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Development and Pilot-testing of a questionnaire about the use of technology for learning and communication in Small-and Medium-sized Enterprises (SMEs)

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Abstract (English)

While e-learning is often used and has major benefits for large organizations, there seems to be a different pattern for e-learning in Small and Medium Sized Enterprises (SMEs). E-learning is beneficial for SMEs, too, but these organizations hesitate to actually implement it. Although the managerial attitude towards e-learning was identified as a main reason for this reluctance in implementation, not much recent research is done in this field of study. Because of this lack of research, this study tries to develop and test a questionnaire, which should measure the attitude of SME-managers towards e-learning (in Germany). This questionnaire is based on a questionnaire which was developed by Admiraal and Lockhorst (2009), but a lot of adaptations were made in order to update it. It was planned to test the questionnaire by a large-scale establishment of its validity and reliability and by a small pilot-study (N=5), which should test the comprehensibility and usability of the questionnaire. Because of practical reasons it was not possible to conduct the large-scale establishment, so this study focuses on the pilot-study. Although there were some improvement-points, the general impression of the managers was that the questionnaire was good to use and comprehensible. The improvement points were later revised. Before the questionnaire can be handed out to SME-managers, its reliability and validity should be established. Furthermore, because the questionnaire seems to measure rather the use of technologies for learning and communication than the attitude of SME-managers, it would be helpful to include another questionnaire to measure this attitude. The questionnaire which is developed in this study can nevertheless be very informative in analyzing the implementation of e-learning in SMEs.

Abstract (Dutch)

Terwijl e-learning vaak gebruikt wordt en grote voordelen biedt voor grote organisaties, is er een ander patroon voor e-learning in het midden- en kleinbedrijf (MKB) te zien. E-learning kan ook voordelig zijn voor het MKB, maar zij aarzelen nog het daadwerkelijk te implementeren. Hoewel de attitude van managers essentieel blijkt te zijn voor de weerstand tegen e-learning, zijn er geen actuele onderzoeken over dit onderwerp te vinden. Om dit tekort aan onderzoeken te verhelpen, probeert dit onderzoek een vragenlijst over de attitude van MKB-managers uit Duitsland ten opzichte van e-learning te ontwikkelen en te testen. Ten grondslag aan de nieuw ontwikkelde vragenlijst ligt de vragenlijst van Admiraal en Lockhorst (2009), maar er werden vele aanpassingen voorgenomen om deze vragenlijst te updaten. Het was oorspronkelijk gepland de vragenlijst op twee manieren te testen. Ten eerste werd gepland een pilotstudie uit te voeren om te testen of de vragenlijst duidelijk en goed te gebruiken is. Ten tweede zou met een grootschalig onderzoek de betrouwbaarheid en validiteit geanalyseerd worden, maar dit is wegens praktische redenen niet gelukt. Dit onderzoek concentreert zich dus op de pilotstudie. Uit de resultaten van deze pilotstudie blijkt dat de vragenlijst wel duidelijk en goed te gebruiken was, maar dat er ook nog verbeterpunten zijn. Deze verbeterpunten werden vervolgens verwerkt. Voordat de vragenlijst van managers ingevuld zal worden, zal nog de betrouwbaarheid en validiteit gemeten worden. Verder zou nog een andere vragenlijst toegevoegd kunnen worden, die de attitude van MKB-managers meet, omdat de vragenlijst die in dit onderzoek ontworpen werd eerder de gebruik van technologieën voor het leren en communiceren lijkt te meten. De vragenlijst die in dit onderzoek ontworpen werd kan niettemin goed gebruikt worden om de implementatie van e-learning in het MKB te analyseren.

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Introduction

E-learning is one of the most important trends in employee training and development. This importance is derived from the fact that a lot of influences act on organizations: Globalization, new technologies and rapid economic changes for example are all imposing high demands on employee training and development (Brown & Charlier, 2013; Cheng et al., 2014; Ho & Kuo, 2010). These influences force organizations to learn faster and to be more flexible in order to keep up with the pace and be competitive (Cheng et al, 2014). As a solution to the high demands, e-learning is increasingly used by large organizations (Cheng, Wang, Yang & Peng, 2011).

In addition, e-learning can also have several advantages for Small and Medium Sized Enterprises (SMEs), but they are not using it a lot (Admiraal & Lockhorst, 2009; Floyde, Lawson, Shalloe, Eastgate & D'Cruz, 2013). One advantage is that SMEs usually have smaller training-budgets and e-learning does not cost as much as traditional learning (Floyd et al., 2013; Hamburg, Engert, Anke & Marin, 2008). In addition, SMEs need a more flexible learning approach and e-learning is more flexible than traditional learning (Floyd et al., 2013). The problem is that SMEs are still reluctant to consider e-learning, although they can benefit from it a lot (Admiraal & Lockhorst, 2009; Floyd et al., 2013). One of the most important reasons for this e-learning reluctance is the managerial attitude towards e-learning in SMEs (Admiraal & Lockhorst, 2009; Hamburg & O'Brien 2014a; Hamburg & O'Brien 2014b). But besides the identification of this important factor, little research is done in this field of study. There are no studies which are up-to-date and relevant. So it is crucial to analyze the managerial attitude towards e-learning in SMEs in order to get a recent view on the topic. This study tries to provide a solution to the lack of up-to-date information on the attitude of managers towards SMEs by developing and testing a questionnaire, which measures exactly the attitude of SME-managers towards e-learning.

