The diversity of why

A meta-analytical study of usage motivation in enterprise social networks

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Abstract In times of demographic change, skill shortage, and disruptive innovations, organizational knowledge management and innovative capacity are the key to a company's success. But how can knowledge be retained with fast staff turnover, global project-based work and parental leaves? Using enterprise social media to improve knowledge dissemination at work seems promising, when looking at the success of private social networking sites. In this article we combine ten different empirical studies which investigated different aspects of how user diversity influences the motivation to use social media at work. The emerging meta study using the DeSimonian Laird Method (total sample size N=522) analyzes different aspects of user diversity and their correlation with eight motives for SNS usage: information, importance, contact, self presentation, autonomy, social comparison, and power & control. We found that that the individual achievement motivation correlates positively with the motives importance, power, information and self presentation. The need for autonomy correlates with openness to new experiences and the need for social comparison with gender and neuroticism. From our findings we derive practical implications for designing a social networking site for work which fulfill the users' needs and function along their motivation.

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1 Introduction

Globalization processes, rising international competition, and a constantly aging population [12] cause knowledge to be a key resource with indispensable value in any innovation process [34]. However, the maintenance, management, and expansion of a companys employees accumulated knowledge is complex, so that a functioning knowledge management becomes important. As traditional knowledge transfer and management is not easy to realize in times of changing work models, innovative media solutions became important. A well prepared and cared knowledge management tool can not only compensate for staff leaving the company for e.g. parental leave or retirement [25], but provide the essential support for the companys success in the era of digital technology.

The usage of enterprise social media for business purposes seems to be a promising approach for enhanced connectivity and communication among employees independent from space, time and position [59]. Since social media services like Facebook, Twitter and other SNS are part of our daily private lives [66], their implementation as a business support tool spread with amazing rapidity [39]. Day-to-day tasks, which previously used to be solved by unsystematic mailing lists and shared servers, are now shifted into social media related technologies. This is particularly important in cases of short-term and project related employment, or for steadily growing companies, which continuously have to integrate new, sometimes inexperienced staff.

But even if a company manages to implement a business community, it sometimes generates low usage motivation or acceptance, and fails to succeed [45]. To counter this, it is important to investigate acceptance of such technical solutions. The acceptance of certain social media applications for business purposes is closely linked to the future users diversity and their usage motivation [11].

Studies concerning usage motives for enterprise social media like social networking sites (SNS) have been conducted on a hypothetical level and are supported by studies in real applications as well (e.g. [45, 58, 19, 11]). However, the approaches do sometimes state controversial messages and therefore cannot be generalized. In addition, some use small samples and only include theoretical investigations, which is why usage motives in relation to user diversity and future employees prospective usage still remain unclear. To give evidence and make a reliable statement about everyone's personal needs and motivations, we conducted a meta-analysis of ten different studies with mostly the same variables and similar geographical and cultural background.

In this article we want to find out how user diversity affects motivation to use a social networking site at work. We also want to understand how differences in motivation translate to behavioral intention to use such a system. By understanding the influence of diversity, one can build a system that addresses the core motivational drivers of the intended users. This research allows prioritizing motivational features and does so by helping to understand how different aspects of motivation drive behavioral intention and thus actual system usage. Overall, we want to understand how diversity determines the "why" for users of social networks at work.

1.1 Structure of this article

After this introduction **Section 2** presents previous **related work** that is related to the studies investigated in this meta-analysis. For this purpose we shortly review the emergence of social media in enterprise knowledge management and the changes this process causes for workers. As we want to look at how users are individually motivated to use such a system, we briefly summarize the literature on achievement and motivation theory at the job. We conclude this section by looking at other research that investigated the influence of user diversity on usage motivation.

Section 3 presents the **context of this research**. The meta-analysis was conducted on ten studies from a single project. Here we also present the reasoning of our methodology.

The **method** is presented in **Section 4**. This section also contains survey items that were used to measure usage motivation and explains the statistical model.

Section 5 gives an overview of the ten **studies used in our meta-analysis**. As not all of the studies have been published yet, we give background information to understand the context of these studies. If the studies have been published, the articles are referenced. This section also contains an overview of used variables and sample sizes.

Section 6 presents the **results** of the meta-analysis by visualizing the found correlations from the pooled samples. We provide three consecutive models: (1) the independent variables (IV) interdependencies to characterize our samples, (2) the dependencies of IV and usage motives, and (3) the dependency of usage motives and behavioral intention.

Section 7 is the discussion of the results and presents **design recommendations** for a social networking service at work that can be applied if the target audience is known by its diversity factors.

Section 8 presents the limitations of our study methodology and an outlook into **future research** opportunities from our research.

2 Related Work

In order to identify where to start we must determine which factors to investigate first. Research from the field of Information and Communication Technology (ICT) has investigated success of knowledge management systems but implementing these as a social networking site brings new challenges. Here, individual motivation seems to play a major role in usage. Therefore, one must reach the largest number of users possible, as the network benefits when all users participate. In order to customize a system to meet all users' emotive and motivational requirements, diversity and circumstances of employees must be regarded.

2.1 Emergence and population of social media for enterprise knowledge management

The potential of Information and Communication Technologies (ICTs) is arrived world-wide in all sectors, and is especially used and still gaining importance in areas of learning, teaching and working. In combination with the Internet those technologies assist knowledge gaining, sharing and management. They give access to digital information, methods, tools, enable connection to and interaction with colleagues and much more [54, 61]. The overall concept of knowledge management can

be defined as "a systematic framework to capture, acquire, organize and communicate knowledge of employees so that other employees may utilize them to be more productive in their work" [3]. As already mentioned the traditional term "knowledge management system" is widely used and further developed in the business world. Nowadays it carries additional names or definitions without a clear distinction. Most of the definitions for systems called enterprise social software, social platforms, social networking sites (SNS), online communities, business social media, or else still correspond to integration, utilization and sharing of knowledge. Each of the technologies mentioned above is kind of a social software which provides an interactive platform and enables colleagues and coworkers to connect, collaborate, exchange, create, gather and publish any type of knowledge and information [74]. It is hardly surprising that enterprise social media solutions, which function as a platform for internal social and business interaction, are increasingly used in many companies [42]. Implementing social software instead of traditional knowledge management tools is said to be less costly but more ubiquitous, mobile, personalized and, if applied with care and a clear mind, effective in meeting the employees needs and demands [3].

One of the prerequisites for knowledge sharing via social media is a supportive organizational culture, e.g. an active leadership which points out the systems benefits [51]. Here, trust in the company itself as well as in coworkers could help to overcome several barriers for knowledge sharing and so motivate the users of business related SNS for active participation [4,51]. Another important pillar of social media systems for knowledge management is to get users to actively contribute [39]. The principle of those systems on organizational level is to include everyone for active participation: digital natives, newbies, oldies, employees working from home, parental leave returners and maybe even retired knowledge keepers. One of the main advantages of requesting all employees to use a specifically designed knowledge management system can be the rise in knowledge quality. The results of a recently published study by Bharati, Zhang and Chaudhury (2015) show a relationship between organizational knowledge quality and organizational emphasis on knowledge management. Thus the indirect positive influence of social media on the organizational knowledge quality is confirmed [8]. Leonardi et al. [42] were among the first to systematically investigate the advantages and disadvantages of social network systems for knowledge management. They describe SNS as the "leaky pipe", "echo chamber", and "social lubricant". Enterprise social networks allow information to passively leak to a broad set of employees

and provide a space to strengthen existing communities of interest. At the same time, they provide insights into what others are doing. On the other hand, these properties come with problems, such as information leak to outsiders, groupthink of isolated groups, and the illusion of social connection. Despite those disadvantages is knowledge management a crucial determinant for an enterprise social network usage and vice versa. Sharing and managing information is consequently responsible for the success of the network [64,65].

