The impact of user diversity on the willingness to disclose personal information in social network services

A comparison of private and business contexts

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Abstract. Social media and social network sites (SNS) are a central medium for communication within the Internet. There has never been a faster possibility for information exchange across the globe with a comparable range and size of audience. So far, SNS are very popular in private communication. But can other fields of application profit from this role model? To find out more about the comparability of the two contexts (private and business) and to specify transferable design guidelines, we investigated the willingness to disclose private data in both private and business context, knowing that data disclosure is one significant success factor for SNS and communities. Therefore, an exploratory questionnaire study ($N = 151$) was designed. The focus of the study is based on the question whether there is a difference between the contexts and whether these differences are related to user diversity factors (age, gender, perceived locus of control over technology (PLoC), and personality traits according to Five Factor Model (FFM)). First results reveal that there is a significant difference between the two contexts that is hard to explain using only factors of user diversity.

Keywords: Demographic change, FFM, social network sites, self-disclosure, personality, technology acceptance.

1 Introduction

The success story of SNS on the Internet cannot be denied. A lot of effort is put into trying to replicate the approach to match up with the success of private SNS, e.g. facebook, in business cases. The problem is that although there is a lot of research in this field, there are no generally accepted design criteria or guidelines available. One research project that tries to fill this gap for the working context in Germany is the project iNec "Innovation through expert-communities in the context of the demographical change." This project consortium is an interdisciplinary team of social scientists, economists, computer scientists, and practice partners that lined up to generate a sustainable community concept accompanied by a personnel development concept.

This concept is designed to face the challenges of demographic change and erosion of the normal employment history: Small- and medium-sized enterprises, e.g., in Germany, are struggling with big problems. These problems are addressing particularly sustainable knowledge management and personnel development, in order to overcome of lack of qualified personnel and fast staff turnover [1].

How this paper is organized In the following subsections the scenario of this research is pointed out. Therefore, the situation of a world dealing with the effects of demographic change and erosion of the normal employment history is portrayed (see Section 1.1). Afterwards, the related work and state of the art of research within the field of SNS for the working context are presented (see Section 1.2). Following that, the approach of user-centered community development of the iNec project is introduced to underline the impact of user diversity on the acceptance of technology (see Section 1.3).

The main focus of the study and the questions addressed are presented in Section 2. Subsequently, the questionnaire instrument of this study is presented (see Section 3). The fourth section of the paper presents the central findings of the investigation on the impact of user diversity on the willingness to disclose personal information. Finishing this paper in Section 5, the results are discussed, limitations are named, and an outlook on future research is worked out.

1.1 The effect of demographic change and erosion of the normal employment history for the working context

In order to point out the necessity of suitable tools and approaches to face arising challenges, this section works out the status quo of a working world struggling with two profound social developments, namely demographic change and erosion of normal employment histories. In a first step, the effects of demographic change on the working world are presented, followed by an outline of the impact of the erosion of normal employment histories. Concluding this section, both phenomena are interlinked to define overall challenges for the working world.

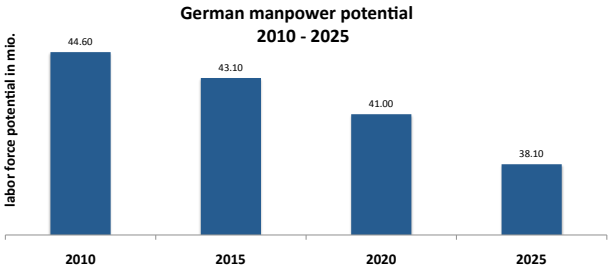

Fig. 1. Decrease of German manpower potential. Source: Graph based on data of IAB (Institut für Arbeitsmarkt und Berufsforschung)

Demographic change. Most European countries are struggling with the demographic change which is accompanied by decreasing fertility rates and an increasing amount of elderly people [2]. This change affects all areas of European society [3]. One sector that is especially affected is the working world[4](see Fig. 1). Facing the effects of the demographic change in the working world is important, because common prosperity is interlinked with it. In Germany, the demographic change is predominantly responsible for a threatening lack of qualified personnel [5]. Many small- and medium-sized enterprises know that, because of upcoming retirements, they will lose a considerable amount of their workforce.

Another challenge that enterprises will have to face is the impact of an aging workforce on the job development. It is essential to define age appropriate workspaces, tasks, and support over time. Especially when considering technology as a solution, the impact of age on the acceptance of technology and learnability must be included in the discussion (see Section 1.3).

Erosion of the normal employment history. In addition to the challenges of demographic change, the working world is influenced by a phenomenon called erosion of the normal employment histories in the social sciences [6–8]. The concept of a normal or standard employment biography is a German phenomenon which stems from the times of the economic miracle in Germany during the late 1940s. The normal employment biography is based on the following aspects: a) permanent contract of employment, b) full time jobs, c) contractually standardized payment, d) social insurance payment obligation. Although the idea of this normal work biography is very present in people's minds, it has never been a social reality for the masses, but shaped the image of work until today. At least in times of globalization and an increasing need for flexibility at work, the assumption of a standardized working biography idea is no longer feasible. Today, work is characterized by part-time employment, parental leaves, stays abroad, home office, and comparably flexible working schedules [9–11]. The general transition to flexible and individually differing career paths generates special requirements in regard to inner corporate communication of enterprises in order to keep the communication both sustainable and robust.