Theoretical Background

E-Learning

E-learning is still a new trend and not yet clearly defined. According to Cheng et al. (2014) one reason for this is that e-learning is a multidisciplinary field of research. In other words, a lot of different scientific disciplines do research on it (e.g., computer science, educational science, psychology, etc.). For this study a broad definition is chosen, because of the broad nature of the study, therefore the definition of Welsh, Wanberg, Brown and Simmering (2003) is selected. According to Welsh et al. (2003), e-learning refers "to the use of computers and networking technologies, primarily over or through the Internet, to deliver information and instruction to individuals" (p. 2). Consequently, because of the broad definition, a lot of technologies and materials are included in this definition (e.g., MOOCs, search engines, Social Media, etc.).

The fact that there are so many technologies and materials available may be one advantage, but there are certainly many more. Most of these advantages are dependent on the technology; not every advantage is suitable for every technology. Nevertheless, the advantages can best be organized into four different groups. The first group of advantages are economic reasons (Burges & Russel, 2003; Cheng et al., 2011; Chuang, Chang, Wang, Chung & Chen, 2008; Floyde et al., 2013). E-learning is seen as more cost-effective than traditional learning (this means: more learning for the same amount of money). The second advantage is the flexibility for the learner (Cheng et al., 2011; Mohammadyari & Singh, 2015). Learners can manage for themselves when they want to engage in learning activities. Furthermore, e-learning is time- and place-independent and can be accessed quite easily (when the required technologies are available). The third advantage is the flexibility for the organization (Cheng et al., 2011; Mohammadyari & Singh, 2015; Tynjälä & Häkkinen, 2005). E-learning enables on-demand learning, which means that organizations can focus on specific learning-contents

in a short time, when they feel the need for it– they can pick for themselves what they need to learn at a given moment. In addition, e-learning helps employees to store and share information and unfinished ideas more easily. The last advantage is, according to Burges and Russels (2003), that the e-learning materials often have a higher quality than traditional learning-materials. The reason for this high quality is that the best instructors and courses are often used for e-learning materials. The information of e-learning materials are also more frequently updated and thus more up-to-date.

On the other hand, there are also many challenges which diminish the effectiveness or distribution of e-learning. The first one is the adherence to online courses (for example MOOCs; Floyde et al., 2013). Although a lot of people can enroll themselves for example in MOOCs, many of them will not finish the course. The second challenge is that employees need to posses the necessary skills and information to successfully be able to use e-learning technologies and materials (Burgess & Russell, 2003; Ho & Kuo, 2010). This challenge is further complicated by the fact, that there are many different technologies and that the number of these technologies is ever-growing (Park & Wentling, 2007). The third challenge is the lack of essential requirements like time, necessary hardware, resources and trust (Sambrook, 2003). The last challenge is the attitude of managers towards e-learning and the general organizational culture, which can be negative towards modern types of learning (e.g., e-learning; Brown & Charlier, 2013). In conclusion, it can be said that although there are a few challenges, e-learning nevertheless is seen as one of the key activities for a successful organization (Floyde et al., 2013). This claim is further supported by the fact that e-learning usually accounts, according to Cheng et al. (2011), for a considerable percentage of corporate investment in training.

E-Learning in SMEs

Despite the facts that e-learning can have a lot of benefits for large organizations and that it is often used in those organizations, it is less frequently used in SMEs (Admiraal & Lockhorst, 2009; Floyde et al., 2013). SMEs were defined by the European Commission (2003) as organizations with less than 250 employees. They account for 99% of all organizations in Europe (Hamburg & O'Brien, 2014a). This great number of SMEs have to cope with the same demands and influences as the larger organizations: the environment is changing (as a result of globalization and other influences), so it is important for SMEs to gain new skills and knowledge, and to be innovative in order to be competitive. Farvarque et al. (2009; as cited in Floyde et al., 2013) shows that e-learning is also as applicable and efficient in SMEs as it is in larger organizations. Especially important for SMEs are thereby the flexibility, because SMEs have usually a less structured daily timetable, and the lower costs, because SMEs have also a smaller trainings budget (Floyde et al., 2013; Hamburg, Engert, Anke & Marin, 2008). In other words, it can be said that SMEs are less likely to engage in e-learning, although it can be as efficient as in larger organizations and it gives the advantages that it costs less and is more flexible than traditional training.

Even though the usefulness of e-learning in SMEs is proven, there are also a few challenges, which could be causes for the small distribution of e-learning in these organizations (Farvarque et al., 2009, as stated in Floyde et al., 2013). These challenges can be best divided into two different groups: external and internal challenges. External challenges are challenges, which are not caused by SMEs themselves. An external challenge is for example that e-learning materials and technologies are less tailored and suitable for SMEs (Guiney, 2015; O'Brien and Hall, 2004, as cited in Floyde et al., 2013). Examples for internal challenges are the existing organizational learning culture (the extent to which organizations provide employees with learning resources and encourage them to use this resources), lack of necessary knowledge, skills and information to use e-learning materials

and technologies, and a "lack of deep analysis to identify skill shortage" (p.2) (Hamburg & O'Brien 2014a; Hamburg & O'Brien 2014b). But the main internal challenge is that managers of SMEs have a negative attitude towards e-learning (Admiraal & Lockhorst, 2009; Hamburg & O'Brien 2014a; Hamburg & O'Brien 2014b; Wang, 2011). This can have different reasons: managers can be too busy planning the daily work routine to think about e-learning or they do not see the benefits and usability of e-learning.

