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# A framework for assessing Web 2.0 customer interaction maturity: The case of the banking industry

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**A framework for assessing Web 2.0 customer  
interaction maturity:  
*The case of the banking industry***

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**Abstract**

*Web 2.0 applications change future customer interaction. This paper develops a framework that enables companies to assess their current stage of Web 2.0 maturity. It enhances existing approaches by adding customer-focused Web 2.0 design patterns and applies it at the case of six top-ranked international banks. The results reveal that the potentials of customer-bank interaction through Web 2.0 within the banking industry are not fully tapped yet.*

**Keywords:** Web 2.0, Social Media, Web 2.0 maturity, design patterns, financial industry, banks

**1 Introduction**

Web 2.0 applications enable new ways of customer interaction. They are expected to better align companies' activities along customer needs (O'Reilly, 2005). Customers for example use social networks, in order to compare sentiments of friends and other networked people about

certain companies, products or services. And some already use value added services, such as customer advisory, over those networks. ASB Bank in New Zealand for example, advises their customers over Facebook instead of using traditional bank branches.

In the financial industry, electronic channels complement or even substitute traditional offline channels. A study of (Cortiñas et al., 2010) shows for the Spanish market that most of a bank's customers (97%) have a multi-channel behaviour. 52% of these customers use physical banks and ATMs and approximately one third more (88%) use the online channel additionally. The growing importance of electronic channels is confirmed by studies of (Anand, 2011), (Hoppermann, 2011) and (McKinsey, 2010), too. With the further growth of the so called "digital natives", the relevance of those channels will tend to rise even more. Customers apply services from different channels and even switch channels during a process (Albesa, 2007). They combine all available channels in their best way (Dapp, 2011).

The use of Web 2.0 applications in customer interaction is becoming crucial to assure customer-centric business models and even allows new ways of approaching the customer (Musser & O'Reilly, 2007). Therefore, the research of this paper concentrates on the following question:

*What elements does a framework for assessing Web 2.0 customer interaction have and which maturity do banks have regarding the use of Web 2.0 applications?*

Web 2.0 applications were widely discussed in literature (e.g. Mettler, Rohner & Winter, 2010; Musser & O'Reilly, 2007, Chiang et al., 2009; Back & Haager, 2011). Musser and O'Reilly (2007) and also Back and Haager (2011) developed concepts to measure the maturity of Web 2.0 product websites based on Web 2.0 principles and patterns. But the existing approaches show the following limitations:

- *Maturity focus:* The model of Musser & O'Reilly (2007) for example includes 150 questions around the Web 2.0 principles and patterns. But those questions are limited for assessing different companies' maturity in Web 2.0 application.
- *Customer focus:* The focus of maturity models, such as e.g. Back and Haager (2011) which is mainly based on O'Reilly's (2005) patterns focuses on product websites and excludes customer-oriented design patterns, such as e.g. the use of social networks (e.g. Facebook, Twitter etc.).

This paper enhances existing approaches concerning maturity and customer focus and provides the following benefits for researchers and practitioners:

- *For researches,* it matches the existing approaches of Web 2.0 design patterns and provides an enhanced framework for the assessment of Web 2.0 applications with a focus on customer interaction.
- *For practitioners,* it provides a framework to assess their own online customer-interaction channels against other, international competitors and thus allows banks to define a roadmap for future development.

The paper is structured in four sections. Section 2 provides a literature review of existing Web 2.0 approaches. Section 3 presents an enhanced framework for measuring companies' Web 2.0

development stage in customer interaction. This framework is then applied to the banking industry, in order to show the current state-of-the-art of Web 2.0 application usage at banks. Finally, section 4 draws conclusions and summarizes the key findings.