Summing this section up, we can say that the working life is strongly affected by social changes which lead to the need for a stronger support of sustainable communication and knowledge management support in enterprises.

1.2 Communication and knowledge management via social network services/communities in the working context

The idea of using technical support in the working context to enhance job performance, knowledge management, and administration is not new. Especially technology acceptance in the context of Information and Communication Technologies (ICT) has been investigated intensively by authors like Davis or Venkatesh and others since the 1980s [12, 13].

The rise and prosperity of SNS [14–17] as one form of social media brought a new chance for networking for enterprises and high expectations regarding the

benefit enterprises might get from SNS usage. The successful implementation of other social software applications like wikis and weblogs [18, 19] also supports SNS implementation activities in enterprises.

In the context of research on SNS implementation in enterprises, Richter and Koch identified six central characteristics of SNS that are useful for the working context: a) *identity management* (representation of a person via profiles), b) *management of contacts* (networking), c) *expert-search* (within an enterprise), d) *support of context- and network awareness*, and e) *support of common exchange* (in an enterprise) [20].

But there is only little knowledge about empirical values regarding SNS realization, although SNS for enterprises are considered to have a big positive impact on knowledge management. This fact is considerably interesting because knowledge is considered a key factor of production as well as a motor of innovation potential of enterprises [20].

A case study of Richter and Koch that focused on success criteria for business related SNS revealed that the integration of SNS in the daily routine is a central success criterion. Other important factors were ease of use, development of the tool according to users needs, integration of existing systems, incentives, corporate culture and the recognition of benefits. Furthermore, Richter and Koch revealed that a critical mass is essential to realize long-term usage of the system.

Summarizing this section, we can state that the idea of integrating SNS into the business context is quite popular, but the knowledge about a successful realization in the working context reveals no concrete guidelines yet. The existing knowledge is mostly focused on individual solutions that are themselves focused on particular enterprises, or overgeneralized criteria which do not lead to practical implementation.

The next section takes these considerations into account and presents an approach of user-centered community development as an approach that could provide a design process which can be generalized to a broader target group.

1.3 The approach of user-centered community design

The approach of user-centered community design addresses the challenge to find design, implementation, and schooling criteria that are suitable for the integration of SNS in the working context, and transferable to diverse enterprises. In this context the idea of the user-centered community design is focused on two central aspects: first, the *comprehension of employees' cognitive skills, their emotional-, motivational-, and knowledge-related needs* in their working environment; and second, the *understanding of aspects related to linguistics and communicative usability* in the context of social media and SNS.

The elements of the user-centered community design research approach are user characteristics (age, gender, personality, educational level, technical expertise, perceived locus of control over technology (PLoC), social media expertise etc.) as *independent factors* and motivation, matching of incentives, usability, design-criteria as *dependent factors* (see Fig. 2). The overall goal of the user-centered community design is to define general design criteria for SNS in the

working context with focus on usability, motivation, and incentives concepts that can be adapted to diverse enterprises according to their personnels' profile.

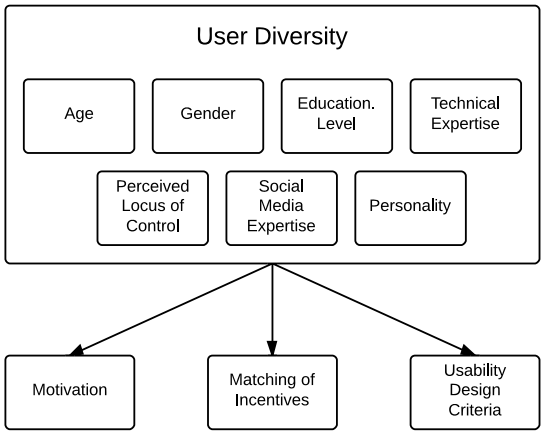

Fig. 2. User-centered community design approach. The effect of user diversity criteria on SNS/community design is evaluated to allow tailored solutions

2 Main focus of the study and questions addressed

In order to find out whether business SNS/communities can benefit from the knowledge about private SNS, we started this exploratory research focusing on the comparison of these two different settings (private vs. business). According to the user-centered community design approach, the focus is set on the influence of demographic data (age and gender), PLoC (sometimes referred to as *computer self-efficacy*) as well as personality (FFM) on the *willingness to disclose data* in SNS. Hence, the following research questions were relevant:

- RQ1: Is there a difference in willingness to disclose data between private and business context?
- RQ2: Does gender influence the willingness to disclose data in different contexts?
- RQ3: Does age influence the willingness to disclose data in different contexts?
- RQ4: Does the PLoC influence the willingness to disclose data in different contexts?
- RQ5: Does personality (FFM) influence the willingness to disclose data in different contexts?

In a second step, the focus is set on incentives and moderating factors that might influence the willingness to disclose data. Therefore, the following research question was addressed:

– RQ6: Is there an impact of moderating variables on the willingness to disclose data?

The research questions presented build the base for the questionnaire instrument presented in the following section (Section 3).