Managerial Attitude towards E-Learning in SMEs and Goal of this Research

Even though the attitudes of managers are one of the main reason why SMEs are still reluctant to introduce e-learning, not much recent research is done on the attitudes of managers towards e-learning in SMEs. Hamburg and O'Brien (2014b) have investigated only the attitude of managers towards cloud-computing, a specific type of e-learning that makes use of an Internet-based network (cloud) to provide easily accessible, on-demand information. Because cloud-computing is only a specific type of e-learning, these findings may not be applicable to e-learning in general. Furthermore, Admiraal and Lockhorst (2009) have analyzed the attitudes of managers towards e-learning in SMEs and found that managers generally have a very negative attitude towards e-learning. But the data of their research is from 2004-2005, so it is outdated, because of the rapid development in the scientific field of e-learning. In addition, the literature about large organizations further supports the claim that the attitude of the manager is very important for the implementation of e-learning (Cheng, Wang, Moormann, Olaniran & Chen, 2012). Because of the lack of research on the attitude of managers towards e-learning in SMEs, this research tries to develop and test a questionnaire, which should measure exactly that which has been neglected – the attitude of managers in SMEs towards e-learning. With more knowledge about the attitude of SME-manager, it could be possible to change this attitude and thus, remove one of the greatest barriers to e-learning

in SMEs. When this barrier is removed, SMEs could profit fully from the many benefits of e-learning.

The questionnaire which is developed in this study is tested by a small pilot-study, which should test the comprehensibility and usability of the questionnaire and a large-scale establishment of its validity and reliability. This research focuses on SMEs in Germany. Thus, the questionnaire is also developed in German.

Construction of the Questionnaire

The questionnaire, which is developed and tested in this study, is based upon the questionnaire which was used by Admiraal and Lockhorst (2009). They used a questionnaire which consisted of seven constructs that measure the attitude of the managers of SMEs towards various topics. The first one was labeled *Technology for Communication* and it measured how frequent technologies are used for organizational communication. The second one was named *Informal E-Learning* and tried to determine whether organizations used Internet Communication Technologies (ICT) for informal learning such as sharing and collecting information. *Informal Learning*, the third construct, quantified whether organizations engaged in informal learning (collecting and sharing of information). The fourth construct is *Formal Learning*. This construct tried to measure the attitude towards trainings in the organization. The fifth construct, *Branch*, quantifies the role of various branch organizations in e-learning. Two constructs consists only of one item: *Technology for Work*, which measures how often ICT are used for help for current work, and *Formal E-Learning*, which establishes how often ICT are used for learning and training. In total, the questionnaire included 46 items.

As described in the previous sections, e-learning is a rapidly changing trend and since the development of the initial questionnaire, a lot of new technologies were developed (e.g., MOOCs, Clouds; Brown & Charlier, 2013). As a result, a lot of conceptual details have

changed in the last years. Therefore, there was a growing need to change the initial questionnaire and this was done in this study.

The changes that were made to the initial questionnaire by Admiraal and Lockhorst (2009) can be best described in three different categories. All these three categories of changes are described in Table 1; it compares the initial and the new questionnaire and shows thereby all differences between these two questionnaires. The first category is 'changes in constructs'. In this study, the initial set of constructs of Admiraal and Lockhorst (2009) was changed. The new construct *Assessment* was introduced, because regular assessment seems to have a positive effect on e-learning and should therefore be measured (Booth, Carroll, Pappaioannou, Sutton & Wong, 2009). Accordingly, this construct consists of three questions that measure the assessment policy of SMEs. In addition, to the knowledge of the researcher the construct *Branch* has not been used anymore in recent research. Because Admiraal and Lockhorst (2009) did not state any reliable reasons why they included this construct, this construct was then deleted to focus more directly on e-learning and not on other concepts

The second category of changes is 'changes *of* questions'. This means that questions were added or deleted. Four new questions (Q 7, Q14, Q 15, Q31) were added to focus the questionnaire more directly on the specific topic of e-learning and not only on related constructs. This means, that more questions which asked directly about e-learning were added. Furthermore, two questions (Q28, 29) were attached to the questionnaire to ask more about the assessment policy of the SMEs (as described above). Another construct, which helps to measure e-learning in SMEs, is the attitude of employees towards computers. According to Park and Wentling (2007), the positive attitude of employees towards computers enhances the perceived usability of e-learning, which in turn positively influences the learning transfer to the everyday work. As a result, employees with a positive attitude towards e-learning are more satisfied with the result of e-learning than employees who have a negative attitude towards e-learning. This notion is further supported by Bhuasiri, Xaymoungkhoun,

Rho and Ciganek (2012) who had shown that a positive employee-attitude towards e-learning leads to more perceived benefits. Thus, a question to measure the attitude towards computers was attached to the questionnaire (Q42). In addition, one question is added related to the possibility of employees to choose for themselves what they want to learn (Q36), because self-directed learning seems to reinforce e-learning (Cheng et al., 2011). Another question (Q8) was appended to the questionnaire to get information over the length of training in general.

Table 1

Comparison Between New and Initial Questionnaire

Construct and Number of Item	Initial Item	New Item
Descriptive Features		
Q1	How many people are employed by your company (including yourself and any freelance employees)?	Same
Q2	Which of the following categories describes your type of business the best?	Same
Q3	At how many locations do your employees work (e.g. home, different buildings, at customer's place)?	At how many locations do your employees work?
Q4	How many employees have a college or university degree?	Same
Q5	How many employees are skilled workers (e.g. have some kind of vocational competence certificate)?	Same
Q8	/	How much time have employees per year for following training?
Q9	How many employees have a computer for their own use at work?	Same
Q10	How many employees have an e-mail address at work?	Same
Q11	What is the ratio of men to women in your company?	Same
Q12	What is the average age of the employees in your company?	Same
Q13	Which of the following ICT tools are used within your company (more alternatives may be indicated)?	Which of the following ICT tools are used within your company (more alternatives may be indicated)? [a]
Q14	/	Which of the following types of e-learning are used within your company (more than one choice possible)?