## 2 Literature Review

### 2.1 Web 2.0 and Web 2.0 design patterns

The Term “Web 2.0” has been coined by Tim O’Reilly in 2004 and describes a wide variety of differing concepts, technologies, principles and patterns (O’Reilly, 2005). Web 2.0 and its patterns have been variously discussed in literature but a generally definition is still missing (Stevens, 2006; Böhring, 2011; Kilian, Hass & Walsh, 2008). Most of the approaches refer to the work of O’Reilly (2005), Musser & O’Reilly (2007) respectively Governor et al. (2009) who define the major design patterns for Web 2.0. The definition of O’Reilly (2005) shows that the Web 2.0 is a hard to delimit concept with a clear focus on Web 2.0 design principles and patterns. Definitions of design patterns can be found among different authors and there are many and different design patterns depending on the field of application represented (e.g. Pree, 1995; Ahmad & Saxena, 2009; Cooper, 2000, Coplien & Schmidt, 1995). This allows establishing particular design patterns in the software engineering, where they describe solutions for software design problems (WIKLET, 2010). With reference to these authors, our purpose a design pattern is the abstract description of a solution related to a recurrent problem within a certain context. Design patterns offer a template, which describes subsystems as well as components of the system and the relations among them (Ahmad & Saxena, 2009; Kohls, 2008; Cooper, 2000).

Neither Musser and O’Reilly (2007) nor Governor et al. (2009) clearly define the term Web 2.0 design pattern. Due to the author’s understanding of a Web 2.0 design pattern, it solves a recurrent problem in a Web 2.0 environment and is furthermore strongly based on the Web 2.0 attributes “massively connected”, “decentralized”, “user focused”, “open”, “lightweight” and “emergent” (Ahmad & Saxena, 2009; Kohls, 2008; Cooper, 2000 , Musser & O’Reilly, 2007).

Author	Web 2.0 design patterns
O’Reilly (2005)	<ul style="list-style-type: none"> <li>▪ The web as platform</li> <li>▪ Harnessing collective intelligence</li> <li>▪ Data is the next intel inside</li> <li>▪ End of the software release cycle</li> <li>▪ Lightweight programming models</li> <li>▪ Software above the level of a single device</li> <li>▪ Rich user experiences</li> </ul>
Musser & O’Reilly (2007)	<ul style="list-style-type: none"> <li>▪ Harnessing collective intelligence</li> <li>▪ Data is the next intel inside</li> <li>▪ Innovation in assembly</li> <li>▪ Rich user experiences</li> <li>▪ Software above the level of a single device</li> <li>▪ Perpetual beta</li> <li>▪ Leveraging the long tail</li> <li>▪ Lightweight models and cost effective scalability</li> </ul>

Governor et al. (2009) <sup>1</sup>	<ul style="list-style-type: none"> <li>▪ Software as a service</li> <li>▪ Participation-collaboration</li> <li>▪ Mashup</li> <li>▪ Asynchronous practice update</li> <li>▪ Rich user experiences</li> <li>▪ The synchronized web</li> <li>▪ Collaborative tagging</li> <li>▪ Declarative living and tag gardening</li> <li>▪ Semantic web grounding</li> <li>▪ Persistent rights management</li> <li>▪ Structured information</li> </ul>
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Table 1: Literature review of Web 2.0 Design Patterns

The literature review discloses that Web 2.0 design patterns are continuously developing and therefore characterize the evolution of the internet (see table 1). As O’Reilly & Battelle (2009) have mentioned the next step in the evolution of Web 2.0, we will distinguish 11 Web 2.0 Design Patterns which represent the current practice. Figure 1 shows how these 11 Web 2.0 design patterns were derived from literature review. The discovered Web 2.0 design patterns from literature are being assessed through its applications within leading Web 2.0 companies. The leading Web 2.0 companies were retrieved from Alexa Traffic Rank (2012), as top Web 2.0 websites. Furthermore companies that have been identified as especially relevant from Musser & O’Reilly (2007) within the development of their Web 2.0 design patterns have been added as well. This leads to a stronger diversification of industries. The 11 design patterns in a second step were also checked against the following Web 2.0 website benchmarks: Facebook, Youtube, Amazon, eBay, Wikipedia, Yahoo, Delicious, MySpace, Google, Eventful, Flickr (Alexa, 2012). Table 2 defines the identified design patterns.