When thinking about how and why employees adopt a social networking system/site or not, the concepts of perceived ease of use and perceived usefulness by Davis [20] should be kept at the back of ones mind [66]. Stocker and Müller compared survey results of the benefits and the perceived ease of use with factual usage statistics of a specific social networking platform called References+ at Siemens. Their results show, that e.g. usage frequency and perceived benefits of a SNS are correlated [66]. Other researchers [74,70,38] confirm the influence of perceived ease of use and perceived usefulness on the attitude to use SNS. Those two factors show some differences when looking at the experience users have with IT systems. In 1995 a study by Taylor and Todd revealed, that the attitude towards IT system usage differs, depending on the experience of users and their perceived ease of use and usefulness regarding the system [67]. As attitudes affect the behavioral intention and this intention in turn affects SNS activities [74], it is important to gain insight towards the future users motivation and attitude concerning SNS. If the company does not carefully estimate possible motivation and rewarding strategies, users might reject yet another platform [45,34]. That is why—even though the usage of social networks in business is becoming standardized, ubiquitous, mobile and less costly [73]—the challenge of meeting individual needs remains.

Turan, Tinmaz and Goktas [68] investigated university students reasons for not using a SNS. They claimed perceived waste of time, violation of privacy concerns, dislike of self-representation and missing trust in virtual friendships as reasons for non-use. Others state, that employees rather search for new contacts than only connecting with people they already know [27].

To minimize limitations and maximize potential of those systems, their structure and following implementation has to be consciously managed [8,54]. Beside platform or system specific factors, the user acceptance in form of a multifactorial product should be focused by investigating personal and motivational determinants [36]. From the plethora of possible criteria that influence acceptance and rejection, one must first determine the specific criteria by which a work-based portal should

be evaluated [16, 15]. As human factors' knowledge seem to be the most essential ingredient for a successful implementation of a social networking system [34], social software should be focused on the benefits for their users [39]. Therefore, it is highly important to investigate peoples motives for using such systems at work [61].

2.2 Achievement, Motivation and Job

When looking at motives for using such a system, it is necessary to understand human motivation in general. In this field a large body of research and theories already exists. The roots of the modern field of motivation research, can be traced to Maslow's hierarchy of needs [46] from the earls 1940'ies. Maslow ranks different needs and argues that some of these needs are basic human needs (physiological and safety needs) that need to be fulfilled before higher human needs (belonging, esteem, self-actualization) become important. However, some aspects of human behavior contradict this hierarchy. For example, people may accept physiological suffering for causes driven by belonging or esteem. Needs are also shaped by personal experiences and thus individual learning. Especially in societies where physiological needs are satisfied in general, other needs seem to become more important. This ultimately even leads to generational differences in motivation [76].

Modern motivational theories usually addresses three different sources, according to Vassileva [69]: intrinsic, extrinsic and social motivation. These theories aim to explain motivation either through internal, external or social reasoning. A fourth category are supertheories that use all multiple types of reasoning to explain motivation.

2.2.1 Intrinsic motivation

The general idea of intrinsic motivation is that the desire to perform an action is based in cognitive convictions and affect driven. Deci [23] defined intrinsic motivation as a self-desire to to seek-out challenges and new knowledge. The desire to do something is derived from internal wanting. Motivation is triggered by goal-setting [44] and then modulated by an internal evaluation. Intrinsic motivation also depends on the locus of control (Can my actions lead to change, or is the outside world responsible?) and self-efficacy [5] (Do I feel in control?). The benefits of intrinsic motivation is that it is long-lasting and self-sustaining. This brings the natural disadvantage that it is harder to change and shape. Cognitive evaluation theory, explains how

change change depending on external factors (e.g. feedback) occurs.

2.2.2 Extrinsic motivation

Extrinsic motivation assumes the oppositional stance that motivation is caused by external reasons. In particular theories of reinforcement by Skinner [28] or expectancy theory [41] explain the probability of a behavior depending on the previous exposure to rewards or punishment. The internal evaluation (consciously or subconsciously) is conducted against the expected outcome (reward or punishment. How this outcome is evaluated follows certain rational and irrational (psychological) rules thus leading to the theories of behavioral economics and gamification utilizing these findings to increase motivation [69, 10]. The benefits of extrinsic motivation is that it can be applied quickly to change behavior, but intricate reinforcement schedules have to be developed to create behaviors that are resistant to spontaneous deletion.

Extrinsic motivation is not an opposing theory to intrinsic motivation, but a complementary one. Both types of motivations are assumed to steer human behavior likewise and differ in applicability, sustainability, and in trade-off evaluations. It is worth noting, that rewards (and thus extrinsic motivation) can undermine intrinsic motivation [22]. One must be careful to reward intrinsically motivated people, as this can lead to extrinsically motivated behavior. The person now behaves a certain way because of expected rewards and behavior might delete the behavior if rewards no longer occur. The self-sustaining nature of intrinsic motivation can thus be damaged.

2.2.3 Social motivation

Social theories of motivation include the social ties of a human being in their evaluation of behavior. For example, the motivation for wearing a formal uniform can be social in nature, if a person perceives their social group identified by wearing the uniform. A good example of social motivation theory is Festinger's theory of cognitive dissonance [30]. Cognitive dissonance is the discomfort caused by a behavior that is contradictory to one's believes and values. If I see myself as a person that is helpful in nature, yet do not give money to beggars— a helpful behavior—I might consider giving money a non-helping behavior. I might tell myself: "Giving this person money does not actually help him, it only rewards him for his begging." Cognitive dissonance can retrospectively cause changes in remembering what one has done or how someone evaluates behavior.

2.2.4 Super-Theories

Super-Theories of motivation combine the previous three dimensions into unified models. Early theories such as the theory of planned behavior [1] merge social, internal and external reasoning for an intended behavior. Self-Determination Theory (SDT) [56] expresses these aspects as needs for autonomy, competence and relatedness. Actions that increase the autonomy of an individual lead to higher volition; actions that require the competence of an individual lead to higher volition; and actions that an individual can relate to lead to higher volition.

2.2.5 The diversity of usage motives

Both intrinsic and extrinsic factors play a large role in computer-based technology adoption [21]. More specifically, the motivation to use a SNS utility of such network not only depends on perceived utility, but also on an individual enjoyment from sharing knowledge and cooperativity [60]. But also social factors matter, as high commitment from all colleagues can further increase the individual motivation.

Different motives, such as autonomy and competence, may also play a different role in SNS adoption. Beyond the motives from self determination theory, other motives have been shown to influence usage behavior in ICT environments and knowledge sharing in SNS environments at work [51].