Q15	/	Which type of e-learning is the most important one in your company?
Technology for Communication		
Q16	/[b]	Communication within the company
Q17	Communication with colleagues in other companies	Same
Q18	Communication with suppliers	Same
Q19	Communication with customers	Same
Q20	Communication with other, for your work relevant people	Same
Q21	Communication with associations and groupings (e.g. chamber of commerce, branch organization, governmental institutes)	Same
Technology for Work		
Q23	Help for current work (e.g. computer help programs or product manuals)	Same
Informal E-Learning		
Q31	/	Our employees are encouraged to engage in e-learning
Q37	In our company we need computers to do our work	In our company we need computers/tablets/smartphones to do our work
Q38	Most of the employees use the Internet on a daily basis	Same
Q39	Every employee in our company is able to use the computer	Every employee in our company possesses the skills necessary to use a computer/tablet/smartphone
Q40	In our company we use ICT to share information	Same
Q41	In our company we use ICT to collect information	Same
Q42	/	Our employees are generally thinking positively about ICTs
Q43	Our employees are encouraged to use e-mail	Same
Q44	Our employees are encouraged to use the Internet	Same
Formal E-Learning		
Q7	/	What percentage of this trainings* is followed online?
Q22	Learning and/or training	Same

Informal Learning		
Q25	/[b]	Daily work practice provides enough opportunities for our employees to stay up to date
Q26	Our employees are encouraged to regard changes in the work environment as challenges for their professional development	Same
Q32	Our employees are encouraged to solve problems together	Same
Q33	Our employees are encouraged to share information	Same
Q34	Our employees are encouraged to collect information	Same
Q35	Our employees are encouraged to share information with colleagues in the same profession	Same
Q36	/	Our employees can choose for themselves what they want to learn
Formal Learning		
Q6	How many employees follow training organized by the company?	Same
Q24	Our employees are encouraged to stay up to date by following (offline-) courses	Same
Q30	In our company, we have a considerable training budget	Same
Assessment		
Q27	Assessment of the employees' skills is an important part of our company's policy	Assessment of the employees' skills is an important part of our company's policy[c]
Q28	/	Assessment of learning progress (whether an employee has learned something new) is an important part of our company's policy
Q29	/	The learning progress of our employees is regularly being assessed
Branch		
	Our employees are encouraged to ask branch organizations for Information	Deleted
	Our branch organization actively encourages its members to share Information	Deleted

Our branch organization actively encourages its members to use ICT to share information	Deleted
Our branch organization plays an important role in developing training for our sector	Deleted
Our branch organization plays an important role in developing ICT based training for our sector	Deleted

Note. All items are presented in English and numbered according to the new English version, for the German questions see Appendix A.
[a] For this item, only the answer options were changed, not the item itself.
[b] Admiraal and Lockhorst (2009) included these items in their questionnaire, but they did not explain to which construct these items belong.
[c] This item belonged to the *Formal Learning*-construct. After integrating the *Assessment*-construct, it was decided that this item fits better in the *Assessment-construct*, because it explicitly asks about assessment.

The third category are ‘changes *in* questions’. This means that the formulations of the questions were changed or new information was added to the initial questions. In three questions (Q13, Q 37, Q39), new technologies were added. Furthermore, the formulation of question 39 was adapted to make the question more precise. To summarize all the changes from all three categories, it can be said that the main changes were that an assessment-construct was introduced, new factors were added to measure related concepts, the questionnaire was focused more directly on e-learning itself, and questions which mentioned technologies were updated by adding new technologies.

The last step in the construction-process was the translation from English to German. The initial questionnaire from Admiraal and Lockhorst (2009) was written in English and all the changes were also made in the English version. But it was necessary to translate the questionnaire to German, because it is planned to use the questionnaire later in Germany. The translation was done by using a translate-retranslate method. The researcher translated the whole questionnaire to German. Then the questionnaire was handed to another translator who started to retranslate the German questionnaire to English again. After that the initial and the retranslated versions were compared. Questions were only transferred to the final version of the German questionnaire, when the initial and the retranslated version had matched. If that was not the case, both translators reformulated the question together until both decided, that it matched. The disagreements were resolved by searching for the causes of the disagreements (e.g., different vocabularies, different structure of the sentences, etc.). Then both translators looked for the most suitable German translation of the vocabulary or the sentences together. Furthermore, the questions of the German questionnaire were ordered and numbered differently from the English one, because of lay-out reasons. To be consistent, the researcher continued to number the questions in this report according to the English version (thus, Q38 means question 38 of the new English version).

Updated Questionnaire

The result of this construction-process was an updated questionnaire (for the complete questionnaire, see Appendix A). This questionnaire consists of seven constructs (*Technology for Communication, Technology for Work, Informal e-learning, Formal e-learning, Informal learning, Formal learning* and *Assessment*), which are shown and described above. The seven constructs were measured by in total 44 items. All items except the demographics were scored on a 5-point Likert type scale. The demographic statistics of the organizations reflected the size of the organizations in terms of number of employees (Q1), the category of the organization (Q2), the number of locations where employees work (Q3), specific characteristics of employees (Q4, Q5, Q11, Q12), questions about the implementation of trainings for employees (Q6, Q7, Q8), and questions over the usage of ICT (Q9, Q10, Q13, Q14, Q15).

Methods

Design

The next step was then to test the updated questionnaire. Therefore, two different ways of testing were planned. The first one involved a qualitative pilot-study that should measure the comprehensibility and usability of the questionnaire. The second way of testing was a large-scale quantitative establishment of reliability and validity of the questionnaire. Because of time constraints and unanticipated bureaucracy it was not possible nor feasible to collect large-scale data to establish reliability and validity. At the beginning of the data-gathering, a request was send to the German Industrie und Handelskammer (IHK) in order to get a large sample of SMEs. The IHK is a chamber of commerce who was the only available source that has a large register of SMEs. But it was not possible to get access to this large register, because that is only possible by sending formal request, which can take several months to be

accepted. As a consequence, it was not feasible to collect large-scale data which is necessary to establish reliability and validity, so the Participants- and Procedure-section only describes the pilot-study. In the Data-Analysis-section, the analyses which were *planned* to be used and the analysis of the pilot-study which were actually used, are described both.