3 Method

In order to reach a large number of participants, the questionnaire method was chosen. The questionnaire was provided electronically. Before distribution, differently aged adults examined the questionnaire to avoid misunderstandings and possible lack of clarity. Filling in the final version of the questionnaire took between 25 and 40 minutes.

In the following sections the design of the study is presented: Section 3.1 contains the central variables of the study and Section 3.2 a description of the questionnaire's design.

3.1 Variables

As *independent variables* age, gender, personality (according to FFM [21]), and PLoC were chosen. Personality was measured according to the FFM with bipolar adjective scales (see Table 1). In order to keep the methodology similar to earlier research, PLoC was assessed using eight questions with a six-point Likert scale (range: 8–48, Cronbachs's $\alpha = .91$).

As *depended variables* we selected the evaluation of a set of personal data (name, date of birth, hobbies, etc.) that is often used in social media profiles (see Table 2). The evaluation was assessed on a dichotomous scale (1 = *I would disclose this information*, 2 = *I would not disclose this information*). Because of the explorative character of the study, we chose this polarizing answering-scale to get a first definitive idea of users' attitude. Additionally, we asked the participants to evaluate moderating conditions for information disclosure, e.g., money as an incentive or more information about how the data is handled and possibly disseminated. All items were presented in two settings: *private* and *business*.

3.2 Questionnaire instrument

The questionnaire used in this study is divided into six main parts: (a) demographic data, (b) PLoC, (c) personality according to FFM, (d) expertise with social media, (e) evaluation of willingness to disclose data in social media applications, (f) evaluation of moderating factors for data disclosure (e.g., money or more information). More information about the topics and the scales used are given in the sections below:

3.3 Variables related to user-diversity

Three areas of user-diversity are of interest to our study. We look into demographic data, the PLoC, and into the big five personality measures (FFM).

Demographic data: Each participant was asked to state his/her age, gender, educational level as well as current profession in order to give us the opportunity to investigate the influence of these factors on the willingness to disclose information in SNS.

Perceived locus of control (PLoC). In order to get more information about the attitude and interaction with technology, we asked for PLoC. This factor is assessed via eight questions on a six-point Likert scale (range: 8–48, Cronbach's $\alpha = .91$).

Personality Personality traits are evaluated according to Neo-Five-Factor-Inventory from Costa and McCrae [22]. This inventory uses the scales: *openness*, *conscientiousness*, *extraversion*, *agreeableness*, and *neuroticism*. In this questionnaire we used a short version of the Five Factor Inventory (FFI) [21, 23]. In our study the the items are presented as a bipolar 9-point adjective scale (see Table 1).

3.4 Evaluation of disclosure of different data in social media applications

The disclosure of data within SNS is an integral part for a successful usage of such applications. In order to find out what data a user is willing to disclose in social media applications, we asked for an evaluation ("*disclose*" and "*retain*") of 15 different data items (Table 2) for both scenarios, *private* and *business*.

Some of these items are related to private contact data while others are related to business contact data. Both are assessed in both contexts.

Social media usage concerns. In order to find out whether the participants have a positive or negative attitude against social media, we used an item set of 10 items (on a six-point Likert scale) asking for the level of agreement to certain statements about social media (see Table 3).

4 Results

This section presents the central findings of the current study according to the research questions (see Section 2). Section 4.1 presents the sample of the study. The following subsections present the influence of the factors age, gender, personality, and PLoC on the willingness to disclose data, for each of the contexts, *private* and *business*. After that, we present the evaluation of moderating factors for the willingness to disclose private data to get information about the suitability of incentives and the influence of moderating factors.

Table 1. Evaluation of the NEO Five-Factor-Inventory items on a bipolar adjective scale

Please classify yourself within the following character traits. Which trait fits you best?								
☐ **extroverted**, sociable, thirsty for interaction with other people	☐ very	☐ fair	☐ a little	☐ yes/no	☐ a little	☐ fair	☐ very	☐ **introverted**, quiet, taciturn, secluded, loner
☐ **emotional**, nervous, worried, strained, sensitive	☐ very	☐ fair	☐ a little	☐ yes/no	☐ a little	☐ fair	☐ very	☐ **easy-going**, calm, relaxed, self-content, robust
☐ **open-minded**, unbiased, inquisitive, sophisticated, imaginative	☐ very	☐ fair	☐ a little	☐ yes/no	☐ a little	☐ fair	☐ very	☐ **determined**, rigid beliefs, low interest in news, traditional
☐ **curt**, cold, critical, quick to anger, distrustful	☐ very	☐ fair	☐ a little	☐ yes/no	☐ a little	☐ fair	☐ very	☐ **sociable**, cooperative, cordial, kind, accommodating
☐ **conscientious**, reliable, careful, tidy, ambitious	☐ very	☐ fair	☐ a little	☐ yes/no	☐ a little	☐ fair	☐ very	☐ **sloppy**, casual, untidy, unpunctual, chaotic, nonchalant

Table 2. Evaluation of the data in social media profiles, dichotomous scale: "disclose" or "retain"

I would disclose the following information in a private SNS:		
☐ first name	☐ address (private)	☐ profession
☐ second name	☐ phone (job)	☐ hobbies
☐ sex	☐ phone (private)	☐ marital status
☐ date of birth	☐ mobile phone number	☐ religious affiliation
☐ address (job)	☐ email	☐ political opinion

Table 3. Exemplary items of social media usage motives on a six-point Likert scale (1=total agreement to 6=total rejection) order by level of agreement descending

I am skeptical about social media, because...	M	SD
... there is no established etiquette.	2.75	1.37
... it is an impersonal way of communication.	3.15	1.34
... it induces the impoverishment of interpersonal relationships.	3.15	1.45
... it facilitates voyeurism.	3.52	1.45
... social media is also involved in criminal and abuse contexts.	3.67	1.52
... it supports stalking.	4.04	1.43
etc...		