Depending on the context of work, different motives seem to play a role in motivation. For example, employees are motivated for work in general by receiving *feedback* on their performance. Feedback and *social comparison* are inherent human needs [29] directed at self-evaluation and self-actualization. Only by understanding the individual position in the hierarchy, can actions be evaluated. Understanding how individual actions are evaluated can then lead to a sense of *importance.* Importance means having meaning beyond the individual. If my actions help more than just myself, I am important. If my decisions matter, I am important. The need for making decisions *autonomously* and conducting actions on one's own behalf is also strong motivation for work [35].

When it comes to private web usage, the motives *information, contact* [9], and *self-presentation* become important [32]. Users go to the web to find information and get in touch with other people, but also use the web to express themselves and present themselves to a (restricted) public audience. Self-presentation in this regard is also strongly connected to the idea of impression management. Impression management refers to the concept of switching a role [33] depending on the situation to present the world an impression, that is suitable for the context. In the context of web-applications users present themselves as best as possible depending on the context of the web-application [40]. The more pronounced a users extraversion and self-efficacy in use of technology, the stronger users do impression management online.

Overall, getting access to information [49] is also a human need that might play a major role in setting up knowledge management through a SNS. SNS can centralize information storage and thus satisfy the *need for information* for its users. Getting the users to actually commit information to the SNS is the harder task. The motive of having power [47, 48] over other people is a strong motivation for employees to not share knowledge unless using the SNS also caters to this need.

2.3 User Diversity and Usage Motivation

Over time many studies about success, personality and motivational factors concerning SNS were conducted. Different users report that they would use such a system for differing reasons and from different motivational standpoints [59, 19], so that the results do not always coincide. Some studies state that general diversity factors like gender and age are not of great or even any importance when regarding motives for business community usage [59, 57]. Others found notable differences concerning motivational factors due to gender [43, 11].

Cardon and Marshall [18] conducted a study to find out about relations between age, usage frequency and attitude towards social networks for team communication. They conclude that people between the age of 18 and 31 show a huge potential to drive the adoption of a SNS as many of them already use social media on a daily basis. They also found out that the mere usage of such an internal enterprise system often leads to the believe of high quality work through using the platform [18]. Chen [19] found correlations between usage motivation and user behavior like usage frequency as well. The author classified motivation into the following six types: information and instrumental, entertainment and aesthetic, social connection, altruism, ascription and self-identification, and intrinsic motivation. Each of those motivation types showed a significant positive correlation with a certain user behavior, namely usage level, registration time and frequency. According to their study, acquiring and sharing information is the strongest motivational aspect. Other research has indicated that users would use such a system, if it addresses their need for information, too [57]. Furthermore, the

authors claim self-portrayal, feedback and social interaction as motivational factors. Findings by Lin and Lu [43] reveal the importance of enjoyment as the most influential factor for continued usage. Right after the fun during usage comes the number of peers, followed by usefulness.

Schaar et al. [57] revealed correlations of technology-related diversity factors like social media usage frequency with certain usage motives. The authors claim the need for information and autonomy as the most important motives. But diversity factors do not only influence why a system is used, they also influence how it is used. There are crucial differences in what different users are willing to share on social networking site, depending also on its usage context [58].

Furthermore, a persons personality is said to be related to general internet usage [37]. The influence of individual personality factors on the usage of private social media sites like facebook is—though often examined—still controversially discussed. While Ross et al. [55] could not find a strong connection between personality and facebook use, Amichai-Hamburger and Vinitzky (2010) try to use more objective evaluation criteria. They were able to see meaningful correlations between the personality factors of the five-factor model and facebook use [2]. It is obvious that differences in personality somehow influence how people interact on a business SNS [17] and thus be regarded further.

Still, the findings from existing literature are not unanimous but rather depend on the specific user group, so that the specifics of user diversity should be investigated further. For this reason, we wanted to find out what really drives different users to use a social networking site at work. As we wanted to gain an overall perspective, we conducted a meta study with regard to user diversity and motivational factors. This meta study combines the outcome of several studies which used quantitative methods and revealed real-life usage results as well as self-reported results.

3 Context of this research

In order to address this research question, we want to conduct a meta-analysis on a set of ten empirical studies conducted in a research project in Germany. The aim of this research project was to identify user-diversity criteria that help in designing a social media based service for knowledge dissemination. A subset of studies conducted in this three-year research project included data on motivation and the users intention to use such a service.

From these studies we want to investigate the association of user factors, motivational factors and the behavioral intention of users to adopt a social media application in a work setting.

We chose this setting as it represents a diverse set of studies with participants from diverse backgrounds. Some of the studies were conducted with employees of companies from different branches of industry, while others were conducted with students, thus potential future employees. As some of these studies are extensive user studies of a demonstrator developed in this project, sample sizes are sometimes small. The survey-based studies have larger samples.

As the contributing user factors were held equal across studies, we can draw data from individual studies and conduct meta-analysis on this data nevertheless. Although samples come from different sources, merging these data sets should provide a better context in the sense of cumulative research. The internal validity of this approach is high, because the studies were all conducted in very controlled settings (i.e. recruitment of participants through social networks of several researchers). As some studies were also conducted in companies that actually use social media for knowledge dissemination, external validity should be high as well.

4 Method

Since our studies are differently sampled we cannot simply merge the data-sets into a single study. Therefore, we combine these studies using the r-package "meta-cor" by Etienne Laliberté. This allows us to treat each study (see also 5) as an individual sample, yet derive cumulative results over all studies.

All our analyses rely on correlational data from ten studies (see section 5) and are combined using the method of DerSimonian-Laird (DSL)[62]. This method uses the correlation coefficient as effect size. It yields confidence intervals for correlations and indicators of significance (i.e. p-values). It also assumes a random-effects model by adjusting standard errors of individual studies in accordance with their respective variance. We use this approach, because it can be seen as the most conservative meta-analysis approach which underestimates effect sizes if fixed-effects were expected.

Overall, we analyze the correlation of user factors with motives and the correlation of motives with behavioral intention (see Fig. 1), we then use the forest plots to visualize results for verification (see Fig. 2 for an example).
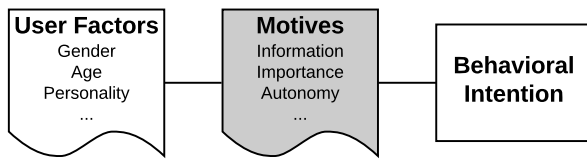
Fig. 1 Research hypothesis: Understanding how user diversity influences motivation helps understanding which motives to leverage to improve SNS adoption.
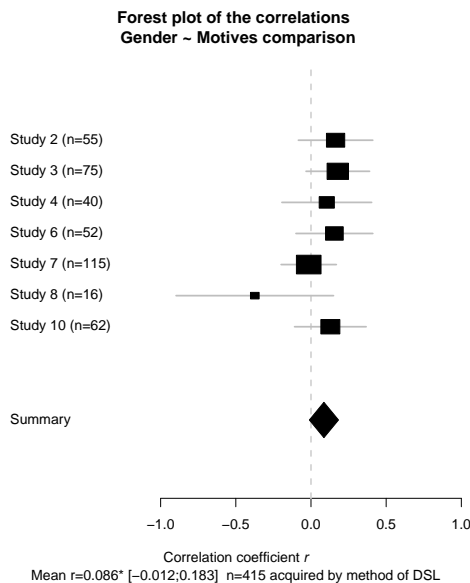
Fig. 2 Forest plot for correlation effect size between gender and the motive of social comparison

4.1 Used Variables

We use the largest possible sample for all pairs of variables (see also Tab.2). Overall, we use the following 19 factors:

- Age (as an integer)
- Gender (male=0, female=1)
- Education (six levels, ordinal)
- Big-Five Personality BFI-10 Inventory (ten items, six levels)
- Achievement Motivation (AMI, 30 items, six levels)
- Social Media Joy of Use (six items, six levels)
- Social Media Usage Frequency (six items, seven levels, exponential distances)
- Technical Self Efficacy (TSE, eight items, six levels)
- Usage Motives (eight motives, three items each, six levels)
- Behavioral Intention (BI) (three items, six levels)

With all ten studies we get a sample size of n=522 participants. The factors age, gender and education were assessed in every single study.