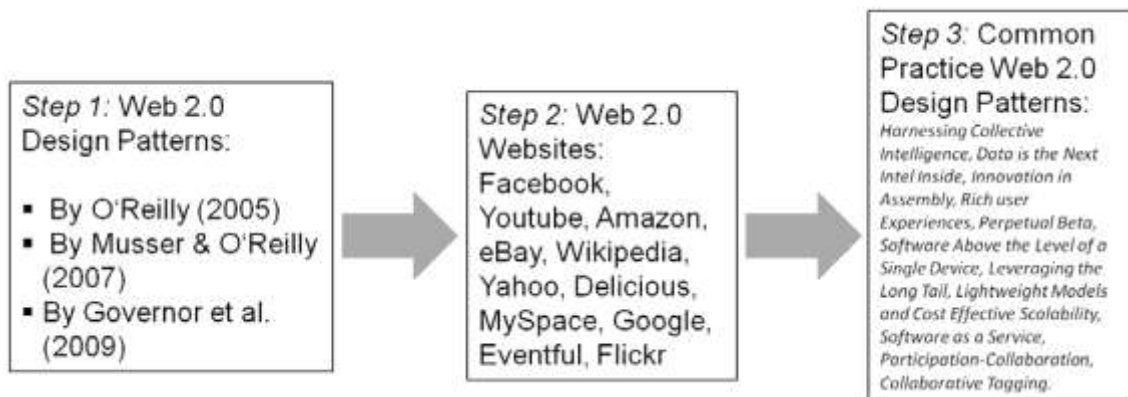


Figure 1: Methodology for the definition of Web 2.0 design patterns

<sup>1</sup> Governor et al. (2009) identified the pattern „Service-Oriented Architecture“, not as Web 2.0 design pattern due to its very high level of abstraction. It was rather identified as Web 2.0 architectural pattern and therefore has not excluded in this paper as well.

Web 2.0 Design Pattern	Description
Harnessing Collective Intelligence	“Create an architecture of participation that uses network effects and algorithms to produce software that gets better the more people use it” (Musser & O’Reilly, 2007, p. 10).
Data is the Next Intel Inside	“Use unique, hard-to-recreate data sources to become the “Intel Inside” for this era in which data has become as important as function” (Musser & O’Reilly, 2007, p. 10).
Innovation in Assembly	“Build platforms to foster innovation in assembly, where remixing of data and services creates new opportunities and market” (Musser & O’Reilly, 2007, p. 10).
Rich user Experiences	“Go beyond traditional web-page metaphors to deliver rich user experiences combining the best of desktop and online software” (Musser & O’Reilly, 2007, p. 10).
Perpetual Beta	“Move away from old models of software development and adoption in favor of online, continuously updated, software as a service (SaaS) models” (Musser & O’Reilly, 2007, p. 10).
Software Above the Level of a Single Device	“Create software that spans Internet-connected devices and builds on the growing pervasiveness of online experience” (Musser & O’Reilly, 2007, p. 10).
Leveraging the Long Tail	“Capture niche markets profitably through the low-cost economics and broad reach enabled by the Internet” (Musser & O’Reilly, 2007, p. 11).
Lightweight Models and Cost Effective Scalability	“Use lightweight business- and software-development models to build products and businesses quickly and cost-effectively” (Musser & O’Reilly, 2007, p. 11).
Software as a Service	“SaaS delivers computational functionality to users without them having to persist the entire application or system on their computers” (Governor et al., 2009, p. 4).
Participation-Collaboration	“The Participation-Collaboration pattern focuses on self-organizing communities and social interactions among Web 2.0 participants. It embraces reuse of content, fractional updates or contributions to collective works, the constant beta, trusting your users, and making the user a core part of the architecture and model for Web 2.0” (Governor et al., 2009, p. 4).
Collaborative Tagging	“Commonly referred to as folksonomy, a term coined by Thomas Vander Wal, Collaborative Tagging refers to the ability of users to add “labels” (or tags) to link resources with semantic symbols that themselves are grounded in a conceptual domain (ontology)” (Governor et al., 2009, p. 5).

Table 2: Definitions of the Web 2.0 Design Patterns

## 2.2 Web 2.0 Assessment Models

Web 2.0 assessment models define the level of adoption of Web 2.0 applications that companies have reached (Musser and O’Reilly, 2007; Chiang et al., 2009)). Musser and O’Reilly (2007) developed a Web 2.0 assessment model. This Web 2.0 assessment model is structured in open questions followed by the former eight Web 2.0 design patterns “Harnessing Collective Intelligence”, “Data is the Next Intel Inside”, “Innovation in Assembly”, “Rich User

Experiences”, “Software Above the Level of a Single Device”, “Perpetual Beta”, “Leveraging the Long Tail”, “Lightweight Models” and “Cost-Effective Scalability”. Although, this model includes design patterns for Web 2.0 applications, the open questions are not suitable for assessing a company’s website. The model is based on over 150 questions to be answered that provide no scale for assessing different stages of maturity in Web 2.0 application adoption. Musser and O’Reilly’s (2007) model targets rather products and not the company’s webpresence and based on the eight gathered Web 2.0 design patterns.