Employed statistical methods. As statistical methods, Mann-Whitney U, Kruskal-Wallis and Friedman tests are used. For normality testing, Kolomogorov-Smirnov testing was used. For testing of nominal scales, Chi-Square tests are used and Cramér's-V is reported. The level of significance was set to $\alpha = .05$. Effect sizes, if applicable, are reported using Pearson's r.

For all tests, case-wise deletion of missing values was applied. Because not all participants finished the survey, some results rely on smaller samples. For these cases, either the reduced sample size (i.e., N) or the absolute frequency of a measurement (i.e., n) is given.

4.1 Sample description

The sample of this study comprises a total of $N = 151$. The sample of the study is rather young with a mean age of 27.4 ($SD = 8.0$). The educational level of the sample is quite high with 50% ($n = 75$) having "Abitur" (the highest German high school degree) and further 37% ($n = 55$) having a college degree.

Furthermore, we can report that the sample has a bias to female participation with $n = 89$ female participants and $n = 62$ male participants.

According to expertise with social media we have a rather tech-savvy sample: In the context of social media usage only 3% ($n = 4$) of the sample reported that they never use social media. The rest of the sample uses social media at least 0-10 minutes a day ($n = 13$) or most more than 4 hours a day ($n = 33$). In this context, we can also report that the participants' age correlates negatively but highly significantly with social media usage frequency ($r = -.225$, $p < .01$).

We can also say that the sample reveals no unanimous attitude towards the evaluation of the character of social media: 39% ($N = 132$) reported to agree (i.e., *rather agree*, *agree* and *agree completely*) that social media are impersonal. The statement "social media supports the impoverishment of human values," was confirmed by 44% ($N = 133$) of the participants.

For the factor *PLoC*, we can report that the sample has a perceived high PLoC ($M = 4.58$, $SD = .98$).

Referring to personality (all personality scales range: $1-9$) we can say that the level of *neuroticism* was average ($M = 4.5$, $SD = 1.76$). Male participants revealed lower neuroticism than females ($M_{\male} = 3.8$, $M_{\female} = 5.0$, Mann-Whitney $U = 1797$, $Z = -3.626$, $r = .3$, $p < .01$). *Extraversion* was slightly above average ($M = 5.9$, $SD = 1.55$). Males showed lower extraversion than females ($M_{\male} = 5.6$, $M_{\female} = 6.1$, Mann-Whitney $U = 2214$, $Z = -2.142$, $r = .175$, $p < .05$). *Openness* was above average ($M = 6.9$, $SD = 1.41$) for the whole sample. In comparison to the average distribution, the level of *agreeableness* was lower ($M = 3.8$, $SD = 1.57$). For the factor *conscientiousness* we can report a level above average ($M = 6.5$, $SD = 1.53$). None of theses scales was normally distributed (Kolmogorov-Smirnov test yields $D(142) > .09$ and $p < 0.01$ for all scales).

Summarizing, we can state that we have a young, predominantly female sample with a high level of extraversion which is quite tech-savvy and affine to social media, but also critical of the effects of social media towards society.

4.2 Willingness to disclose data in the private and business context

To get a first impression whether the willingness to disclose private data in SNS depends on the setting the current SNS is used in, we made a descriptive comparison of all evaluated data. As Figure 3 and 4 illustrate, there are differences between the two settings. Especially the disclosure of *address (work)*, *phone number (work)*, *mobile phone number*, and *hobbies* revealed deviations.

The willingness to disclose work related data (address and phone number) increases enormously in the context of a business usage context (see Fig. 4): For address (work) we revealed an increase from 6% ($n = 132$) in the private context up to 71% ($n = 111$) and for the phone number (work) from 4% ($n = 131$) up to 76% ($n = 111$).

Interestingly, the willingness to disclose more sensitive data, like one's mobile phone number, also rises in the business context: the willingness to disclose the mobile phone number increases from 5% ($n = 130$) in the private context up to 22% ($n = 106$) in the business context. Moreover, the disclosure of one's email address increases from 47% ($n = 131$) to 74% ($n = 111$). Other aspects, like hobbies, decrease from a business oriented using context to the private one, even if not to a big extent (76% $n = 131$ *private*; 33% $n = 108$ *business*).

In addition to the descriptive analysis, non-parametric Friedman tests were implemented to find out whether the differences between the two settings are statistically significant. As Table 4 illustrates, significant differences between the two settings could be revealed for: last name, address (work), address (private), phone number (work), mobile phone number, email, hobbies, family status, religious affiliation and political attitude.

