Are public and private health insurance companies going Web 2.0? – A complete inventory count in Germany

Nadine Blinn
Hamburg University
nadine.blinn@wiso.uni-hamburg.de

Mirko Kühne
Hamburg University
mirko.kuehne@wiso.uni-hamburg.de

Markus Nüttgens
Hamburg University
markus.nuettgens@wiso.uni-hamburg.de

Abstract
The Internet is increasingly used as a source for information and knowledge. Even in the field of healthcare, information is widely available in the Internet. In the context of healthcare management, two general questions are of interest: (1) which information or content is provided? (2) How is it provided and by whom? As sickness funds play a highly relevant role in the German healthcare system, we conduct an exploratory survey to provide first answers to these questions. We perform a third party web assessment by doing a complete inventory count of the German sickness funds landscape. Hence, all 238 private and public health insurances were analyzed according to their website. Our descriptive results address researchers as well as practitioners. Moreover, our study provides a foundation for further research by raising first categories that can be used for a theoretical explanatory model.

1 Introduction

The Internet is increasingly used as a source of information and knowledge. Since people are more and more used to gather information about a wide variety of topics by electronic means, nearly all thematic aspects of daily life are covered. Hence, information that addresses the field of healthcare in general or specific health care aspects (e.g. specific diseases) is increasingly searched online [20; 23]. In the German health care system, sickness funds play a highly relevant role. In Germany, sickness funds provide most of the publicly funded healthcare system on the national level. Because of recent developments in German health policy, sickness funds are under high cost pressure. Moreover, competition between today’s 238 sickness funds is very high: as contributions of insurants in Germany were harmonized to a certain level, the differentiating factors for the companies are the services they provide. Consequently, German sickness funds have two main reasons to provide extensive and high quality information via Internet:

(1) Cost savings: the provision of detailed, structured and extensive information to the insurants aims at avoiding costs for highly individual, time-consuming consultation. Therefore providing information by websites is cheaper than providing telephone-based customer services or individual services in a local agency.

(2) Competitiveness: as the fee for health insurances in Germany was harmonized to a uniform level, sickness funds need other major differentiating factors from their competitors than costs. One possibility that can also be found as a major differentiating factor in other industries is “quality of services”. Consequently, information services provided by electronic means with a wide availability and a certain quality level could be a factor that distinguishes high-quality from low-quality from the point of view of insurants.

While the field of health insurance companies is not yet widely analyzed concerning the implementation of Web 2.0 artifacts, a recent survey [1] provides first findings on why Web 2.0 artifacts are useful in insurance companies in general:

• with Web 2.0 applications, (pre) sales of complex products is possible with web-based consulting tools.
• Web 2.0 supports the insurances’ readiness for active customers. Users are not only passive consumers, but actively participate in the co-design of the products.
• content and information can be provided in a “playful” and interactive way.
web-based content and information are available 24/7.

Because of the increasing use of the Internet as a source of healthcare knowledge and information on the one hand and the special role and competitive situation of sickness funds in Germany on the other hand, we expect sickness funds to provide high quality websites that offer a wide variety of information. Therefore, we formulate two initial research questions: (1) to what degree do Germans sickness funds provide web-based content and information to insurants and interested persons? (2) Which technologies are used to provide these services?

The goal of this paper is to uncover first exploratory findings concerning these two questions from a survey of websites provided by German health insurance companies. We conducted the survey according to the methodology “third party web assessment” [17] and performed a complete inventory count comprising websites of all German sickness funds. In order to get objective – or at least intersubjectively verifiable – measurements for the provided content as well as for the used technologies, we use two different benchmarks:

For the contents, we use the so called “healthcare bulb” [14], a model comprising different layers with detailed criteria to cover all thematic clusters belonging to healthcare management.

For the used technologies, we refer to a framework for Web 2.0 characteristics [8; 18] in order to structure the technological perspective.

The remainder of the paper is structured as follows. In the second section, we briefly introduce the background of the German healthcare management system, focusing on characteristics of health insurance companies (public sickness funds and private health insurances) and their role in the German healthcare system.

We complement the basic principles of the national healthcare system by an overview on related work. In the third section, we present our study. After describing the design and methodology of the study, we present and discuss our findings and results in detail. Finally, we summarize our work and give an outlook on further research.