As the literature review showed, existing maturity models, such as e.g. the model from Back & Haager (2011) are primarily focused on product websites. It does not consider customer-facing Web 2.0 applications, such as e.g. social media, etc. Additionally, this model exclusively refers on O’Reilly’s Web 2.0 principles and patterns (O’Reilly, 2005) and does not include other design patterns. This product centricity is also the major focus of other research, such as e.g. from (e.g. Chiang et al., 2009).

The following framework for the assessment of Web 2.0 application use in customer-facing processes has the following requirements:

- Literature review on state-of-the-art in Web 2.0 design patterns with respect to all relevant literature in this area.
- Provide a framework that allows companies to assess Web 2.0 application adoption not only for product-centric websites, but also in customer-interaction.
- To offer banks a current state-of-the-art analysis in Web 2.0 adoption, such as UBS, Deutsche Bank, Bank of America, etc.

### **3 Framework for assessing Web 2.0 maturity in customer interaction**

#### **3.1 Web 2.0 Framework**

The following chapter shows the enhanced framework for assessing the adoption of Web 2.0 applications in companies. It aggregates the evaluated Web 2.0 design patterns from chapter 2 and structures them according to specific criteria, which enable companies to qualitatively assess their Web 2.0 adoption. These criteria are deviated from practice (Facebook, Youtube, Amazon, eBay, Wikipedia, Yahoo, Delicious, MySpace, Google, Eventful, Flickr (see also Chapter 2; (Alexa, 2012)). Each criterion can be assessed on a scale from 0-3. The rating scale is defined as followed:

- “0” means no implementation of a specific Web 2.0 design pattern on an assessed company’s website. This means the company has not yet launched this Web 2.0 pattern.
- “1” means a low implementation of a specific Web 2.0 design pattern. Only weak approaches for an implementation can be observed, but the approaches are still rather immature.
- “2” means a medium implementation a specific Web 2.0 design pattern. This level is mainly distinguished from level 1 through a structured approach.

- “3” stands for a fully implemented Web 2.0 design pattern. The company understands and uses a specific Web 2.0 concept. Additionally it harnesses its full potential.

The calculated sum of all Web 2.0 design patterns enables companies to evaluate the overall Web 2.0 adoption of their websites. The authors distinguish 3 different stages of a website. This classification is based on the six levels of Forrester's Social Technographics Ladder of Participation (Forrester Research, 2007) as key factor for Web 2.0 webpresence:

**Inactives** (SUM of 0-24): This level is the lowest. The company uses no active Web 2.0 applications. Therefore Web 2.0 design patterns have only partially been implemented. Customer interaction is reduced to static information retrieval, such as e.g. reading financial information.

**Collectors** (SUM of 25-48): The level of the “collectors” enables more interaction between the customer and a company through the website. This is provided by interactive content, such as e.g. publishing consumer reviews of products and services. Collectors activate their users and provide e.g. external social media platforms. They understand the Web 2.0 as a concept to find the best way to interact with the customer.

**Creators** (SUM of 49-72): Creators stand for the highest level of web 2.0 websites and have a maximum of user involvement. Creators are innovative and support the customer always with the latest Web 2.0 applications. Therefore, creators have a clear Web 2.0 strategy and future roadmap to interact with their customer.

### **3.2 Measuring Web 2.0 maturity at banks**

In order to measure the current state-of-the-art of Web 2.0 adoption at banks, the six largest banks from Switzerland, Germany and the USA with an international focus were chosen based on their size regarding their balance sheets:

- Switzerland (SNB, 2012): UBS AG and Credit Suisse AG
- Germany (Bankverband, 2012): Deutsche Bank and Commerzbank
- USA (National Information Center, 2011): Bank of America and JPMorgan Chase & Co.

The region for the selection is based on the list of top innovative countries. The three selected countries represent each segment of the top 15 most innovative countries (Switzerland = top segment, USA = second segment, Germany = third segment) (Dutta, 2011).

