

Social Network Sites for Elderly People - A Critical Analysis of Established German-Speaking Online Platforms

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Abstrac—Due to the increasing Internet usage of elderly people, Social Network Sites (SNSs) for this audience group gain in importance. The present study analyzed 19 German-speaking online platforms for the elderly with regard to 26 specified success criteria. Therefore, a subjective evaluation on the basis of those criteria was conducted for social community, forum and content management system as most important types within SNSs. In order to approve this evaluation, objective data was gathered from providers of third-party website analyses. On the basis of a group discussion and an additionally matrix analysis, the study showed that website's success does not depend on the quantity of offered main categories but rather on mature and distinct functional offers. Within the matrix analysis, a large variance (41.8 vs. 6.0) between the analyzed SNSs was highlighted. Within this important audience group, achieving a critical mass is a major prerequisite for a successful SNS.

Index Terms—Elderly, internet, older people, social network sites, sns.

I. INTRODUCTION

Social interaction is an innermost human need at any age [1]. However, especially elderly people often have to suffer from isolation since family and relatives do not have enough time to care or the number of close friends decrease. Due to global demographic changes, the situation will increasingly exacerbate [2]. As a result of this trend, the Internet gained in importance for older people and many online offers for the elderly arise. However, these websites are not equally successful. In general, a website's success highly depends on the visiting frequency: the higher it is, the greater is the success of the website [3]. For some websites and especially for SNSs, not only the time of visiting but more the social exchange within a platform is important. In particular, older people have special requirements for SNSs [4]. Thus, a measurement methodology referencing the functionality of a SNS as a critical success factor is needed which can be proven additionally by objective third-party data.

The current research approach is based on [5]. In line with

his findings, the present article contains an empirical approach to use the pre-defined categories of SNSs as well as specific criteria in order to analyze offerings for elderly people. Thus, the research question of this article is defined as follows: *Which characteristics determine the success of German-speaking Social Network Sites for elderly people and how can this success be measured?*

II. BACKGROUND

This section contains the background information about the aging population and an increasing Internet usage by older people. It is referred that these developments lead to a growing demand for age appropriate SNSs.

A. Aging Populations

The demographic change, meaning a growing aging society [2], is one of the global mega trends in the 21st century [6]. Germany is one of the most involved countries. The German population will belong to the oldest in the world by 2035. By the middle of this century, more than half of Germany's inhabitants will be older than 50 years [7] and the proportion of people aged 65 years and over will increase from one fifth in 2005 to one third in 2050. Analogically, the over eighty-year old people will even triple to more than 10 million people [8].

Main factors for this trend can be seen in an increasing global life expectancy, a declining fertility rate and an aging of the "baby boom" generations [9]. Adapted from [10], the Federal Republic of Germany is thus subject of the so called "threefold ageing" as the following three criteria are met: Absolute growing figure of older people, relative increasing number of older people compared to the younger and rising number of very old people, defined as 80-year-old and above. Thus, the importance of age appropriate products and services can be seen as a social challenge for a durable integration into the society.

B. Increasing Internet Usage

The Internet is one way for older people to make existing social contacts more accessible or to establish new ones [11]. Due to its increasing use, almost 60 percent of people aged 60 years and above currently use the Internet for mails, information research, or online banking in Germany [12]. Especially the spread of user generated content was recognized not only within the younger generation [13], [14].

On par with the negative correlation between age and the number of social contacts, the rising number of elderly people using the Internet offers high potential for social exchange platforms, especially in the German context [4].

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According to the study by [15], the membership of the elderly in SNSs has also grown. Whereas in 2009 only seven percent of people aged 40 to 49 and three percent in the age between 50 and 64 are registered in social networks, the numbers rose to 20 percent (age 40 to 49) and 10 percent (age 50 to 64) in 2010 [15].

C. Demand for Age Appropriate SNSs

The usage of SNSs in general is accompanied by various reasons. The mentioned challenges demonstrate the demand for age appropriate SNSs. Therefore, an evaluation tool to measure the success of SNS for the elderly is needed in order to improve current offerings or to create successful new ones. Thus, a classification of existing SNSs for elderly is implemented based on pre-defined criteria.

III. METHODS

A. Classification of SNSs

In order to evaluate SNSs in view of their functional offers, various categories had to be defined. Considering the variety of existing functions on websites, a unique grouping in accordance with the detection of multiple different function designs in various categories (such as forums, social community, or free mail provider) was difficult. Thus, the author conducted various expert interviews in order to detect a general classification and the most important success criteria for each SNS category [5]. Due to the following focus group discussion, the main categories were defined as „social community“, „forum“ as well as „content management system (CMS)“. It is based on the OSI Reference Model by [16], which represents an abstract form of structure commonly used in computer science. The defined criteria are illustrated in Table I.

B. Matrix Analysis

The website's assessment was conducted with reference to the classification of the SNS. The 26 criteria ensured full applicability of the three categories. Every website obtained subjective scores for its functional offers by means of a four point Likert scale. The scores ranged from 0 („not existent“) to 3 („very pronounced function“). Depending on functional offers of single websites, the analyzed SNS achieved scores for each of the three main categories.