Participants

There were 5 participants (100% men) in the study. All of them were managers of SMEs in Germany. Every one of these participants were from the social and spatial environment of the researcher and they were recruited by convenience sampling. This means that the managers of SMEs, who were easy to access, were included in the sample. Although every participants was from the social and spatial environment of the researcher, none of them had a personal relationship with the researcher or even met the researcher before. Furthermore, all managers gave informed consent (for the Informed Consent-form, see Appendix B). The sampled organizations of the managers were distributed over the following categories: one organization was from the service-sector, one from the retail-sector, two from the wholesale-sector and one organization could not further be specified by the manager. There were no managers from organizations which engage in production. In addition, the number of employees ranged across all three employee-number categories: one organization had less than 9 employees, three organizations had 10-50 employees and one organization had 51-250 employees.

Procedure

At the beginning of each interview, it was illustrated that the study consists of two parts: the first one was the completion of the questionnaire and the second one was a short debriefing where participants could mention strong points and points which should be improved. For the first part, participants were informed that they were to be given one questionnaire and that

they should answer each question by ticking the statement which best applied to their organization. Furthermore, it was emphasized that the participants understood that the goal was not only the answering of the questions, but also that the participants tell about their experience while filling in the questionnaire (about possible ambiguities, understandability, usability, points to improve, etc.). This means that the participants should not hesitate to ask, when they had any questions or comments about the questionnaire. After all questions were answered, the second part began: all participants were asked whether they can think of any strong points or points to improve the questionnaire. This was a rather general instruction to mention anything they could think of with the intention to not limit the participants in their answers.

Each one of the participants participated alone in this study. Furthermore, each participant was interviewed at the head office of his organization. This means that the researcher went to all five organizations and handed a paper-and-pencil version of the questionnaire to the participants. There was but one requirement for the place of each interview, it had to be a silent room where the participants could fully concentrate on the questionnaire. The researcher was the whole time in a close proximity to the participants to answer questions or take notes.

Data Analysis

The pilot-study was analyzed by comparing the different comments and impressions of the managers. All comments and impressions were named in the Results-section, but only comments or impressions which are confirmed by another participant, are further used to improve the questionnaire (in the Discussion-section). Thus, the comments and impression are not based on a singular, individual opinion, but rather on a consensus between different participants.

Furthermore, two different analyses were planned to be used in this study to establish reliability and validity by using SPSS. The first one was a Reliability Analysis to calculate the Cronbach's alpha to measure the internal consistency of the different scales (e.g., *Technology for Communication).* If the Cronbach's alpha of every scale should be higher than 0.7, the internal consistency of the questionnaire would be acceptable (Kline, 1999). In addition, it is planned to do a Factor Analysis to measure the construct validity of the questionnaire.

Results

As already described in the Method-section, because of time constraints and unanticipated bureaucracy it was not possible nor feasible to collect large-scale data to establish validity and reliability. Thus, in the following section only the results from the qualitative pilot-study are presented. In this section both, the comments of the participants during the completion of the questionnaire and the strong- and improvement points which were mentioned during the debriefing, are depicted. To improve clarity, the results of all participants are illustrated consecutively.

Participant 1

Participant 1 was a manager of a very small (less than 9 employees) retail-organization. He was really concentrated and precise while looking at the questionnaire. As a result, filling in the questionnaire also took him about 45 minutes, but he had a lot of improvement-points. He thought that the 'type of business'-question (Q2) was not clear enough, because in his opinion, a lot of organizations are a combination of different types. Thus, he suggested that the questionnaire should be made a bit more flexible to account for organizations, which cannot be categorized so easily. In addition, he noted that the question over the average age (Q12) was not linear distributed. This means that the different categories of the question encompasses different time spans (e.g., category 2 (26-35 years): 10 years time span, category

3: (36-40 years): 5 years time span, etc.). Furthermore, the term ‘blended learning’ was not clear to him (Q14) and he suggested that it could be explained better. After the completion of the questionnaire, he also named several strong- and improvement-points. As a strong point he stated that the questionnaire was “uncomplicated and relaxing”, that in comparison with other questionnaires, it did not take him much time to fill it in, and that this questionnaire measured e-learning in his opinion very well and efficiently. On the other hand he also found two improvement-points. The first one is that, although he perceived the questionnaire as “uncomplicated and relaxing”, he thought that it could still be made more clearly and easier to understand. In his view, the questionnaire should be made so every craftsman can understand it. The second improvement-point is that he sometimes found it difficult to use the Likert-scale for some questions (mainly the questions over the frequency of the use of ICT technologies; 16-23) and that this could be made easier to understand.

Participant 2

Participant 2 was a manager of a wholesale-organization which number of employees was between 10 and 50. It took him 25 minutes to complete the questionnaire. He also admitted that he had problems to classify his organization for the ‘type of business’-question (Q2), specifically, he asked what he should tick when several types of businesses were applicable. Furthermore, the ‘at how many locations do your employees work?’-question (Q3) was not clear for him. His organization had several fitters employed, who went to customers, so he did not know what to tick. At the end, he stated that he perceived the questionnaire as very comprehensible and he also admitted that this questionnaire inspired him to think more about e-learning in his organization. In contrast, no content-related improvement-points were found by him. He just noted that the questionnaire could maybe look a bit more ‘official’ by for example placing the logo of the university at the top of each page.

Participant 3

The third participant was also a manager of a wholesale organization with 10-50 employees. The completion of the questionnaire took him 20 minutes. He did not comment anything except that he perceived the questionnaire as very easy to complete. The Likert-scale was especially liked by him, because it is much easier than "writing it down every time".