4.1.1 Big Five Factors

The big five personality factors emerged from the research of several differential psychologists [26]. Their research lead to the conclusion that differences in personality follow a five dimensional structure, hence the name big five factor model. The big five factors have been established in research and can therefore be used to measure individual differences in five dimensions. The following short descriptions provide an overview of the meaning of the individual dimensions. The acronym *OCEAN* is used to easily remember the five dimensions. Interested readers should refer to further literature to deepen their understanding of the individual dimensions [26], as the ones presented here are held simplistic.

- **O**penness – refers to the willingness of an individual to take part in new experiences. Openness is also used as a means to measure intellectual curiosity. High openness can also be seen as unpredictable or unfocused.
- **C**onscientiousness – refers to the tendency to be organized, reliable, and dutiful. People with high conscientiousness scores can also be seen as inflexible.
- **E**xtraversion – refers to the tendency to seek social contact and be energetic. People with high extraversion scores tend to be attention seeking, while people with low extraversion may seem reserved and withdrawn.
- **A**greeableness – refers to the tendency to be compassionate and sympathetic. People who are agreeable work well in teams, tend to be helpful and trusting in nature. High agreeableness scores also relate to naivety and submissiveness.
- **N**euroticism – refers to the tendency to experience negative emotions. High scores in neuroticism are related to emotional instability. Low scores can sometimes be perceived as uninspiring or unconcerned.

In our scenario we use the BFI-10 inventory proposed by Rammstedt et al. [52,53]. Individual big five dimensions are abbreviated with BF and the first letter of the dimension (e.g. BF N for neuroticism). As differences in personality can lead to different usage behavior in enterprise social media (e.g. people with higher neuroticism may have stronger privacy concerns), we include the big five personality factors in our meta-analysis.

4.1.2 Achievement Motivation

The Achievement Motivation Inventory (AMI) is a construct that measures the individual differences in relation to job-related achievements. The scale typically has 170 items that measure motivation in 17 sub-dimensions.

A short version top-level scale of 30 items exists [14] and is used in our In our settings (AMI-Short). As in a work-based setting, usage patterns may differ depending on a persons overall motivation to achieve, we include this factor in our meta-analysis.

4.1.3 Technical Self-Efficacy

Technical Self Efficacy (TSE) refers to a persons self-perception of being able to control technological devices. It uses eight items to assess the scale [7] and has been highly predictive for technology acceptance in several use cases [17]. The underlying theory of technical self-efficacy is based on Bandura's theory of self-efficacy [5]. The theory states that when an individual is convinced that they can do something, they will approach it differently, thus changing possible outcomes.

4.1.4 Motives

In order to understand why users would use social media for work-based scenarios, we identified eight motives that are relevant to usage behavior. Each of these motives was measured with three items (see Tab.1). Each factor relates to a complex human need, and its possible leverage for using a SNS at work. In addition, each factor—in our case—measures how strong the individual need is in effectively motivating the user to use a SNS at work.

The need for *information* relates to an individuals tendency to seek out information at work. In order to solve complex technical problems information and knowledge is often required. This need is more pronounced in employees of knowledge-based organizations. Motivation for action, e.g. active participation, is thus drawn from seeking useful information.

The need for *importance* relates to an individuals need to feel important and meaningful [6]. Motivation is drawn from the knowledge of conducting actions that reach beyond the utility of the individual itself.

The need for *contact* refers to an individuals urge to get in touch with other people. Their need for contact can motivate behavior like reaching out to already known or hitherto unknown colleagues, for instance. Using features such as chats, forums or message-boards can be used to increase motivation for SNS usage.

The need for *self presentation* relates to the individuals desire to be seen positively by others [40]. It measures how much motivation can be drawn from allowing a person to showcase themselves. A SNS can leverage this need by allowing e.g. extensive profiles.

The need for *autonomy* refers to the individuals need to act and behave without external control [23].

In work environments this need is often related to the amount of freedom an employee has, e.g. in choosing methods to attain a certain goal.

The need for *feedback* relates to the individuals desire to have their behavior evaluated [24]. Fostering individual learning can be achieved by providing adequate feedback. Individuals with a desire to learn and improve seek feedback as a motivation for action.

The need for *social comparison* relates to the individuals desire to to gauge their social value [50]. Understanding the relative "worth" of their actions in relation to other employees can help in creating a reference frame for work efforts.

The need for *power and control* refers to individuals need to attain power or control over other people [47]. Power is related to high social status and vice versa. Individuals with a high need for power and control are driven to the urge to gain more leverage through other people.

4.1.5 Behavioral Intention

Whether users actually use a system can be predicted relatively well, when asking them whether they intent to use a system [20]. The whole area of technology acceptance research deals with factors that predict both intention to use and actual system usage of system, user, and contextual factors. In order to keep the model in this research lean, we only focus on the intention to use a social networking site at work, as actual system use can be influenced by external factors. This work focuses on the internal motivation to use such a system.

4.2 Statistical Methodology

We used the aforementioned DeSimonian-Laird Method to estimate correlation effect sizes, for all pairs of variables between independent and dependent variables. We plotted forest plots our of those results and report the combined correlation coefficients, as well as sample sizes for all correlations that yielded confidence intervals that did not include the 0 (i.e. no correlation) explicitly. We selected only those correlations that showed at least p-values of $< .05$. This means if we report a correlation there will still be a chance of 5% that the data could have appeared, even though the correlation should not be true for the whole population. This approach also means that we might over-report some findings, as we apply our methodology to about 324 possible correlations. However, we cannot tell which of our findings are these artifacts and which are "true" findings. We also use correlational data on the variable gender. Gender is a categorial variable and thus not suitable

Table 1 Items used to measure the usage motives.

Motive	I would use the application, because...
Information	I get information about activities in my business unit.
	I could get information easier.
	I could get information relevant for me.
Importance	my work within the network is valued.
	my contributions matter for progress at work.
	my contributions are useful for other members.
Contact	my colleagues are immediately available for me.
	I can stay in contact with my colleagues via the network.
	I can socialize with my colleagues.
Self Presentation	it increases my visibility of what my skills and competences are.
	I can present new ideas.
	I can present my achievements.
Autonomy	I can work independently within the network.
	I can work at any time and at any location.
	I can plan my work more independently.
Feedback	I get feedback from my colleagues.
	I get feedback for my work.
	I get responses according to my work.
Social comparison	it allows me to compare my skills and competences with others.
	it allows me to see how others have performed in similar situations.
	it allows comparing how much other people work.
Power and control	it allows me to control whether people work enough.
	it allows me to get more control over other people.
	it allows me to control whether people are working.

for Pearson moment-correlation analysis. However, the underlying general linear model should yield similar results – in terms of significant outcomes – as a meta-analysis for T-tests or other point-estimates. For the sake of simplicity we report these findings as a correlation as well.