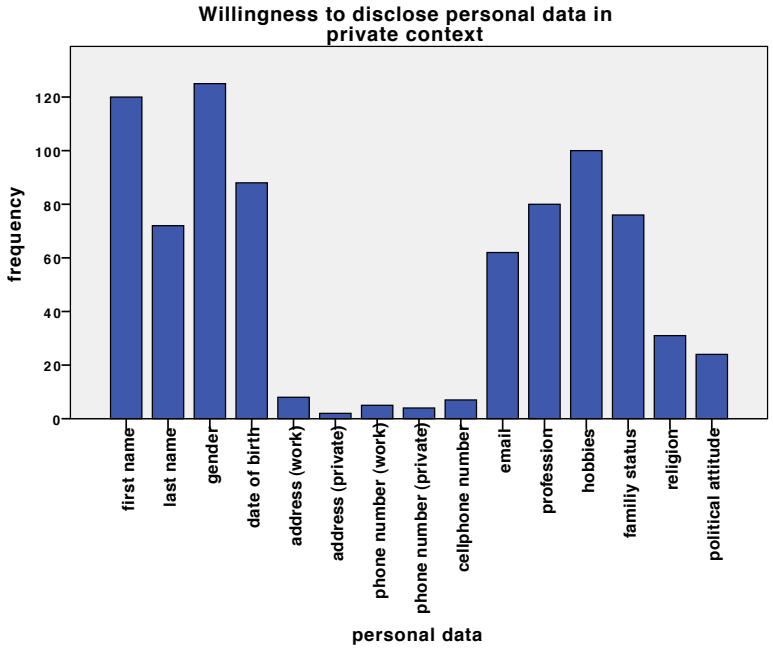

Fig. 3. Willingness to disclose personal information in the private context

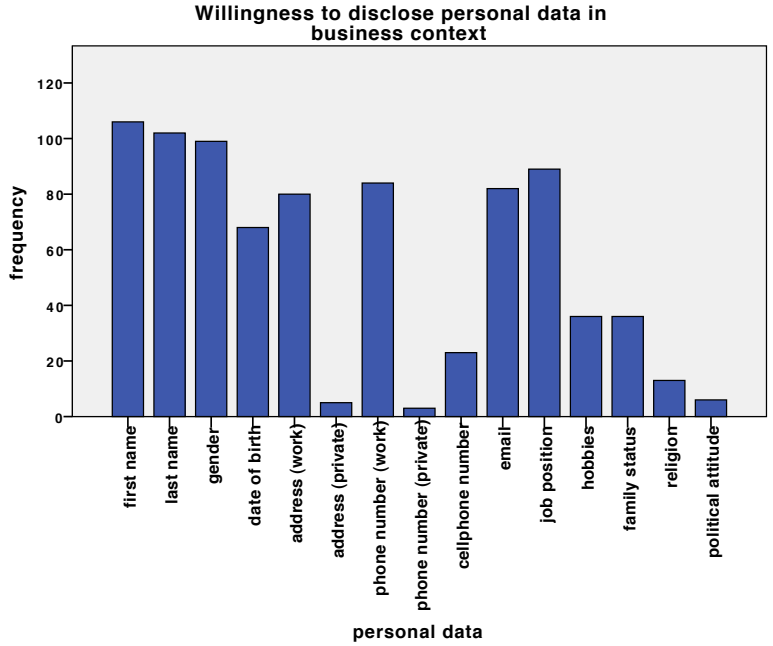

Fig. 4. Willingness to disclose personal information in the business context

Table 4. Results repeated measures analysis comparing willingness to disclose personal data in SNS in the private and business context (non-parametric Friedman Test)

Item	Chi-square	df	Asymp. Sig.
last name	40.091	1	0
address (work)	73	1	0
address (private)	4	1	0.046
phone (work)	79	1	0
mobile phone number	15.211	1	0.001
email	20.455	1	0
hobbies	37.753	1	0
family status	26.471	1	0
religious affiliation	7.2	1	0.013
political attitude	10.286	1	0.001

4.3 Influence of user diversity on the willingness to disclose data in SNS

In order to get more information about, the origin of these differences and taking the answering-scale into account non-parametric Chi-square tests for independence and Kruskual-Wallis tests were performed. According to the research questions 1–5 (see Section 2) the following section presents the influence of gender, age, PLoC, and personality on the disclosure of private data aspects in SNS. Results of both settings are presented together in individual subsections according to the independent variables: *age*, *gender*, *PLoC*, and *personality*.

For the analysis we formed groups:

- *Age groups* were formed as a median split (young: 14–25 years, and old: 26–55 years).
- *PLoC* was divided into two groups (low: means ranging 1–4.75; high: means from 4.76–6, median split).
- The *FFM personality traits* were each divided into three groups: low level of the current factor, medium, and high, creating 3X5 factorial levels.

Age. Due to the fact that age is often an important carrier variable for the acceptance of technology, especially ICT, we analyzed the influence of the age groups (young and old) on the willingness to disclose personal data in the context of private SNS and business oriented ones.