The 6 banks were assessed regarding their Web 2.0 adoption with the use of the framework developed in this research. The assessment was made within a two-step-process. First step was a rigorous iterative procedure developing the different levels of adoption. The second step consisted of independent assessment of the defined banks webpresence referring to the principle of triangulation. After independent assessments differences were deeply discussed and could be corrected by the three raters.

Table 3 gives an overview of the results. The results reveal that the potential of customer-bank interaction through Web 2.0 applications in the banking industry is not fully tapped yet. The assessed banks have launched Web 2.0 activities to intensify customer interaction. Especially Deutsche Bank and Bank of America are pioneers in implementing Web 2.0 design patterns.



Deutsche Bank and Bank of America as Collectors with a SUM > 24 have started adopting Web 2.0 design patterns but have not yet fully committed to the Web 2.0 concept. On the other hand, UBS, Credit Suisse, Commerzbank and JP Morgan Chase & Co. are classified as Inactives (SUM < 25). Due to the results, these banks do not use Web 2.0 design patterns to reach the customer and no bank is classified as a Creator. JP Morgan Chase & Co. falls in the last position. Although, JP Morgan Chase & Co.'s already launched a Facebook site and a Youtube channel, the website does not fulfil the Web 2.0 criteria.

Generally, the assessed banks do not offer the possibility of participation (e.g. chats, reviews) of customers directly on their websites. They rather offer alternative platforms such as Facebook and Twitter for the active interaction with the customer. Only by linking the opportunities of participation to other platforms, it is possible for customers to help shape existing content and develop services. Due to the assessment, it can be stated that the banks mainly use Facebook, Twitter and Youtube as social media platforms for customer interaction. However they use these possibilities only for marketing activities, instead of connecting those channels with their sales and service processes. With these social media channels, the customer has the possibility to "like" statements from the bank, nevertheless enhanced processes, such as e.g. advisory, etc. through these channels is not possible, yet. Also notable is, that the banks integrate Application Programming Interface (API) in terms of icons of the specific social media platforms to redirect the customer to the relevant page. APIs are a set of protocols, routines and tools to build software applications (Richter & Koch, 2007).

Dynamic elements and the provision of services on different devices support the usability of banks' websites. Some banks already provide their services through mobile apps. The banks offer mobile apps for self-services (e.g. account opening) and other customer-related processes. The customer for example can retrieve the account balance through such a mobile app. The stronger assignment of APIs would contribute to more flexibility, whereat banks on this point still tend to be very cautious.

Another important element of customer centricity is collaboration platforms, which provide the ability to gain customer data through partners and use documented customer history (Data is the next Intel inside). Deutsche Bank for example integrates APIs from collaboration partners (e.g. outside of their particular sector of industry, such as Google) on their website. Therefore, Deutsche Bank is able to capture customer all relevant data.

Web 2.0 Design Pattern		UBS AG	Credit Suisse AG	Deutsche Bank	Commerzbank	Bank of America	JP Morgan Chase & Co.
<b>Participation-Collaboration</b>							
	The company uses applications (e.g. chat) that allows the consumers to come into contact with other consumers (provides a collaboration platform like Facebook, Youtube)	1	2	3	1	3	1
<b>Harnessing Collective Intelligence</b>							
	User-generated content is published unfiltered.	1	2	3	1	3	1
	The company gives the user the opportunity to shape existing content (e.g. upload of own photos etc.)	1	2	2	1	2	1