5 Included Studies

Overall we used the results of ten studies which were conducted within the scope of a research project[1] between 2013 and 2014. First we presented the studies shortly in the following paragraphs to give an overview for the later presented analysis. Therefore, we report the acquisition process, the sample, the main purpose and the measured variables which will be used in this meta analysis. Naturally most of the studies contain further variables that are not relevant for this article and thus stay disregarded.

5.1 Study 1: Motivational Factors for SNS Usage at Work

The study was conducted in end of 2012. The participants were recruited in the personal environment of

the conducting author. As there werent any restrictions for participation, people from different working areas were asked to fill out the online questionnaire. After eliminating incomplete data sets the final sample consisted of n=68 people from Germany, Belgium and the the Netherlands. The purpose of this study was the user-centered determination of motivational factors for social network system usage in the work environment. Therefore the following variables were measured and used in this meta study: age, gender, education, years of employment, position in company, media usage frequency, media joy of use, technological self-efficacy (TSE), achievement motivation (AMI), usage motivation and probability of system usage. Data from this study has been used in previous studies [57].

5.2 Study 2: Achievement Motivation and SNS Usage

The study was conducted in between May and July 2013. Like in the study before the target group was not determined by many aspects. The only factor for participation in the online questionnaire was being employed in a company and working area in which a usage of a business community is theoretically possible (which means everyone working in the service sector, administration and management, public service or similar sectors). The acquisition process was conducted via facebook and personal contacts of the leading scientist. After eliminating incomplete data sets the final sample

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[1] "iNec - Innovation through expert-communities in the time of demographic change"

consisted of n=55 people. The following variables were measured and used for the purpose of investigate the impact of achievement motivation for social networking sites at work: age, gender, years of employment, position in company, media usage frequency, media joy of use, number of contacts in most frequently used SNS, big five dimensions of personality (BFI-10), usage motivation and dimensions of working behavior. Data from this study has been used in previous studies [58].

5.3 Study 3: Personality and Motivation for SNS Usage

The study was conducted in April 2013. The participants were recruited via snowball-method in some social media sites. There were two conditions for participation: only people who are or were employed and have access to the Internet could take part. No occupational category was excluded. After eliminating incomplete data sets the final sample consisted of n=75 people. The study was conducted to find out, if and how a persons personality influences the motivation to use a SNS in a working context. The measured variables for this purpose are: age, gender, years of employment, position in company, media usage frequency, media joy of use, number of contacts in most frequently used SNS, big five dimensions of personality (BFI-10), usage motivation, and further aspects of a persons personality. Data from this study has been used in previous studies [58].

5.4 Study 4: Factors of Work Environment in SNS Usage Motivation

The study was conducted in May 2013. The recruiting process took part in a German SME which is a software service provider in the area of technical documentation. The company already has and uses an internal wiki for documentation processes. After eliminating incomplete data sets the final sample consisted of n=40 people. In this study the influence of work environment factors as one of the factors of success - on the motivation to use social networks in the work context is examined. Therefore the following variables were measured and used: age, gender, years of employment, position in company, media usage frequency, media joy of use, number of contacts in most frequently used SNS, big five dimensions of personality (BFI-10), and usage motivation. Data from this study has been used in previous studies [58].

5.5 Study 5: Evaluation of Usage Motives and their connection to User Diversity

The study was conducted in 2013 and 2014. The acquisition process took place at a company in Germany which participated as an industrial partner in the "iNec" project. After eliminating incomplete data sets the final sample consisted of n=83 people. In answering questions about social media usage motives this study focused especially on user diversity. The following variables were measured and used in the meta analysis: age, gender, years of employment, position in company, media usage frequency, media joy of use, number of contacts in most frequently used SNS and usage motivation. Data from this study has been used in previous studies [59].

5.6 Study 6: Motivation for SNS Usage 1

The study was conducted in April 2013. We distributed the online questionnaire to personal contacts via email and social media. After eliminating incomplete data sets the final sample consisted of n=52 people. The main purpose of this study was to find out usage motives in a widely mixed control group for comparison with the company based samples. Therefore. the following variables were measured and used to find out relevant factors concerning SNS usage motives: age, gender, years of employment, position in company, media usage frequency, media joy of use, big five dimensions of personality (BFI-10), and usage motivation.

5.7 Study 7: Motivation for SNS Usage 2

The study was conducted in October and November 2014. Participants were recruited in the already mentioned company as well. After eliminating some data sets - which were carelessly or not completed at all - the final sample consisted of n=115 people. 31 subjects completed both parts of the survey, but for the reason that even those data sets with missing parts could be used for the analysis of some specific variables, the remaining 84 subjects stayed in the sample. To find out about motives for SNS Usage at work we measured the following variables: age, gender, education, years of employment, position in company, media usage frequency, technological self-efficacy (TSE), usage motivation, and probability of usage.

Table 2 Overview of all studies and the factors present in all studies. The last column contains all combined sample sizes of variable pairs.

Study Factor	1	2	3	4	5	6	7	8	9	10	combined n
n	68	55	75	40	83	52	115	16	39	62	522
Big-5		✓	✓	✓		✓			✓		261
AMI	✓	✓	✓			✓					250
Media JOU	✓	✓	✓	✓	✓	✓					373
Media UF	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	522
TSE	✓						✓	✓		✓	261
Motives	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	522
BI	✓						✓	✓		✓	261

5.8 Study 8: Usability Evaluation of a SNS for Internal Knowledge Management

The study was conducted in June 2014. Participants were recruited in the personal environment of the scientist. The only requirement for participation was the local availability in Aachen (Germany) so that the leading scientist could visit the subjects for conducting 1) a survey with an integrated task-based user test and 2) an interview. After eliminating incomplete data sets the final sample of the survey consisted of n=16 people. The variables we surveyed for this study were the following: age, gender, education, years of employment, position in company, media usage frequency, technological self-efficacy (TSE), usage motivation (before and after testing a SNS), and probability of usage.

5.9 Study 9: Motivation for Using Social Media at Work

This study was conducted in 2014 between January and July. The participants were recruited in an international operating clothing and fashion company which employed about 110 people in 2014. The company already uses social media software like skype, yammer and asana for internal communication, which was the only requirement for participation. After eliminating incomplete data sets the final sample consisted of n=39 people. Here, the purpose was to find out about motives of employees who already work with social media for internal communication processes. Therefore, age, gender, media usage frequency, technical affinity (with different questionnaire than the TSE), big five dimensions of personality (BFI-10), and usage motivation were included in the data collection via online questionnaire. Data from this study has been used in previous studies [11].