2 Theory and Background

2.1. The Landscape of German healthcare management

The German health insurance reform of 2007 requires everyone living in Germany to be insured [4]. There are two main types of health insurance – the public health insurance (“Gesetzliche Krankenversicherung” or GKV), which is also known as sickness funds, and the private health insurance (“Private Krankenversicherung” or PKV). Approximately 85% of the population is member of one of the public sickness funds, while the others usually have private health insurance. Consequently, most German residents (approx. 70 million people) are insured by the public system (except public officers, self-employed people/entrepreneurs and employees with a gross income above 48,600 EUR per year or 4,050 EUR per month [3].

As required by law within the fifth social statute book (SGB V), members of the sickness funds have to pay an insurance fee that depends on the amount on their income as employees. Each insurant gets the same benefits, even though the individually paid fees might differ. All of the sickness funds must charge the same rate (depending on personal income).

![Figure 1. Overview of German National Healthcare System (according to [9])](image)
Consequently, there is no longer any competition between sickness funds based on fees; competition only exists with regard to services and possible refunds. Usually, the company of an insured employee pays half of the insurance contributions, the other half is provided out of the employee’s salary. The fee for this public health insurance is currently 15.5% (from July 1, 2009: 14.9%) of the eligible gross salary to a maximum monthly income limit of 3,675 EUR.

The private insurance system is based on an individual agreement between the insurance company and the customer. The fee depends on a range of individual characteristics, for example, the percentage of coverage, the amount of chosen services, the individual risk or the entrance age into the private system, and so forth. The private health insurance market is served by about 50 German insurance companies. The basic principles of the German healthcare system are illustrated in Figure 1. Both the public health insurance and the private health insurance struggle with the increasing cost of medical treatment and the changing demography. The previously large number of public health insurances decreases every year: currently the Federal Ministry for Health officially counts 196.

2.1. Related work

In the research field of electronic health, several studies exist addressing how German health insurances use the Internet for their business’ purposes or how Web 2.0 technologies and concepts are used in the context of healthcare (see Table 1).

<table>
<thead>
<tr>
<th>Title</th>
<th>Year</th>
<th>Author</th>
<th>Topic</th>
</tr>
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<tbody>
<tr>
<td>Gesundheitsportale 2001</td>
<td>2001</td>
<td>[22]</td>
<td>Empirical survey on the profiles and benefits of German healthcare portals</td>
</tr>
<tr>
<td>Die Assekuranz im Internet – Alle Versicherungswebsites im Vergleich (in German)</td>
<td>2007</td>
<td>[1]</td>
<td>Analysis of the German insurance company landscape (123 Websites)</td>
</tr>
<tr>
<td>Web 2.0 in der Assekuranz - Anwendungsmöglichkeiten, Praxisberichte &amp; Trends (in German)</td>
<td>2008</td>
<td>[2]</td>
<td>Case Studies and recommendations on Web 2.0 applications in insurance companies.</td>
</tr>
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2.1.1 Gesundheitsportale 2001. The survey provides detailed information about the publicity, benefit and the dynamic of development of selected health care portals. The study shows also the variety of the different portal types and provides a systemization of critical success factors. The data is gathered from hospital executive’s point of view. The survey deals mainly with the usage of the Internet in hospitals and selected health care portals. The study provides empirical results on publicity, usefulness and development dynamics of healthcare portals.

2.1.2 Die Assekuranz im Internet. The websites of private German insurance companies where analyzed with regard to usability, user guidance, texture and website navigation. Based on the results of the survey, the authors identify trends and standards for the virtual presentation of insurance companies. The outcome of this study is a ranking of all websites of private German insurance companies.

2.1.3 Web 2.0 in der Assekuranz. The study provides an overview about the application spectrum of Web 2.0 technologies in private German insurance companies. Practical examples and reports of experiences on successful implementations were presented. Interviews and discussions with Web 2.0 designers from the insurance companies provide an overview of the current status and further development perspectives on the implementation of Web 2.0 technologies.