Non-Parametric Kruskal-Wallis tests revealed that the factor age only influences the willingness to disclose data in the context of private SNS. In this context, revealing work address ($\chi^2(1) = 4.097$, $p = .043$), work phone number ($\chi^2(1) = 5.414$, $p = .038$) and mobile phone number ($\chi^2(1) = 4.097$, $p = .043$) are influenced by age. For the disclosure of phone numbers (mobile phone as well as landline), we can report that younger participants are more willing to disclose this information. The willingness to disclose the work address was higher within the older age group (old: 76% $n = 54$; young: 69% $n = 55$).

Gender. To find out whether there are gender differences in the willingness to disclose data in SNS we have run Chi-square tests for independence. Results revealed that gender influences both the willingness to disclose one's own gender ($\chi^2(1) = 5.901$, $p = .015$, Cramér's-$V = .211$) as well as one's private phone number ($\chi^2(1) = 5.733$, $p = .017$, Cramér's-$V = .211$) significantly in the private usage context. Female participants are less willing to disclose gender or their private phone number.

For the business context, gender differences are significant for mobile phone number disclosure ($\chi^2(1) = 4.262$, $p = .039$, Cramér's-$V = .201$). In this context, women are less willing to disclose information.

Perceived Locus of Control (PLoC). The PLoC has no influence on the willingness to disclose personal data in private SNS. The willingness to disclose data in business related SNS only reveals a significant influence on the disclosure of a person's religious affiliation ($\chi^2(2) = 14.933$, $p = .011$). Members of the group "high level of PLoC" are more willing to disclose their religious affiliation, although the willingness to disclose religious affiliation was very low in general only 5% ($n = 77$) stated that they would disclose their religious affiliation.

4.4 The influence of personality

Addressing the research question (RQ5), we investigated the influence of FFM personality traits *openness*, *conscientiousness*, *extraversion*, *agreeableness*, and *neuroticism* on the willingness to disclose personal data in *private* or *business* social networks. For the analysis, non-parametric Kruskal-Wallis test was chosen.

Openness. Results show that *openness* has a significant influence on the willingness to disclose the private address in the private context ($\chi^2(2) = 19.654$, $p < .001$) as well as in the business context ($\chi^2(3) = 8.175$, $p = .017$). For both cases we can state that the higher the level of openness the higher the willingness to disclose one's private address in SNS.

Conscientiousness. *Conscientiousness* influences the willingness to disclose one's mobile phone number ($\chi^2(2) = 10.011$, $p = .007$), religious affiliation ($\chi^2(2) = 8.314$,$p = .016$), and political attitude ($\chi^2(2) = 12.011$, $p = .007$), but only in the private context. : Although the willingness to disclose the religious affiliation is generally rather low, people with a high level of conscientiousness are more willing to disclose their religious affiliation. 15% ($N = 34$) of participants with a high level of conscientious confirmed that they would disclose that information. Within the group of participants with a moderate level of conscientiousness only 10% ($N = 31$) and within the group with a low level 13% ($N = 40$) stated that they would disclose their religious affiliation. Regarding the disclosure of one's mobile phone number and political attitude, we can say that the higher ones level of conscientiousness the lower the proportion of people willing to disclose this data.

Extraversion. The level of *extraversion* has a significant influence on the disclosure of the private address in private SNS ($\chi^2(2) = 9.377$, $p = .009$) and business orientated ones ($\chi^2(2) = 7.385$, $p = .025$). Also, the willingness to disclose one's political attitude is significantly affected by extraversion in private (($\chi^2(2) = 9.324$, $p = .009$) as well as in business contexts ($\chi^2(2) = 9.543$, $p = .008$). For the private context we could also reveal a significant influence of extraversion on the disclosure of ones work address (($\chi^2(2) = 12.795$, $p = .002$) and one's phone numbers (private phone number: $\chi^2(2) = 9.386$, $p = .009$; work phone number $\chi^2(2) = 13.313$, $p = .001$). On the one hand, we can summarize for influence of extraversion that an increasing level of extraversion influences the willingness to discloses data positively. But on the other hand, we have to report that there is a generally low willingness to disclose data in all cases portrayed here: The only item that reached a willingness to disclose above 30% was the disclosure of the political attitude in the private usage context (i.e., 39%).

Agreeableness. *Agreeableness* has no significant influence on the willingness to share personal data in either private or business oriented SNS.

Neuroticism. The last personality trait of the FFM scale, *neuroticism*, influences the willingness to disclose ones hobbies ($\chi^2(2) = 13.775$, $p = .001$) and the family status ($\chi^2(2) = 7.889$, $p = .019$) in the private using context. For the business context, the mobile phone usage is significantly influenced by neuroticism ($\chi^2(2) = 7.492$, $p = .024$). According to the influences of neuroticism disclosure on the willingness to disclose personal data, we can report that the higher the level of neuroticism the lower the willingness to disclose one's mobile phone number in the business related usage context. In the context of the disclosure of a persons' family status we revealed that people with a high level of neuroticism are more willing to disclose their family status. 79% ($N = 33$) stated that they would disclose their data. In comparison, only 53% ($N = 45$) of the participants with a medium level of neuroticism and 49% ($N = 51$) with a low level would disclose their hobby within a SNS. For the disclosure of one's hobbies, we revealed that people with a high level of neuroticism are more willing to disclose their hobbies than participants with a lower level: 100% ($N = 33$) of participants with a high level of neuroticism would disclose their hobbies whereas only 69% ($N = 45$) of the participants with a medium level of neuroticism and 67% ($N = 52$) of the ones with a low level are willing to disclose this information.