5.10 Study 10: Attitude and Experience Towards SNS for the Business Context

The study was conducted in July and August 2014. All participants of the online survey were recruited in a German SME, which is primarily specializing in software for estate agents. After eliminating incomplete data sets the final sample consisted of n=62 people. The purpose was to find out peoples experience and attitude towards SNS for business usage in a three-step process. At first, their theoretical attitude was captured. The next step was a short demonstration of a prototypical SNS for the business context. The presentation was followed by step three in terms of a survey to evaluate the subjects attitude and experiences again. The following aspects were collected: age, gender, education, years of employment, position in company, media usage frequency, number of contacts in most frequently used SNS, technological self-efficacy (TSE), usage motivation (before and after testing a SNS), and probability of usage.

6 Results

In the following sections we will report the results from our meta-analysis. First we look at the interdependencies of the independent variables (i.e. user factors) and dependent variables. We do this in order to understand how our samples are set up. The discovery of expected correlations such as age and work duration, should support the external validity of our meta-analysis. In contrast to that, finding unexpected correlations should also tell us something about the specifics of the samples in our studies. Next, we investigate how user diversity factors influence different motives to use enterprise social media across our studies. Lastly we take a look at how different motives influence the behavioral intention to use a SNS for knowledge dissemination at work.

We only highlight some of the findings numerically, as all correlation coefficients and sample sizes are reported in the diagrams (see. Fig. 3,4 & 5). We report the level of significance in the figures by adding asterisks to the correlation coefficients. One asterisk (*) refers to a level of significance of $p < .05$, two (**) of $p < .01$, and three (***) of $p < .001$, respectively.

6.1 Interdependencies of Variables

When looking at the independent variables, which are e.g. the user diversity factors, we see a quite diverse picture. In Fig. 3 we have outlined how our independent variables are correlated with each other in our meta-analysis. We draw a box for each variable and connect two boxes by a line, when the meta-analysis finds a significant correlation. We also add the strength and direction to the line, as well as the respective sub-sample size for both variables contributing to the correlation.

As we expected, older participants have also more job experience, because they obviously have had more time to simply be *at work*. Interestingly this correlation does not translate as a transitive relationship to two major SNS usage factors. Only job experience (and not age) shows a small negative correlation with both the number of contacts in social networks as well as the usage frequency of SNS. This means that how engaged users are in private social network sites is influenced by how long they have been a part of the workforce. When looking at the influence of gender, we see that female participants showed higher scores in the dimensions agreeableness, neuroticism and openness. This partly agrees with previous research [75], but also differs slightly in regard to sub-aspects of personality. This influence is strongest when looking at the neuroticism scale ($r = .354$). Interestingly, achievement motivation or technical self-efficacy showed no correlation in relation to other user diversity factors.

All measured motives showed high correlations between each other, leading to the conclusion that an underlying factor (e.g. general "motivatedness") might explain these strong correlations (see Tab. 3). A similar correlation can be found for achievement motivation (see Fig. 4) with some of the usage motives. The strongest correlation was found for the *need for power* and the *need for social comparison* ($r = .687$). No correlation was measured between the *need for contact* and the *need for feedback*, because the two motives were never assessed in the same studies.

6.2 The influence of user diversity on motivation

When looking at both user diversity factors and motivational factors, we find several correlations that yield different relationships of how different users have differently strong tendencies for their motivation to use a SNS at work (see Fig. 4).

First, age (not work duration) plays an increasing role for the *need for importance* ($r = .103$). This means that the older a person is the stronger is his/her need for feeling important or being meaningful when using a social network. This correlation is nevertheless not very strong.

Gender (i.e. being female) and neuroticism both correlate slightly with the *need for social comparison*. Since gender and neuroticism themselves are slightly correlated, the influence is probably due to the underlying differences is the neuroticism scale. This means that the higher emotional insecurity of a person is, the stronger is their need to evaluate themselves in comparison to other people.

The strongest influence on usage motivation can be seen at the variable achievement motivation. This means that the more a person shows ambitious tendencies at work, the more the motives need for *importance*, *power and control*, *information*, and *self-presentation* play a role in SNS usage motivation. Ambitious users therefore would use a SNS, if they believe that usage will improve their personal meaningfulness ($r = .229$), their power over other people ($r = .239$) as well as their information needs ($r = .229$) and needs to show their own performance within their work environment ($r = .312$). The last correlation is the strongest of all "user factors-to-motives" correlations.

The motive of *self-presentation* is also correlated with the personality dimension agreeableness ($r = .118$). This means, that the more agreeable a person is, the higher their motivation to use a social networking site for the purpose of showing their skills.

The personality dimension of openness correlates with the *need for autonomy* ($r = .128$). People that are more open to new experiences thus show higher motivation to use a social networking site, because it enables them to structure their work environment in a more autonomous way. It adds to their freedom in the "how" at work.

Interestingly, the two usage factors social media joy of use and usage frequency correlate negatively with the *need for autonomy*. This means that people who enjoy using social media more ($r = -.130$) and do so more often ($r = -.114$), are less motivated by the capability of social media to structure work more autonomously.

IV Interdependency
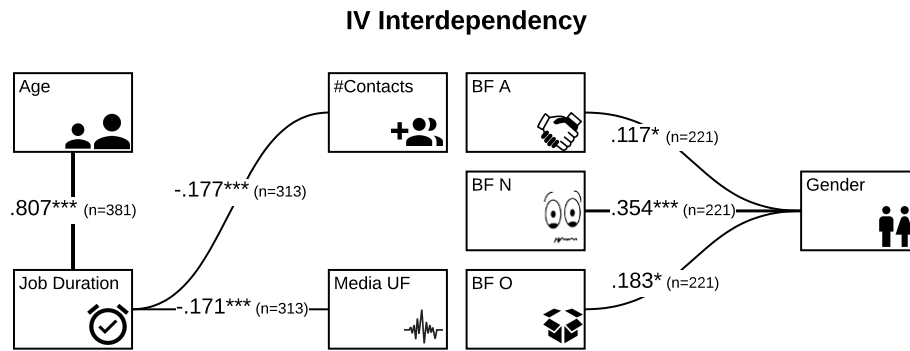
Fig. 3 Correlations of independent variables. The boxes represent (latent) factors measured in the individual studies. A line is drawn, when the meta analysis finds a significant correlation. The strength of the correlation is given as Pearson's r and joint sample size of studies containing this variable. UF=Usage Frequency, BF A = Big five personality dimension agreeableness, BF O = Big five personality dimension openness, BF N = Big five personality dimension neuroticism

Table 3 Correlation table of all motives. Upper half are combined correlation coefficients, lower half are combined sample sizes. Sample size may vary, as not all motives were assessed in all studies.

| Motives	1.	2.	3.	4.	5.	6.	7.	8.
1. Contact		.567	.413	.553	.442	.553	.606	
2. Information	522		.324	.425	.444	.570	.675	.511
3. Power	421	421		.455	.687	.486	.392	.549
4. Self Presentation	454	454	353		.606	.510	.684	.657
5. Social Comparison	353	415	353	415		.641	.562	.647
6. Autonomy	353	392	353	392	353		.576	.657
7. Importance	454	454	353	454	415	392		.677
8. Feedback	$0^\dagger$	522	421	454	415	392	454	

†Feedback and contact were not measured together in any sample.

All r values show a level of significance of $p < .001$.