2.1.4 Examining the medical Blogosphere. The study provides an approach of structuring the medical blogosphere by examining the characteristics of medical bloggers and their blogs. The study supports a better understanding of who these new medical writers are, what they write about, when, where, and how they do it, and finally what their motivations for blogging are. In a nutshell, the results show that the
considered medical bloggers are highly educated and devoted blog writers, faithful to their sources and readers. This behavior has assured them attention from other bloggers, their coworkers and colleagues, as well as the new media.

2.1.5 eHealthtrends in Europe 2005-2007. The study examines the pace and direction of the European citizens’ appraisal of eHealth services. In addition to studying trends in the general population, the study also focuses on whether the type and frequency of health-related activities on the Internet change as users become more experienced. The survey also provides an outlook on the future of Internet-based services for health and illness. The study underlines the increasing importance of the Internet as a health information source. There is relative growth in all age groups and for both men and women in Internet use for health purposes, with especially strong growth among young women. Along with this growth, the authors point out that the second generation of Internet health users is using the Internet for more than just reading information. They are using the Internet as a channel, for direct communication with health professionals as well as with other patients. The research has detected small trends over a two-year period. The authors will follow up on this research in upcoming years and evaluate whether this trend in second-generation Internet health users continues. The authors mention that physicians need to be aware of their patients’ use of such new technologies, since this might lead to much better informed patients and requests from patients for more interactive, Internet-based communication pathways.

To sum up, none of these studies gives a complete and detailed overview about which content is provided by sickness funds’ websites or which technologies are applied for presenting the content.

3 Survey of German health insurance companies websites

3.1. Methodology and design

The accomplishment of our study follows the method of “third-party web assessment” [17], whereas the “mystery user” approach is applied [13]. The principle of the “mystery user” approach indicates that an examiner puts her- or himself in the role of a client that requires the services provided by the website. This methodological approach is also known as “mystery shopping” [25]. Therefore, inter-subjectivity and realism are widely ensured. In order to benchmark the examined websites, on the one hand, we apply the healthcare bulb to evaluate the provided content. On the other hand, we employ a framework for Web 2.0 characteristics for measuring the technological perspective.

As we conducted a complete inventory count, the database comprises all 46 German PKV\(^1\) and 192 German GKV\(^2\). 238 data sets are gathered in total. The criteria catalogue for the content consists of 21 criteria (cp. Section 3.1.1) and the catalogue for the technical perspective consists of five criteria (cp. Section 3.1.2). The 26 evaluation criteria are transformed to a binary scoring model, that is, if a criterion is fulfilled (information for a criterion according to the healthcare bulb is available), the portal scores one point and otherwise it gets zero points. By aggregating the points over all criteria, the maximum number of reachable points is 26.

3.1.1. Content benchmark. In general, a common sense of what the term “health” means is intuitively given. While the World Health Organization defines health as “a state of complete physical, mental and social and well-being and not merely the absence of disease or infirmity” [26], the literature does not provide a consistent definition [12]. Therefore, we cannot clearly determine the characteristics of “healthcare”, or what “healthcare” really and objectively is [7]. The “healthcare bulb”, a model consisting of four layers, provides a possibility to structure the components or stakeholders of healthcare management. The healthcare bulb exists in different variations [5;7], however, all variations refer to the initial model of Hilbert et al. [14]. Accordingly, health care management comprises – comparable to a bulbs’ layers – core areas as ambulatory and clinical healthcare treatment services. The core areas are complemented by pre-service industries and supplying industries as well as border area industries and other branches with strong relations to healthcare [14].

3.1.2. Technological benchmark. The use of Web 2.0 applications in a medical context or in the context

\(^{1}\) For an overview compare: http://www.pkv.de/verband/mitgliedsunternehmen/
\(^{2}\) For an overview compare: https://www.gkv-spitzenverband.de/publish/Alle_gesetzlichen_Krankenkassen.axd?ActiveID=1028&gvAdressenOverview_PageIX=0 and http://www.krankenkassen.de/gesetzliche-krankenkassen/krankenkassen-liste/
of healthcare is defined as “web-based services for health care consumers, caregivers, patients, health professionals, and biomedical researchers, that use Web 2.0 technologies and/or semantic web and virtual reality approaches to enable and facilitate specifically 1) social networking, 2) participation, 3) apomediation, 4) openness, and 5) collaboration, within and between these user groups” [10]. This principle is also called "Medicine 2.0", "Health 2.0" or “e-health” [10; 19;20].