Participant 4

Participant 4 was a manager of a service-organization with 10-50 employees. He needed 25 minutes to complete the questionnaire. The 'at how many locations do your employees work?'-question (Q3) was unclear for him, it was not clear for him how employees who are driving to clients and customers should be rated. In addition, the manager thought that question 8 (how much time employees have per year for following training) should be reformulate to sound nicer and more positive. During the debriefing, he said that he had perceived it very positively that definitions were given for ICT and e-learning, but it would be even better, if these definitions had been on every page where questions about ICT/e-learning were asked. In this way the participant does not have to remember them.

Participant 5

The fifth participant had a medium-sized (51-250 employees). He could not specify his organization further in one of the 'type of business'-categories. It took him 20 minutes to complete the questionnaire. During the completion he had only one question and that was whether he could take two options at the question 'over the most important type of e-learning' (Q15). It was not clear to him that he could only tick one option, because he said that this was not explicitly explained there. At the end, he mentioned as strong-point that the questionnaire really made him think more about e-learning, because he did not know much about e-learning

beforehand. On the other hand, he stated that it was one improvement-point for him to give the definitions of ICT and e-learning always on the same page as the questions about them.

Discussion and Conclusion

The aim of this research was to develop and pilot-test a questionnaire which measures the attitude of German SME-managers towards e-learning in their organizations. As a result, the questionnaire provides a solution to the lack of up-to-date information on the attitude of managers of SMEs towards e-learning. To attain this aim, a questionnaire which was used by Admiraal and Lockhorst (2009) was used as a basis in the development-process. This initial questionnaire was adapted and changed in order to update the questionnaire (for the precise changes, see the Materials-section). The new questionnaire was then translated to German, because it is planned to use this questionnaire in Germany. The new questionnaire in German was further tested in a pilot-study.

In the following paragraphs the most important points of the above mentioned pilot-study are summarized. As described in the Method-section, only comments and impressions which are confirmed by at least one other participant are used to improve the questionnaire. This increases the reliability of the comments and impressions.

The first point which was interesting is that the majority of participants *explicitly* told that they perceived the questionnaire as easy to understand and comprehensible (as stated by Participants 1, 2, and 3). All other participants did not criticize the usability and comprehensibility of the questionnaire, but they praised it neither. Thus, it can be said that in general the questionnaire accomplished the goal of being easy to understand for managers in SMEs. This was a rather positive finding, because it was the aim of the pilot-study to check for ambiguities and understandability of the questionnaire.

On the other hand, there were also some improvement-points mentioned. First, three participants (Participants 1, 2, and 5) voiced that they had problems to classify their

organizations in the ‘type of business’-question (‘Which of the following categories describes your type of business the best?’). The problem with this question seemed to be that participants could only tick one answer option, but a lot of organizations were a mixture of these categories. As a result of these difficulties of the managers to answer this questions, it is necessary to reformulate the answer options of this question. This question is used to roughly categorize organizations, so it would not be helpful to change the instructions so that multiple options could be ticked. Thus, there are generally two possible solutions here: it could be made even plainer that the participants should tick the answer options which suits *the best* by adding another sentence which emphasizes this or the answer options could be changed completely. Because this categorization is widely used to classify organizations, the first option is chosen to improve the questionnaire (Guiney, 2015).

The second improvement-point is that Question 3 (‘At how many locations do your employees work?’) was ambiguous for two participants (Participants 2 and 4). Both participants stated that some employees of their organization worked as field staff and they did not know whether they should include these locations where the field staff works as well. After having a closer look on the initial questionnaire, it was apparent, that there was a mistake in the transfer of the question from the initial to the new questionnaire rather than a missing explanation. The initial question already explains what was precisely meant with “location”: “At how many locations do your employees work (*e.g., home, different buildings, at customer’s place*)?” (p.20; Admiraal & Lockhorst, 2009). Therefore these examples for places were added again to the question.

The last improvement-point is the idea that the definitions of ICT and e-learning should be shown on every page where participants had to answer questions about ICT and e-learning, because in this way the participants do not have to remember the definitions. Participants 4 and 5 both mentioned this idea. As a consequence of the problem of remembering the definitions and the fact that the definitions of e-learning and ICT are shown

on almost every page, the definitions are going to be handed out separately to the questionnaire. In this way, the participants can simultaneously look at the questions and at the definitions without writing down the same definitions on every page. In short, it can be said that the questionnaire was easy to understand and to comprehend for the managers, but nevertheless there were a few points, which should be improved (Question 2 and 3, and the definitions of ICT and e-learning). These points were all improved in the questionnaire for further research. The complete and final version of the questionnaire can be seen in Appendix C.

In addition to these improvement-points, it was also really interesting to see what impact the questionnaire had on the managers. Two managers (Participants 2 and 5) stated that this questionnaire really inspired them to think more about e-learning in their organizations. Participant 5, who was a manager of an organization with 51-250 employees, further explained that he did not know much about e-learning before filling in the questionnaire. This further supports the claim, which is described in the Theoretical Background-section, that managers are not really aware of e-learning and its benefits (Cheng, Wang, Moormann, Olaniran & Chen, 2012).

This study has also some strong-points and weak-points, which should be considered to put the conclusion into perspective. One weak point for example was that organizations of the production-sector were underrepresented - none of the five managers was a manager of an organization out of this sector. The absence of a production-organization is noteworthy, because Admiraal and Lockhorst (2009) found that these organizations use more technologies than organizations of the other sectors. Furthermore, Ho and Kuo (2010) confirmed that the degree of technology-usage affects also the attitudes towards technology. So, it could be that the managers of production-organizations have a different attitude towards e-learning than the other managers. This is not so relevant for this study, because the pilot-study was more about the usability and comprehensibility than over the actual results of the questionnaire. But it is

very important for further research to include organizations out of all three ‘types of businesses’ in order to draw a representative sample.

