niche-producers can get consumer access through these search engines without the necessity of expensive brand building, fueling the so called ‘long tail’ effect. An increase in interactivity enables new opportunities for users to give advice on specific product configurations to other users or the producer, e.g. through tagging functionality. For the acquisition process EAVs can result in more interactive extranets or enterprise integration networks that allow better process flows and better on time information.

Analog to intangible products, tangible products could also benefit from the EAVs of Web 2.0 eminently in the configuration and acquisition process. A product configuration system for example could display comments of users or clients with recommendations on certain configurations – a conversation that is currently held on user communities outside of the car manufacturers’ sites (Piller et al. 2005). Rich media allows a better presentation of the configuration alternatives, e.g. through animations or video streams of the configured product. Voice support could be used to explain complex configurations and animations can explain procedures, e.g. how to take measures for customized textiles. The configuration of complex products like cars usually requires deep product knowledge to arrive at the best fit for the customer. For those online configuration systems Web 2.0 will allow much better consulting functions leveraging especially increased interactivity and multi-mediality.

Conclusions

Basis for each business model is the definition of the added value a business generates. The opportunities to generate added values are significantly influenced by technical and behavioral trends. EAVs have been the driver for most of the business models in the Internet area, the Web 2.0 development further enlarges the potential of EAVs. Technical trends enable new forms of interaction, lower access, and a new dimension of multi-mediality through e.g. the transmission of video and push services. Especially behavioral trends encourage users to interact, generate content themselves and lead to a new level of openness in standards and development processes.

Due to the outstanding importance of e-commerce for MC, the impacts of Web 2.0 on new business models were analyzed in the context of MC scenarios. For structuring the Web 2.0 influences to different phases of value creation in MC, the MC macro process has been adopted. Furthermore, the Web 2.0 influences were analyzed for different types of products, namely digitized and non-digitized products. As a focal point an adoption framework was introduced that combines the influences of Web 2.0 on business models in MC dependent on different product types and the particular value creation step.

The outcome of the analysis showed strong impacts for configuration stage, where increased interactivity will build the basis for a change in user behavior towards taking time and effort of adjusting and tailoring goods instead accepting mass productions. According to the analysis, impacts on the further MC macro process steps depend on the product characteristic: The analysis shows major gains mainly for digitizable products throughout all stages of the MC macro process. For non digitizable products major gains can be expected mainly in the configuration phase, while other phases show rather small impacts.

As it was shown, the development of e-commerce and thus the EAVs of Web 2.0 are of great importance for the development of MC. A core characteristic of MC is the increasing user integration in the value creation process – in parts even in the creation of the supply chain – for producing higher individualized products. Simultaneously companies adopting MC often face an increasing product complexity and thereby increasing production costs. Rightly utilized, the additional EAVs of Web 2.0 can enable companies to e.g. gather more reliable customer data or to intensify the customer contribution within the value
creation process. Recapitulating the Web 2.0 effects on MC it can be stated, that properly used Web 2.0 techniques can attain more worthwhile MC or even enable completely new MC business models such as e.g. personalized digital new services. Future work will examine frameworks and requirements for the value architecture in a Web 2.0 environment. Anymore, the effects of Web 2.0 on MC will be examined further with use of case studies. The analysis of this work is currently based on a qualitative assessment of Web 2.0 enlarged added value potential and its impacts on MC. The qualitative approach presented in this paper will be expanded by a quantitative approach. Ambition of this research is the development of reliable ex-ante adoption frameworks as also ex-post assessment frameworks that are able to appoint the quality of business models.

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