4.5 Moderating factors for the willingness to disclose personal data in SNS

In order to find out whether moderating factors can influence the willingness to disclose personal data, we asked each participant to evaluate four statements (on a four-point Likert scale from 1 = totally disagree to 4 = totally agree) addressing incentives and other moderating aspects for the disclosure of personal data.

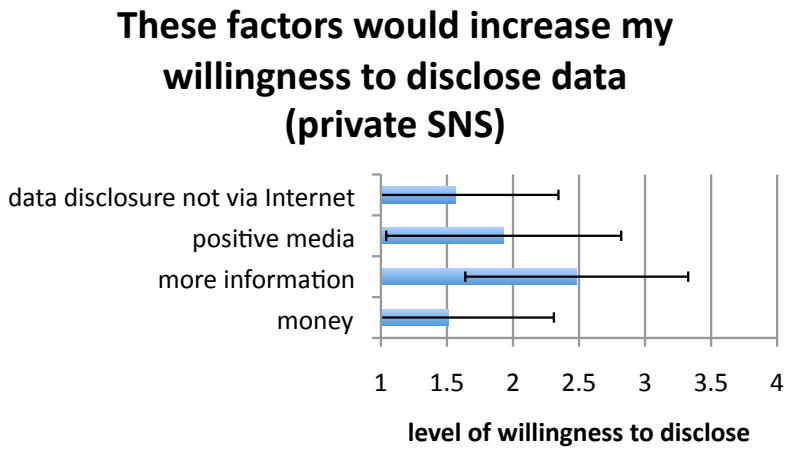

Fig. 5. Mean comparison of moderating factors for the willingness to disclose personal data in SNS in a private context (on a four-point Likert scale)

As the two figures (see Fig. 5 and 6) illustrate, *data disclosure not via Internet*, *money* and *positive media* were, on average not regarded to have a positive impact on the willingness to disclose data in SNS neither private nor business related ones. Only *more information* is evaluated to have a positive impact on the willingness to disclose data in SNS.

4.6 Influence of user diversity on the evaluation of moderating factors

To learn more about the influence of user-diversity on the moderating factors for data disclosure, non-parametric Kruskal-Wallis tests were executed to detect differences in the evaluation habits. Results revealed that the factors age and gender are not causing significant differences in the evaluation of the moderating factors for data disclosure.

The PLoC revealed a significant difference for money as an incentive for data disclosure in private SNS ($\chi^2(1) = 4.265$, $p = .039$). The higher a person's PLoC, the higher their willingness to disclose data for money.

The FFM personality traits revealed no significant difference for the factors extraversion, neuroticism, and conscientiousness. Agreeableness showed a significant difference in the evaluation of the incentive *money* in the context of business oriented SNS ($\chi^2(2) = 6.051$, $p = .049$), the higher the level of agreeableness the lower the evaluation that money would enhance the willingness to disclose data in the business context. The factor openness revealed a significant difference in the business context ($\chi^2(2) = 8.303$, $p = .016$) for the statement less negative

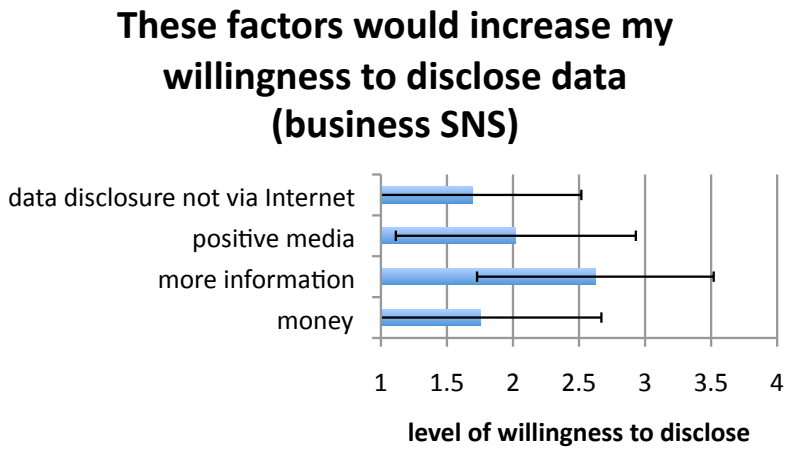

Fig. 6. Mean comparison of moderating factors for the willingness to disclose personal data in SNS in a business context (on a four-point Likert scale from 1 = *disagree* to 4 = *agree*)

press would enhance the willingness to disclose data. The higher a participant's level of openness, the lower the rejection of this statement.

Summing this section up we say that the moderating aspects *money*, *less negative press* and *data entry not via Internet* are not regarded to have a positive impact on the willingness to disclose personal data in SNS. The only factor regarded to have a positive impact was early information (for private SNS as well as business related ones). Also, the user diversity factors age, gender, PLoC as well as personality showed no meaningful influence on the moderating factors.