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<b>Data is the Next Intel Inside</b>						
	The company ensures that the user can combine new products and services (e.g. mass customizing)	0	0	0	0	0
	The company collects and documents information about the user (behaviour, etc.) via Web 2.0 applications (reviews, etc.)	1	1	2	1	2
<b>Innovation in Assembly</b>						
	The company uses APIs from other providers (e.g. route planner, etc.) and integrates them into the company's website	1	1	2	1	2
<b>Rich User Experience</b>						
	The corporate website is dynamically built (e.g. dynamic menus, feedback, etc.) and is supported by Ajax	1	2	2	0	2
	The applications on the web pages can be personalized by the users	0	0	0	0	0
	The company offers services which have a high usability (e.g. uncomplicated download of products, quick help with questions)	1	2	2	1	2
<b>Perpetual Beta</b>						
	The company analyses user behaviour and deviates appropriate measures (e.g. the removal of rejected elements software issue)	0	1	1	0	1
	The company website and the services are continuously incrementally developed (e.g. release of innovative services and products)	1	2	2	1	2
	New features are tested by the users themselves (e.g. the company invite the customer to (also with a competition) to test the products and give feedback)	0	0	0	0	0
<b>Software Above the Level of a Single Device</b>						
	Users have the ability to access the services through multiple channels and devices (e.g. browser, smartphone)	1	1	2	1	2
	The different types of content are synchronized across all channels (e.g. each information by each channel)	1	1	1	1	1
	The usability of the service is provided across all channels (e.g. download of information is quickly)	1	2	2	1	2
<b>Leveraging the Long Tail</b>						
	The company offers niche products (e.g. the customer search for a long time and find the product or service only by the specific company)	0	0	0	0	0
	The company offers its users self-service	0	1	1	0	1
<b>Lightweight Models and Cost-Effective Scalability</b>						
	The company provides its users with Web 2.0 technologies (e.g. RSS feeds, wikis or blogs)	1	1	3	1	1
	The company has a scalable pricing model (the user only pays what he has effectively used)	0	1	1	1	1
	The users help to develop the company's website (e.g. through APIs)	0	0	1	0	2
<b>Software as a Service</b>						
	The web services will be offered that production and consumption of the services coincide at the same time	0	1	1	0	1
	The company offers services that are independent of any operating system	1	1	1	1	2
<b>Collaborative Tagging</b>						
	The company provides the common indexing of relevant topics	0	0	3	0	0
	The user finds relevant information on a topic through predefined tags	0	0	1	1	0
<b>SUM</b>		<b>10</b>	<b>18</b>	<b>27</b>	<b>11</b>	<b>25</b>

0 No implementation    1 Low implementation    2 Medium implementation    3 Full implementation

Table 3: Results of the analysed Web 2.0 adoption of the 6 bank's websites (date of assessment: January 10<sup>th</sup>, 2012)

## 4 Conclusion and Reflection

This paper developed a framework for the measurement of the use of Web 2.0 applications. This framework extends existing approaches by (1) bringing together all relevant Web 2.0 design patterns from literature and (2) enhance maturity models for Web 2.0 with customer-oriented design patterns. It allows the identification of new opportunities for companies to assure the customer needs and to permit a new way to approach the customer.

The framework was adopted at the case of the banking industry and showed that today's banking industry is not mature regarding Web 2.0 adoption in customer-related processes. The application of the framework to the banking industry has shown, that the analysed 6 banks are generally still in the first stages of the Web 2.0 concept. The banks are actually evaluating the potential of the Web 2.0 in terms of supporting the consumer-bank interaction. Especially Deutsche Bank and Bank of America are fostering first implementations of Web 2.0 design patterns and therefore have already implemented concrete products and services. However, reluctance is observed. A reason could be regulatory requirements.

As shown the Web 2.0 design patterns are continuously under development. This fact leads to the need of continuously updating the framework through new Web 2.0 design patterns. Therefore the development in Web 2.0 design patterns would be in the scope of further research. Future research could also focus on applying this framework to other industries and analyse their stage of maturity regarding Web 2.0 adoption. Regarding the sample of banks which was analysed it would be interesting to compare different innovation classes from banks. Finally a cross-industry comparison would be of great interest as well, in order to identify Web 2.0 leading industries.

## References

- Ahmad, Saxena. (2009): Domain-Driven Architecture for Object-Oriented Software System. Retrieved 08.01.2012 from [http://www.ubicc.org/files/pdf/DD\\_Architecture\\_updated\\_209.pdf](http://www.ubicc.org/files/pdf/DD_Architecture_updated_209.pdf).
- Albesa. (2007). Interaction channel choice in a multichannel environment, an empirical study. *International Journal of Bank Marketing*, 25 (7), 490-506.
- Alexa. (2012). Top Sites. Retrieved 05.01.2012 from <http://www.alexa.com/>.
- Anand. (2011). Key Imperatives for Cutting-Edge Cross-Channel Banking. Aberdeen Group.
- Back, Haager. (2011). Assessing Degrees of Web 2.0-ness for Websites: Model and Results for Product Websites in the Pharmaceutical Industry. 24th Bled eConference eFuture.
- Bankverband (2012). Die 100 grössten Deutschen Kreditinstitute. Retrieved 02.01.2012 from <http://www.bankenverband.de/service/statistik-service/banken/strukturdaten-die-100-groesten-deutschen-kreditinstitute/files/fileinnercontentproxy.2011-08-02.2898611668>.
- Böhring. (2011). Towards a Design Theory for Applying Web 2.0 Patterns to Organisations. ECIS, Paper 189.