### 6.3 The influence of motivation on adoption

Lastly, we take a look how different usage motives influence the willingness to actually use a social networking site at work. In particular we measured this by measuring the behavioral intention using three items (see Fig. 5). When looking at the joined correlation coefficients we see that *autonomy* has the strongest association ($r = .636$) with behavioral intention. This means that users who show a stronger need for autonomy in using a SNS also show a stronger desire to actually use such a system. The second strongest correlate with usage intention is the *need for power and control* ($r = .600$). Users that have a stronger urge to use a SNS in order to establish control over colleagues also show higher behavioral intentions. Similar correlations can be found for the *need for importance* ($r = .546$), the *need for social comparison* ($r = .534$), and the *need for information* ($r = .510$). Interestingly, the *need for self-presentation* ($r = .451$) shows the weakest correlation of the motives. Still, it means that the higher the need to show-off ones' capabilities, the more likely this person will use a SNS for knowledge dissemination.

7 Discussion

Looking at the overall results, we found interesting associations between both user diversity factors and motivational factors, as well as motivational factors and the behavioral intention to use a SNS at work. First, it is interesting to see that user diversity factors that often explain variance (e.g. age and gender) seem to play a lesser role when merging data sets in a meta-analysis. They do influence two motives, importance and social comparison, but not very strongly. In particular gender is possibly only a carrier-variable for diversity in neuroticism, as both variables are also correlated and both correlate with social comparison. It could be that users who are more emotionally unstable seek stability in social comparison, attaining an external frame of reference for a lack of an internal frame of reference. Thus, people that show a tendency for fearful emotions might see a Social Networking Site not only as a means to gather and distribute knowledge, but also as a personal stabilizer at work. It would be interesting to see, whether the increased need for privacy, which people with higher neuroticism show, would counteract this increase in motivation. It is also questionable, if poor

Usage Motives
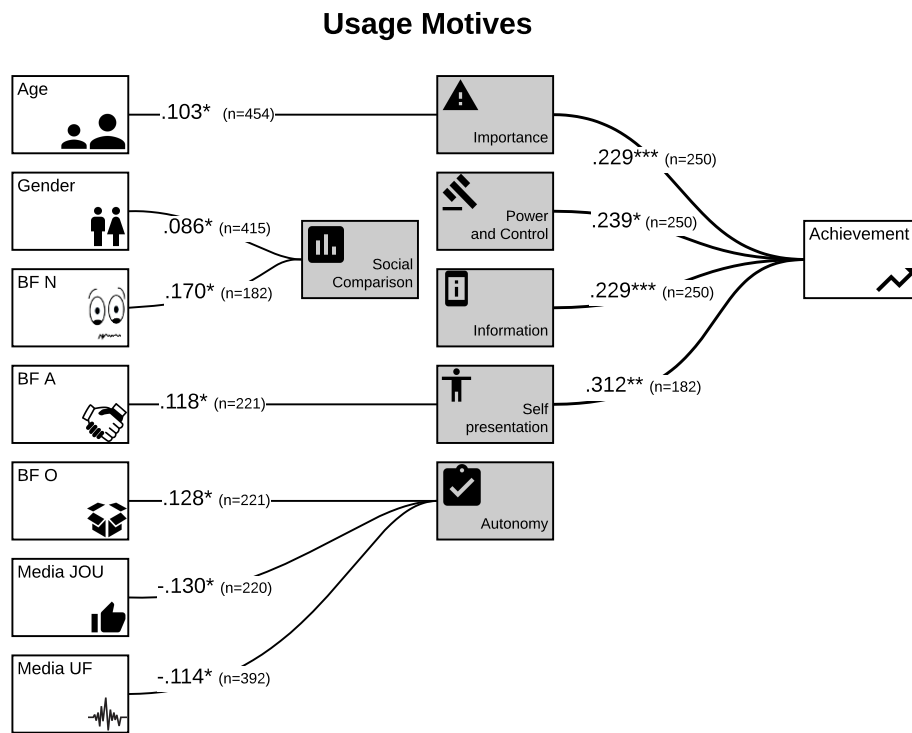
Fig. 4 Correlation effect sizes of independent variables (depicted in white boxes) with motives (depicted in gray boxes). The need for feedback and contact did not show significant correlations.

Motives and Intention to Use
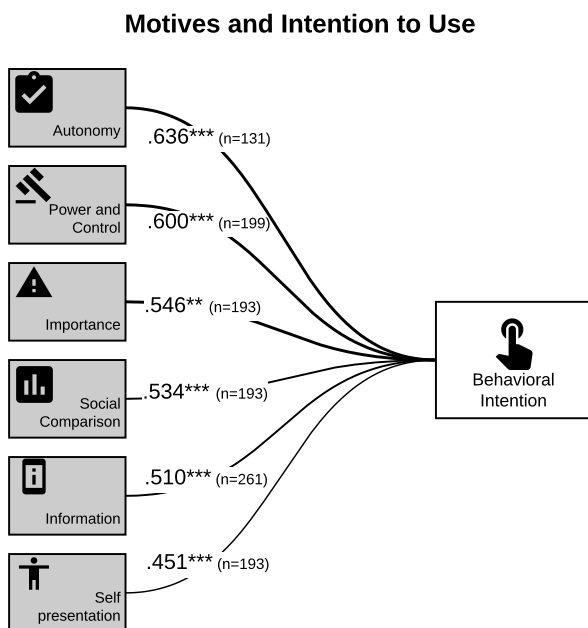
Fig. 5 Correlation effect sizes of motives and behavioral intention. The need for feedback and contact did not show significant correlations.

Age seems to only slightly correlate with the motive of importance. This could mean that users of a higher age seek more meaning in work, and hope to leverage this desire by using a SNS. This finding would be in line with other findings, where financial rewards are seen as more important for younger users than for older ones [59]. Partly, this might be caused by a lower entree level income, but also because of shifts of needs that come with experience or age itself [31].

A typical motive is the need for information, because it is also the intention behind a SNS for knowledge dissemination. Our data indicates that it is only related to the achievement motivation of the user. This of course neglects contextual factors (e.g. information availability, information needs from task, etc.), but is nevertheless revealing. A possible interpretation might be, that users who are generally more aspiring at work also know, that information plays a critical role for being successful at work. Therefore, they show a higher need for information as a motive to use a SNS. Similarly, the need for importance, self-presentation, and power and control are associated with higher achievement motivation. All of them are associated with influences on career possibilities. People who are important for an organization are less replaceable and thus more valuable for an organization. Making this importance known by presenting oneself in a SNS can improve ca-

performance in a person with higher neuroticism would actually increase in emotional stability, if social comparison was available.

reer chances. A different interpretation could be, that people who are aspiring in general also have a need to be relevant (i.e. important). However, the need for importance in itself is strongly correlated with the need for power and control and the need for self-presentation.

Two other personality factors with an association to usage motives remained after meta-analysis: openness and agreeableness. Agreeableness showed a weak association with the need for self-presentation. The more agreeable a person is the more more they would like to make themselves known through a social networking site. As agreeableness is also often associated with good social skills and team competencies, being able to promote her/his own capabilities might be a reason for an agreeable person to use a SNS. In addition, to let other people know where they could be helpful could be one of the reasons, why agreeable users are motivated by the need for self presentation.

Openness is correlated with the need for autonomy. As openness is also often associated with intellectual and academic curiosity and additionally on very high scores with impulsiveness, it is easy to imagine why the motive autonomy is associated with openness. Users who want to follow their own urges and curiosity might want to seek this freedom by using a social network in a work environment.