5 Discussion

As data disclosure is a central factor for running a SNS successfully, we investigated the willingness to disclose personal data in SNS in two different settings (private and business). According to the research questions (see Section 2) this research was focussed on the influence of user diversity (age, gender, personality (FFM), PLoC) on the willingness to disclose personal data in SNS, and on moderating factors (data disclosure not via Internet, positive media, more information, money). Due to the fact that SNS in the private context are very successful, we wanted to find out whether these settings are evaluated similarly. Similarities would allow to transfer design guidelines more or less one on one into the business context.

In the context of this research, we could reveal that there is a significant *difference between data disclosure in private or business related SNS* (RQ1). Significant differences were found for the data: address (work), phone number

(work), mobile number, and hobbies. For all differences we found that the working context leads to a higher level of willingness to disclose data.

A relatively high level of willingness to disclose work related data in work related context was not surprising. What was interesting was the fact that data like political attitude, marital status, or religious affiliation showed no differences. Taking these findings into account, we could argue that a direct transition from concepts of private SNS to business related SNS could be possible for some personal data except, the four mentioned above. Especially sensitive personal data seems to underlie a general unwillingness to disclose. For the context of business related SNS it is essential to define which data is necessary for successful usage and what fears influence willingness to disclose.

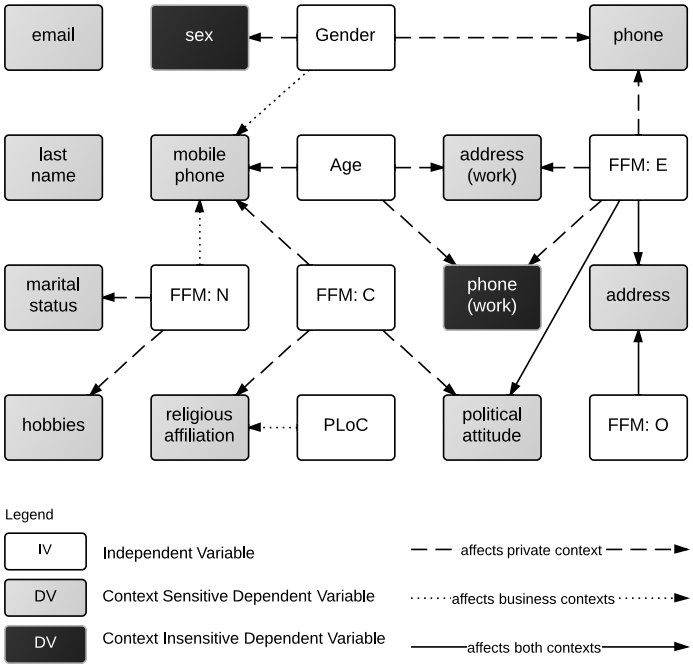

Fig. 7. Visual overview of the relationsships of IV and DV. FFM = Five Factor Model, PLoC = Perceived Locus of Control. All dependent variables denote willingness to disclose

Another aspect of this study was the investigation of the *influence of user-diversity on the willingness to disclose personal data of SNS*: As Figure 7 illustrates, there are relationships between the dependent variables and the willingness to disclose personal data.

The factors *age* and *gender* are predominantly affecting the disclosure of data in the private usage scenario (RQ2 and RQ3). The participant's age influences

data that is related to work information (address and phone) and mobile phone. Due to the fact of the relatively young sample, the experience with work and effects of working life on the private sector could lead to these differences. The willingness to disclose one's private phone number and sex is influenced by a person's gender. The same is relevant for one's mobile phone number in a business scenario. Since all these parameters show lower willingness to disclose data for women one could assume that the low willingness to share either a private phone number or one's sex could be related to avoiding unwanted approaches of male users. This finding is vaguely supported by the effect of neuroticism on willingness to disclose a mobile phone number which is also higher in women. Furthermore, extraversion, conscientiousness, and openness improve willingness to disclose data, but mostly in private contexts (RQ5). One could argue that in business settings varying personality does reflect willingness to disclose, because voluntariness of use (i.e., work) is rather low in this context.

Interestingly, *PLoC* showed only little impact on many facets of data disclosure (RQ4). This finding strengthens the idea that an SNS is more likely to be seen as a medium of communication than one of technology.

The only *incentive* (RQ6) for data disclosure that reaches a positive effect is *more information.* One could argue, since information is a central aim of SNS solutions, that this finding only replicates the importance of *perceived usefulness* from other technology acceptance research.

Designing an SNS for internal business communication requires knowledge of user diversity factors of the specific staff in order to customize required profile data within the SNS. It is necessary to communicate effectively why certain data is surveyed, and to demonstrate the effect of the availability of this data on improvement of information exchange within an organization.

Limitations and future research In the context of this study, we have to name some limitations. Due to the fact that the answering options for data disclosure were limited to dichotomous answering options, we could only run non-parametric tests. In future research, the findings of this study should be investigated by using higher level scales to get a deeper insight into the willingness to disclose data. Additionally, the motives behind the willingness to disclose specific data must be investigated. The relatively young age of our sample promts us to intensify the investigation of age effects within a more age-heterogenous sample in future studies.

Assessment of incentives is particularly tricky, because incentives reported as being most effective do not actually need to be the most effective incentive, as users might not be fully aware of their motives. People might disagree with *money* being an effective motivator but behavioral studies have confirmed different findings in certain settings. In future studies, behavioral studies should be added because they are better suited to determine the impact of incentives.

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