Within our survey and according to our methodology, the focus is on the patients’ and health care consumers’ perspective in their role as a user. Consequently, the possibilities of Web 2.0 applications from the users’ point of view can be distinguished according to Pleil [21] as follows:

- authoring: editing and publishing,
- sharing: exchanging information and opinions,
- collaboration: working together,
- networking: getting into contact and managing contacts as well as
- scoring: evaluating.

Table 2 illustrates the corresponding Web 2.0 artifacts; this comprises Web 2.0 applications (e.g. blogs, also named Web 2.0 tools) as well as Web 2.0 concepts (e.g. tagging).

<table>
<thead>
<tr>
<th>Application Type</th>
<th>Description</th>
<th>Function</th>
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| Weblog           | Web-based communication medium that is determined by the following characteristics  
- chronology (time stamp for entries)  
- actuality (reference to actual events and subjects)  
- interaction (comment-function for readers) internet-relation (links to continual information, links to other blogs, “trackbacks”) | authoring, sharing, archiving (storing), links (connecting information) |

### Table 2. Web 2.0 applications (according to [8;18])

3.1.3. Overall criteria benchmark. According to the specifications in section 3.1.1 and 3.1.2, the criteria catalogue presented in Table 3 provides the categories which we use for our exploratory survey.

<table>
<thead>
<tr>
<th>Category</th>
<th>Healthcare Bulb Layer</th>
<th>Criterion</th>
</tr>
</thead>
</table>
| Content  | 1 Ambulatory and clinical healthcare treatment services as well as care | Clinic / Hospital  
Independent health practitioner  
Alternative medicine  
Rehabilitation  
Care facility |
|          | 2 Healthcare administration | Administration  
Pharmacy  
Cure- and bath resorts  
Self-help |
|          | 3 Pre-service and supplying industries | Medicine- and gerontology technology  
Bio- and gene technology  
Health products  
Healthitrade  
Pharma  
Consulting (B2B) |
|          | 4 Boundary and neighbor | Sport and leisure  
Training and education  
Wellness |
3.2 Results

3.2.2 Results for GKV (Content). A remarkable finding is that none of the 192 analyzed websites fulfills all the defined criteria. Three websites share the first place. They contain most of the content and were evaluated with 18 of 21 points (86%). The second place with 17 points (81%) is shared by the websites of eleven companies. Figure 2 shows the overall results.

The overall average is 10.3 points (49%) per company. Concerning the fulfilled content of a certain category, the categories Administration and Consulting (b2b) score the best with 98% and 95% (see Figure 3). The second ranked category is Self-help with 91%. The next major group is a bundle of six criteria with a strong focus on personal education, well-being and recreation. It starts with Sport and Leisure (86%) and Training and Education (79%). In the range between 73% and 71% are the Cure- and Bath Resorts and Wellness. The categories focusing technological aspects such as Healthtrade as well as Medicine- and Gerontology Techniques are not fulfilled at all and score zero points (see Figure 3).

3.2.3 Results for GKV (Technology). The results concerning the Web 2.0 artifacts are as follows:

34.38% of GKV have Web 2.0 technologies implemented on their websites. The most used Web 2.0 artifact is Wiki (17.71%). 14.06% of GKV websites offer a blog, and 12.5% offer podcasts to the
users. 10.42 % of the GKV websites provide a social community. Only 1.04 % of the websites provide the possibility for social tagging. With regard to the sum of implemented artifacts per GKV, 54.55 % implement one technology, 33.33 % use two artifacts and 13 % offer three or more to the users. None of the GKVs offer all five artifacts.

3.2.4 Results for PKV (Content). None of the 46 analysed websites fulfills all the defined criteria (see Figure 5). The website that contains most of the content is evaluated with 16 of 21 points (76%). The second place with 14 points (67%) is shared by the websites of three companies. The overall average is 7,7 points (36%) per company. The content of the categories Administration and Consulting (b2b) is represented by 98% of the websites. The second ranked category is Training and Education with 87%. Sport and Leisure, Wellness and Cure- and Bath Resorts are following with 54% to 57%.