Subsequently, the three single scores were added to the final score by using a matrix, within the so called matrix analysis. In order to do so, special weighting factors were set up to compare the SNSs among each other.

In order to determine the weighting factors, the decisive added value of a website was assessed by the most pronounced function. In case there was not only one main category, the one with the highest score was weighed by 60 per cent and the other one by 40 per cent. If all three appeared, the one with the highest score was weighted by 60 per cent again, the others by 20 per cent. Due to the rating of 0 to 3 points for the 26 criteria per main category, a maximum value of 78 points can be reached for every evaluated SNS. Since four out of 19 websites were magazines and guides for older adults without the possibility of opening a personal account, these pages could not be evaluated using the matrix analysis.

C. Website Analysis Tool

On the basis of the subjective evaluation of the SNSs by means of the matrix analysis, the Website Analysis Tool (WAT) was used to objectively assess the websites. A correlation analysis was conducted to outline interrelations of the gathered data. Before this background, it became possible to compare these results with those of the matrix analysis.

For further examination, the WATs „seitwert.de“ [17] and „alexa.com“ [18] were used. [17] offers its own evaluation of websites by use of various criteria and their weightings. [18] registers the users' accesses to websites and allows an interpretation of the users' average profile and their attitudes on the basis of this data and its subsequent processing. It analyzes quantitative facts such as the „amount of time spent by a user on a website“, the „site views per user“ or the „percentage of users with a single site view“. The results are reflected in a score system which ranges from zero (0) to 100. In this context, Google PageRank [19], which assesses the link popularity of websites on the basis of an algorithm export and also indicates the success of a website, provided additional data.

IV. RESULTS

A. Matrix Analysis

The final scores achieved within the Matrix analysis are illustrated in Table II. It is notable that a social community (SC) and a forum (F) was existent at more than half of the tested websites, all ranked in the upper third. By contrast, a content management system (CMS) is less widespread (only for out of 19 websites). Since there obviously was no general distinction between the analyzed SNSs in terms of the function offers, a good ranking depends more on a well-established and mature functional offer.

TABLE II: FINAL SCORES OF THE MATRIX ANALYSIS (SOURCE: AUTHORS' DESIGN)

Website	SC	F	CMS	Score
platinnetz.de [20]	x		x	41.8
seniorentreff.de [21]	x	x	x	40.0
MC50Plus.de [22]	x	x		32.6
ahano.de [23]	x	x		32.0
50plus-treff.de [24]	x	x		31.0
Romantik-50plus.de [25]	x	x		31.0
feierabend.de [26]	x	x		24.8
herbstzeit.de [27]	x	x		24.6
planetsenior.de [28]	x	x	x	24.2
aktiv 50.net [29]	x	x		23.6
silbernetzwerk.de [30]	x	x	x	23.0
valvere.de [31]	x	x		23.0
senioren-ratgeber.de [32]		x		19.0
sencity.de [33]	x			11.0
reifezeit.net [34]	x			6.0
aktive-rentner.de [35]				-
55plus-magazin.net [36]				-
senioren-kompass.de [37]				-

As seen in Table II, four websites were not integrated into the numerical evaluation due to the missing possibility of social interaction by means of user accounts [35]-[38]. The

analysis of the remaining 15 SNSs for elderly people revealed that [20] got the best overall score (41.8). Those three SNSs with only one interaction category each [32]-[34] got the lowest score (19.0 to 6.0). Only three out of 15 SNSs

provide all three main categories [21], [28], [30] Due to the fact that a maximum value of 78.0 was achievable, the end values of the analyzed SNSs were in the middle or lower range.

TABLE I: EVALUATION OF THE MAIN CATEGORIES SOCIAL COMMUNITY, FORUM AND CONTENT MANAGEMENT SYSTEM (SOURCE: SUTHORS' DESIGN)

Social Network Sites		
Social Community	Forum	CMS
General Functions • Networking with known social communities User • User Profile • Contact lists and grouping function • Pin board • Ability to establish groups • View online contacts • Chain function (concatenation of friends) • App functions • Adjusted for rights and privacy requests Calendar • Display of private and public events • Adjustable rights for access and visibility • Function to share appointments • Further release function • Extra points Photo Album and Video Functions • Simple upload / java mass upload • Receipt of the photo quality • Grouping function • Adjustable for access rights • Embedding videos • Comments / like me Private Messages and Direct Messages • Single and mass messages • Display (read / unread) messages • Input messages about events (contact inquiry) • "Poke" function • E-mail notification of new messages • Direct message	General functions • Adjusted for rights and privacy requests • Internal search function • Networking with known social communities User • User Profile • Avatar • Contact lists • View online contacts • Adjusted for rights and privacy requests Private messages • Private messages • Display (read / unread) messages • Extra points Topics • Display topics according to certain criteria • Topics and forums can be subscribed • Ways to manage subscribed threads and forums • Displays the users who access a topic • Ability to send a link to a topic by e-mail Posts • Preview • Various tools for creating / managing a topic • Integration of video or graphics • Attachments • Poll function • Post count • BB-Code • E-mail notifications of replies • WYSIWYG „What You See Is What You Get“ • Post rating	General functions • Layout and design created with CSS • Plug-ins • Internal search function • Optimized for Smartphone • Comment function • Poll function Cross-Publications • Post can be transported to an article • Blog entry can be transported to an article Tools / Widget • Latest Comments • Latest News • HTML widgets from third-party • Spam protection • Extra points Publishing – options • Users can write articles and publish • Articles can be assigned to multiple categories • Articles can be published on a homepage • Preview function • Adjustable rights for the article consideration • Publication in the future • Content-life-cycle-management function • Status of an article (published / inactive) • BB-Code • Integration of video or graphics • Attachments • WYSIWYG „What You See Is What You Get“ • Post rating