In addition, a further weak-point or at least a reflection-point was the following conceptual detail. After having a closer look on the questionnaire and the underlying constructs, it was striking that the questionnaire did not really seem to measure the actual *attitude* of managers. The questionnaire was developed by Admiraal and Lockhorst (2009) in order to measure the attitude of managers and it was further used in this way in this study, but when looking at the underlying constructs that are measured by the questionnaire, a different picture emerges: The initial but also the new questionnaire measure rather whether and how frequently SMEs use technologies for learning and communication. This focus on the usage-pattern is for example shown when looking at the items of the questionnaire (Table 1): Eight questions are about the frequency of the use of ICT for specific purposes (Q16-23) and another eight questions are measuring the usage of ICT (Q-37-44). Thus, instead of measuring the attitude, the questionnaire really measures the use of technologies for learning and communication. This does not mean that the questionnaire is useless, but only that it was falsely described or defined. To the contrary, the questionnaire is very useful for gathering valuable information about the use of technologies for learning and communication in SMEs. It can be interesting to analyze the actual implementation of such technologies in SMEs. But, as described in the Theoretical Background-section, there is also a need to analyze the actual attitude of managers towards e-learning, because this attitude acts as a great barrier to e-learning, which can be very beneficial for SMEs. Thus, it would be helpful to include a questionnaire that can measure this attitude to the questionnaire that is developed in this study.

There are different models that can be used to measure the attitude of managers of SMEs towards e-learning. In the following two models, that can be used for this purpose, are described. The first one is the Technology Acceptance Model (TAM), which tries to measure

the factors that influence successful development and implementation of computer-based systems in organizations (Davis, 1986). These computer-based systems are defined by Davis (1986) as "systems that are directly used by organizational members at their own discretion to support their work activities" (p. 9). Thus, this definition would encompass e-learning. The TAM tries to measure the motivational response, which predicts the actual usage of a system. The motivational response is measured by two constructs: 1. perceived usefulness (does this system enhance performance?) and 2. perceived ease of use (is this system easy to use?; Davis 1986). As a result, the TAM could measure the managerial attitude towards e-learning instead of measuring the usage-pattern of technologies in SMEs as the questionnaire does, that was developed and tested in this study. This idea gets further support from the fact, that enhanced and extended versions were often used to study the adaption of e-learning in other contexts (e.g., educational environment; Ngai, Poon & Chan, 2007; Van Raaij & Schepers, 2008).

Another, more recent model, that measures technology adaption is the Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh, Morris, Davis & Davis, 2003). The UTAUT combines several other models of technology acceptance (with TAM amongst them). It consists of four different key constructs: performance expectancy (will the technology enhance performance?), effort expectancy (is the technology easy to use?), social influences (what do other people think about me using the technology?) and facilitating factors (are there factors that supports the use of this technology?). This model, which is more up-to-date and more advanced than the TAM, could also be used to investigate which beliefs lead manager to not implement e-learning in their SMEs. Furthermore, the UTAUT was also already used to measure the adaption of e-learning (see for example, Lin, Lu & Liu, 2013). In conclusion, it is crucial for further research, if that research wants to analyze the *attitude* of SME-manager, to include a questionnaire that does actually measure this attitude. Examples for those questionnaires or models are the TAM or the more advanced and more recently developed UTAUT. One of these models could be added to the questionnaire that is

developed in this study to get a more holistic view over e-learning in SMEs, in this way the usage-pattern of learning and communication technologies *and* the managerial attitude towards e-learning can be analyzed together.

On the other hand, a strong-point of the study is that the debriefing-session consisted of a very broad reflection. Participants were only asked to think of any strong- or improvement-point. As a result of the broad instruction, the participants were not restricted by any rules. This means that participants could bring up everything that was relevant for them. In addition, another strong-point of this study was that the organizations of the managers were distributed over all three categories of 'number of employees'. This is essential, because according to Guiney (2015), smaller SMEs (less than 9 employees) are less likely to engage in e-learning than larger SMEs. Thus, managers of smaller SMEs could find questions over SMEs more difficult than managers of larger SMEs, because they maybe did not come in contact with these terms earlier. This is consistent with the results of this study, although the manager with the smallest number of employees (Participant 1) stated explicitly that the questionnaire was easy to understand, he nevertheless had the most improvement-points and problems with understanding. But this relationship has to been seen cautiously, because only *one* manager of the smallest category of SMEs was interviewed.

The next step, before the questionnaire can be used, is to establish the reliability and validity in order to test whether the questionnaire really measures, what it is supposed to measure. The necessary analyses are already described in the Data-Analysis-section. If this establishment is positive, the questionnaire can be handed out to actually analyze the use of technologies for communication and learning in German SMEs. Furthermore, it would be very helpful to include a questionnaire (e.g., TAM or UTAUT) about the actual attitude of managers towards e-learning to actually measure this attitude. This research can be seen as preparatory work for the actual gathering of data. For the further research it is important that,

unlike in this study, a representative sample is drawn, because there are maybe differences between organizations out of the three categories (retail, production and service).

In conclusion, it can be said that the questionnaire which was developed in this study was in general well developed and had a high usability and comprehensibility, but some adaptations still had to be made (for the final version of the questionnaire, see Appendix C) and the questionnaire still has to be tested quantitatively for reliability and validity. Furthermore, it seemed that the questionnaire does not actually measure the attitude towards e-learning, but rather the use of technologies for communication and learning in SMEs, so further research it would be helpful to include a questionnaire that measures the attitude of SME-managers towards e-learning. In this way, it could be possible to get a more holistic view of the topics of e-learning and use of technologies for learning and communication in SMEs.