Both social media usage frequency and social media joy of use are on the other hand negatively correlated with the need for autonomy. An explanation could be derived from characterizing those users who use social networking sites in private settings extensively, possibly to distract themselves [63]. The need for autonomy might be less pronounced in those users only seeking distraction.

From the relative associations of the individual motives to the behavioral intention, we can first of all say, that all motives seem to positively influence the behavioral intention to use a SNS at work. This is expected, as the motives are operationalized and measured as usage motives. Thus people with high behavioral intentions are expected to show higher individual usage motivation.

One aspect of the data, which is interesting here, is the relative difference between all correlations. The two strongest motives seem to be in contradiction with each other. User might seek more autonomy (spatially and in time) freeing themselves from the control of contextual factors and other users. These "other users", on the other hand, might be looking for more control and power over other users. While at first glance these two motives might be opposed to each other they could actually help each other when seen from a different perspective.

A user looking for more autonomy (e.g. working at home late at night) might gain independence from using a social networking site. Another person, who might want to check on her/his colleagues, could also benefit from the SNS by being able to verify that the other user has actually been working, and not just slacking off at "home-office". Thus a SNS might be beneficial for both perspectives and allowing a more diverse set of working behaviors at the same time.

7.1 Designing a SNS for Knowledge Dissemination

What do these findings mean, when designing a social networking site for knowledge dissemination at work? Naturally, the "usual factors" within technology acceptance research such as ease of use and usefulness must be thought of. But these factors do not lend themselves as helpful design criteria, when trying to incorporate the diversity of a certain set of users. Any software system should follow the rules of usability in the first place, but tailoring them to the specific audience is quite a challenge.

We have seen that user diversity factors show influences on different usage motives with different strengths and different directions. When designing a SNS, we must make sure that the needs of the users and their motivation are reflected in the features and design of the SNS. As a first step, one would measure user diversity criteria of the potential users. In a second step one would identify the most relevant for usage motivation and in a third step try to identify how these motives are affected by working with the SNS. As examples, we show a short list of features relevant to our motives. Some of them might cater to multiple motives.

– **Autonomy**
  Remote login, usage of thin clients, access to tools and data through the SNS, tools for work delegation, shared todo-lists, etc.
– **Power and control**
  Data cockpits, user customization, logged in user list, activity wall, etc.
– **Importance**
  Personal daily summary, thank-you buttons on forums, most helpful comments list, top-lists with many niches for all users, user of the month, etc.
– **Social comparison**
  Performance metrics, quantile based top-lists, actionable hints to improve performance, live Gantt-charts, progress reports on projects, etc.
– **Information**
  Document management system, recommender sys-

tems, collaborative filtering, automatic summarization, RSS feeds, etc.

– **Self presentation**
  Profile pages, activity ranks shown under user names, personal wall for comments, skills and competencies on profile, meet new colleagues feature, etc.

For example, if we know that the system will predominately be used by people that score highly on the openness scale (e.g. research scientists), we must make sure that the social networking site allows them to experience autonomy in the use of the network, as this is the motive correlated with openness. Autonomy is also the strongest correlate for behavioral intention, thus we make no mistake by addressing this motive first. A social networking site can benefit from a strong motive of autonomy, if it contains features that allow for working remotely or organizing work independently of time and location. Depending on the purpose of the SNS one must make sure to allow easy access from remote locations (e.g. thin-clients, fast Internet access, simple login-procedure, proxied and multiple-resolution documents, etc.). The system should also make sure that all relevant data, information, and tools are available that are needed to work autonomously. If for example, research data is necessary for writing an article, the SNS should provide access to the data repository as well. Allowing users to work from home and sharing knowledge in a SNS instead of sitting in meetings could lead to more motivation for this subgroup of users. So new forms of asynchronous communication could be a helpful feature. It would most certainly be helpful to ask the future users, what part of their work hinders them to work autonomously and try to mitigate this in the system. In such a scenario a gamification approach would be further down the list of possible motivating features.

If—in another scenario—users tend to be more anxious and emotionally unstable, it is critical to implement a code of conduct for the network, providing adequate etiquette [17] for users. It is then crucial to uphold this etiquette to ensure users feel safe and comfortable in the SNS. Combining this with good privacy preserving measures and data security should provide the needed stability for more anxious users. Making the use of the SNS safe first and powerful second could help ease the anxiety with digital means of communication. Since users that score higher on the neuroticism scale also look for social comparison, it could be helpful to provide positive feedback for activity in the SNS (e.g. gamification tools, top-lists, etc.). If data on work performance is digitally available and should be shown to the users in the SNS, it should be communicated in relative means and to the user alone. It should not use absolute comparisons to prevent exposure of low performance. These users want to know how well they are doing and not who outperforms them. Furthermore it is necessary to provide clear metrics for performance and to provide means to improve performance – a plan for action for the individual user.

8 Limitations and Outlook

The findings from our study have given us indications on how to design a social networking site for knowledge dissemination. However, the context of our setting was the limited set of studies that were included in our meta-analysis. The reason for limiting the studies in our meta-analysis is our ability to control how the studies were conducted and therefore fully report the results. The survey items were kept the same and we expect more concise results from this approach. Also, not all variables were used in every study, influencing the sample sizes for individual correlations. Some of our findings have larger confidence intervals leaving a higher degree of uncertainty in our final model.

The results and interpretations in this study do not consider factors from other models that try to predict technology adoptions. For example, various models that try to predict technology acceptance from user, system, and contextual factors like UTAUT [71] do exist. These models incorporate system factors such as usability of technology and contextual factors such as social norms or the availability of technical support. From our point of view these factors are important to consider, but strongly depend on either the individual software or the organizational structure. The purpose of this research was to establish a motivational model from diversity factors. A synthesis of this model and models of technology acceptance could lead to a more complete picture in the future. However this would either require to allow more uncertainty in regard to survey methodology by including data from other research projects, or extensive efforts in conducting further research with longer surveys and even larger sample sizes.

The visualizations of our results (see Fig. 3, 4, & 5) hint towards modeling our data using structural equation modeling (SEM). However structural equation modeling has very strong constraints regarding sample sizes and expected distributions. SEM is often used with violated constraints yielding results that might have no internal or external validity. Since not all of our samples contained all variables, we opted for this more simple approach, hopefully leading to higher quality in individual study data and more comparable settings between studies and finally a model that is easier to understand. Methods for meta-analysis in structural equations modeling exist [72], but also come with very tight require-

ments, that our data does not fulfill in all cases (e.g. statistical independence between motives.).

Further research regarding usage motivation could incorporate other studies that measure the influence of usage motivation on technology adoption. A systematic literature of relevant literature and its correlation measures could yield effect sizes that can be integrated into this model easily.

Understanding what motivates different users to actually use a SNS is the key to ensure the innovation capability of small and medium enterprises, who are most strongly affected by demographic change [13] and thus knowledge loss. Finding a consistent model across different user groups, organizations, and cultures, will help tailoring services that maximize individual usage satisfaction and organizational utility. It will provide not just the necessary means to ensure financial safety in fast changing markets, but will also help organizations re-invent themselves and enable organizational self-actualization.

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