B. Website Analysis Tool

First, there was a strong significant positive correlation between the final scores of the SNS and the data from seitwert.de. This finding validates the subjective evaluation of the SNS on the one hand, and, on the other hand, corresponds to the assumption that a well-established functional offer is the key success factor for SNS when referencing elderly people. This result is even more impressive since the correlation between the final score of the WAT and the overall assessment of [17] is still stronger. The small but notable difference of the correlation between [19] and [17] overall assessment stems from the fact that PageRank is part of the seitwert.de final verdict. Since a website operator is able to influence the PageRank, it should not be used as a single indicator for the success of a website.

Second, a strong significant correlation between the site views per user and the final score of the matrix analysis proved the assumption that the direct comparison of diverging attitudes of users was more meaningful with regard to different categories.

Third, the very strong significant correlation between time spent on a website per user “ and „site views per website and user“ reflects the fact that the average number of site views increased when the estimated amount of time spent on a website increases and vice versa. The positive significant correlation between the overall assessment of seitwert.de and the site views per user, or the time spend on a website per user respectively, confirm the assumption that a website's success highly depends on the visiting frequency.

Fourth, in terms of the „share of website visits with only one site view“ and the “site views per website and user”, the time spent on the website must be limited since any other action on the website would indicate the exclusion from this category. Accordingly, a negative correlation between these two sets of data could be observed. Furthermore, the user was able to spend a certain amount of time on a website by a site view only (e.g. just reading) before deciding to close the page. In addition, there existed a negative increase of the percentage of users with a single site view compared to the average site views per users. If the average site views per user increased, the percentage of users with a single site

view decreased.

V. DISCUSSION

The study showed that a website's success does not only depend on a great number of offered main categories, but rather on mature and distinct functional offers.

Websites focusing on content management systems such as magazines and guides showed a significantly higher percentage (up to 70 per cent) of users who only view the page a single time. This fact can be explained by good rankings of these websites' contents in search engines. By entering keywords into the search engines, users are directed to the corresponding website and can access the desired information. As soon as their needs for information are satisfied, there is no reason for remaining on the website and thus, users leave. In doing so, the user has viewed the content of the page only once.

A website's aim is to encourage the user to spend time on it as well as to increase the number of site views per user or to keep it on a high level in order to generate revenues (such as Google AdSense, integrated shop, or the like button). Even though the presented numbers are partially low, there is no indication of an unsuccessful website. Google Page-Rank rates a website as successful in case it was ranked with a result of five and possesses high link popularity. Despite a rather short amount of time spent on the website and a small amount of site views, a website can nevertheless be successful.

Websites which focuses on social communities and forums offer their users a wide range of possibilities to interact (e.g. creation of a personal profile, messages, instant messaging, or the like button). This fact leads to an increased amount of time spent by a user on those sites as well as to increased site views. The significant correlation between the time spent on the website and the average site views per user leads to a high number of site views. For a content-based account, the percentage of users with only one site view is expected to be very high, while the amount of time spent and the number of site views by a user can be very low. This fact differs from websites offering a social community. Hence, the number of users who only view a page once decrease.

VI. CONCLUSION

The analysis of social networks for elderly documents the current state of development in the field and highlights the existing functionalities in German networks. Based on the obtained results, an estimation of the distribution, application and potential of websites can be achieved in this research area. Features leading to a particularly high usage were identified within the target group and the contributing effects were shown accordingly. In summary, the current SNSs for elderly people were discussed and a matrix analysis was presented. However, as already stated, network effects in this particular target group have also a significant impact on the actual use of a website. By achieving a critical mass, for example due to easy usability of the website, existing SNSs as Facebook can be pioneer for social exchange platforms with an audience group specific content [39]. The concept of

an age-specific community site therefore seems to be working only partially. The existing SNSs for elderly have a lot of potential for improvement. Future work should analyze the benefits for the elderly that arise through the usage of SNSs. Furthermore, experiments should be executed to answer the question how SNSs support older people in their everyday life.

A. Limitations

Firstly, the main categories for the criteria for evaluation based on expert interviews and focus group discussions. Moreover, there could exist additional criteria for the evaluation of the SNSs for elderly people.

Secondly, the timespan of analyzing and evaluation of the 19 websites was from September to November 2011. Till today, there can be deviations within content and functionality of the different SNSs.

Thirdly, the rating of the SNSs and the resulting overall scores based on the authors appraisals and experiences.

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