Figure 5. Reached Points in Total

The categories focusing technological aspects such as Healthtrade, Bio- and Gene Technology as well as Medicine- and Gerontology Technology are underrepresented with a maximum of 4%. Moreover, the information concerning Pharma is very little for all websites.

3.2.5 Results for PKV (Technology). A remarkable finding is that only 2 of the 46 PKV use Web 2.0 artifacts – one insurer provides a Blog and one insurer provides a wiki.

3.3 Discussion and Propositions

3.3.1 Discussion

In total, the websites of the public health insurance companies reached more points than the websites of the private health insurance companies. The public insurances contain in the first, second and fourth layer of the healthcare bulb more content than the private insurance companies. Moreover, the number of points of the public health insurance websites in the first layer is almost twice as high as the number of points of the private health insurance websites. Furthermore, the public websites contain 20% more content on the second layer. The third layer is almost similar – the private companies score 6% more points. In the fourth layer, the public companies cover with a total of 54% approximately 10% more content than the private companies. Overall, the websites of the public companies cover in 15 categories more content than the websites of the private companies. However, the private companies reached significantly more points in the category health products than the public companies.

With regard to our initial research questions, healthcare insurance companies focus on content from categories such as Administration, Consultation and Self-help. Concerning the technological perspective, healthcare insurance companies employ various Web 2.0 artifacts. However, our findings also suggest that a significant difference exists (1) between the content provided by GKV and PKV, and (2) between the Web 2.0 artifacts applied by GKV and PKV respectively. Because of these results, we point to three very interesting open issues which remain for further research:

(1) How can the differences between PKV and GKV in the amount of content be explained? Which external factors might provide an explanation?

(2) Why do PKV hardly use Web 2.0 artifacts? Do they use other channels to provide information to their insurants?

(3) Which information is provided by which Web 2.0 technology? Are certain types of information more adequate to be provided by a certain artifact?

Moreover, we are interested if we can use our exploratory results and the used categories as a first starting point in order to develop a theoretical explanatory model for this domain.

3.3.2 Propositions

With regard to the discussion, we suggest the following plausible propositions in addition to the statements “cost savings” and “competitiveness” mentioned in the introduction. These propositions are logically grounded in our findings and in the data. However, we do not yet have identified any underlying theoretical explanatory model that might be useful to explain these developments. The propositions might be helpful as a starting point for the development of theory for a further grounding of extensive information providing in general and use of Web 2.0 for information providing information in specific in public insurance companies.
P1: Public insurance companies implement Web 2.0 artifacts in order to differentiate from their competitors.

P2: Public insurance companies implement Web 2.0 artifacts in order to present themselves in a modern image for potential customers. Hence, they might try to obtain younger customers this way (which are usually expect to be healthier than older people).

P3: Public insurance companies implement Web 2.0 artifacts in order to save cost by providing preventive information in a modern way (Web 2.0 compared to a phones hotline).

P4: Public insurance companies implement Web 2.0 artifacts in order to provide proactive, up-to-date and extensive information (Web 2.0 compared to a phones hotline).

Theories and models from the literature on technology adoption seem to be the obvious choice for a starting point (e.g. [27], [28]). Consequently, as a next step, we plan to identify relevant models and theories that can help us to explain our findings.

4 Summary and Outlook

In the presented paper, we aimed at answering two questions: (1) which information or content is provided by German sickness funds and (2) how is it provided? As sickness funds play a highly relevant role in the German healthcare system, we conducted an exploratory survey to answer these questions. Our findings show that the presented amount of content by public healthcare insurance companies (GKV) is higher than the presented amount of content by private healthcare insurance companies (PKV). The same applies to the implementation of Web 2.0 artifacts. There is a need for theory to be developed and further research is needed. Our categories might provide a foundation for a maturity model for health care management websites. Moreover, they provide the starting point for developing a rigorous explanatory model.

5 References


[18] C. Kolo and D. Eichner, „Web 2.0 und der neue Internet-Boom – Was ist es, was treibt es und was bedeutet es für Unternehmen?“ http://www.robertundhorst.de/v2/img/%20downloads/Web_2.0.pdf?PHPSESSID=3b45d404f7fecn5a20ce077e2b7ce6a b2. Last access: 2nd of January 2009.