- Chiang, Huang & Huang. (2009). Characterizing Web users' degree of Web 2.0-ness. *Journal of the American Society for Information Science and Technology*. 60 (7), 1349-1375. DOI: 10.1002/asi.21058.
- Cooper. (2000). *Java Design Patterns*. Massachusetts: Addison-Wesley Professional.
- Coplien, Schmidt. (1995). *Pattern Languages of Program Design*. Massachusetts: Addison-Wesley.
- Cortiñas, Chocarro, Villanueva. (2010). Understanding multi-channel banking customers. *Journal of Business Research*, 63 (11), 1215-1221.
- Dapp. (2011). *The digital society: New ways to more transparency, participation and innovation*. Frankfurt am Main: Deutsche Bank Research.
- Dutta. (2011). *The Global Innovation Index 2011. Accelerating Growth and Development*. Fontainebleau: INSEAD.
- Forrester Research. (2007). Forrester's Social Technographics Ladder of Participation. Retrieved 02.02.2012 from [http://forrester.typepad.com/groundswell/2007/04/forresters\\_new\\_.html](http://forrester.typepad.com/groundswell/2007/04/forresters_new_.html)
- Governor, Hinchcliffe, Nickull. (2009). *Web 2.0 Architectures*. Sebastopol: O'Reilly Media.
- Hoppermann. (2011). *Best Practices in Multichannel Strategies in Financial Services*. Forrester Research.
- Kilian, Hass, Walsh. (2008). Grundlagen des Web 2.0. In *Web 2.0 – Neue Perspektiven für Marketing und Medien* (Hass B., Walsh, G. and Kilian, T.), pp. 271 – 287. Berlin: Springer.
- Kohls. (2008). *Design Patterns zur Dokumentation von Erfahrungswissen*. Tübingen: Institut für Wissensmedien.
- McKinsey. (2010). *Face-to-Face – A multibillion opportunity to better serve your clients*. McKinsey&Company.
- Mettler, Rohner & Winter. (2010). Towards a classification of maturity models in information systems. In A. D'Atri (Ed.), *Management of the Interconnected World* (pp. 333-340). Berlin: Springer.
- Musser, O'Reilly. (2007). *Web 2.0 Principles and Best Practices*. Sebastopol: O'Reilly Media.
- National Information Center. (2011). Top 50 BHCs. Retrieved 02.01.2012 from <http://www.ffiec.gov/nicpubweb/nicweb/Top50Form.aspx>.
- O'Reilly & Battelle. (2009). *Web Squared: Web 2.0 Five Years On*. Web 2.0 Summit. San Francisco. O'Reilly Media, Inc. and TechWeb. Retrieved 05.01.2012 from <http://www.web2summit.com/web2009/public/schedule/detail/10194>.
- O'Reilly. (2005). *What is Web 2.0. Design Patterns and Business Models for the Next Generation of Software*. Retrieved 05.01.2012 from <http://oreilly.com/lpt/a/6228>.
- Pre. (1995). *State-of-the-art Design Pattern Approaches – An Overview*. Linz: Johannes Kepler University Linz.

- Richter, Koch. (2007). Social Software – Status Quo und Zukunft. Retrieved 05.01.2012 from <http://www.kooperationssysteme.de/docs/pubs/RichterKoch2007-bericht-socialsoftware.pdf>
- SNB. (2012). Banks in Switzerland 2012. Retrieved 02.01.2012 from <http://www.snb.ch/en/iabout/stat/statpub/bchpub/stats/banken.ch>.
- Stevens. (2006): Web Watch 2.0 – What the next generation of online services means to B-to-B. Direct. 18 (14), 39 – 40.
- WIKLET. (2010). Retrieved 07.01.2012 from [http://wiklet.javacore.de/index.php/Design\\_Patterns](http://wiklet.javacore.de/index.php/Design_Patterns).