This research can be seen, as described above, as preparatory work for the data collection process. By this data collection process, two possible insights are possible. First, if a questionnaire that measures the attitude of managers towards e-learning is added, it could be possible to learn more about this attitude. From this knowledge a lot of people could benefit. It is proven that SMEs can profit from e-learning, but the managerial attitude is seen as a major obstacle towards e-learning in SMEs (Admiraal & Lockhorst, 2009; Hamburg & O'Brien 2014a; Hamburg & O'Brien 2014b). If this attitude is closely analyzed, it would be possible to change the attitude. As a consequence, SMEs could profit from the numerous benefits of e-learning. Second, with the questionnaire that is developed in this study it is possible to acquire knowledge about the implementation of e-learning: What for technologies are used? For what purpose are they used? How is the learning climate in SMEs? and so on. It was found that it is a challenge to e-learning in SMEs that e-learning applications are often bad tailored to the needs of SMEs (Guiney, 2015, O'Brien and Hall, 2004, as cited in Floyde et al., 2013). As a result, with the knowledge about the actual implementation of e-learning in

SMEs it could be possible to tailor e-learning applications even more to SMEs and remove this challenge.

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Appendix A

Demografische Daten

Wie viele Personen sind in Ihrem Unternehmen angestellt (Sie und etwaige Freiberufler mit eingeschlossen)?

◯ 9 oder weniger
◯ 10-50
◯ 51-250
◯ mehr als 250

Welche der folgenden Kategorien beschreibt die Art Ihres Unternehmens am besten?

◯ Einzelhandel
◯ Dienstleistung
◯ Produktion
◯ Andere

An wie vielen Orten arbeiten Ihre Angestellten?

◯ 1
◯ 2
◯ 3
◯ 4+

	0 - 20%	20 – 40%	40 – 60%	60 – 80%	80 – 100%	Weiß nicht
Wie viele Angestellte haben einen Universitäts- oder Fachhochschulabschluss?	◯	◯	◯	◯	◯	◯
Wie viele Angestellte sind ausgebildete Arbeitskräfte (d.h. haben ein Zertifikat, das ihre berufliche Kompetenz beweist)?	◯	◯	◯	◯	◯	◯

Wie viele Angestellte nehmen teil an Trainings/Weiterbildungs-möglichkeiten, die von Ihrem Unternehmen organisiert werden?	◯	◯	◯	◯	◯	◯
Wie viel Prozent dieser Trainings/Weiterbildungsmöglichkeiten erfolgt online?	◯	◯	◯	◯	◯	◯

	0 - 20%	20 – 40%	40 – 60%	60 – 80%	80 – 100%	Weiß nicht
Wie viele Angestellte haben einen Computer auf der Arbeit für den eigenen Gebrauch?	◯	◯	◯	◯	◯	◯
Wie viele Angestellte haben eine eigene E-Mail Adresse auf der Arbeit?	◯	◯	◯	◯	◯	◯

Wie viel Zeit haben Angestellte pro Jahr für Trainings/Weiterbildungsmöglichkeiten?

◯ <10 Stunden
◯ 11-20 Stunden
◯ 20-30 Stunden
◯ 30-40 Stunden
◯ >41 Stunden

Wie ist das Verhältnis der Anzahl von Männern zu Frauen in Ihrem Betrieb?

◯ 100 % Männer
◯ mehr Männer als Frauen
◯ ungefähr 50-50 %
◯ mehr Frauen als Männer
◯ 100 % Frauen
◯ weiß nicht

Was ist das Durchschnittsalter der Mitarbeiter in Ihrem Betrieb?

◯ 25 Jahre oder jünger
◯ 26-35 Jahre

◯ 36-40 Jahre
◯ 41- 50 Jahre
◯ 51 Jahre oder älter
◯ weiß nicht

! Information and Communication Technologies (ICT)= dt. Informations- und Kommunikationstechnik; alle Technologien mit denen Informationen gespeichert, gesendet oder umgeformt werden

Welche der folgenden ICT werden in Ihrem Unternehmen benutzt (mehrere Antwortmöglichkeiten sind möglich)?
◯ E-Mail
◯Video conferencing
◯ Internetforen
◯ CD/DVD/Blu- ray
◯ Clouds
◯ Administrative Programme/Buchhaltung
◯ Präsentations-Programme
◯ Online lernen (z.B. Google, YouTube, etc.)
◯ Social Media (z.B. Facebook)
◯ Andere: …….

! e-learning= Gebrauch von Computertechnologien und vernetzenden Technologien um, primär über das Internet, Informationen und Anleitungen zu übermitteln (aus dem Englischen von Welsh, Wanberg, Brown, & Simmering, 2003)

Welche der folgenden Arten von e-learning werden in Ihrem Unternehmen benutzt (mehrere Antwortmöglichkeiten sind möglich)?
◯ Online-Kurse
◯ MOOCs (Massive Open Online Courses)
◯ YouTube (or comparable)
◯ Social Media (Facebook, Twitter, etc.)
◯ Suchmaschinen (z.B. Google)

◯ “Blended Learning” (Kombination aus e-learning und Veranstaltungen, bei denen die Lernenden vor Ort anwesend sein müssen)
◯ Andere: ……..

Welche Art von e-learning ist am wichtigsten in Ihrem Unternehmen?
◯ Online-Kurse
◯ MOOCs (Massive Open Online Courses)
◯ YouTube (oder vergleichbar)
◯ Social Media (Facebook, Twitter etc.)
◯ Suchmaschinen (z.B. Google)
◯ “Blended Learning” (Kombination aus e-learning und Veranstaltungen, bei denen die Lernenden vor Ort anwesend sein müssen)
◯ Andere: ……..

Häufigkeit des Gebrauchs von ICT für bestimmte Zwecke

	1. Gar nicht	2. Selten	3. Manchmal	4. Häufig	5.Sehr häufig
Kommunikation intern im Unternehmen	◯	◯	◯	◯	◯
Kommunikation mit Kollegen aus anderen Unternehmen	◯	◯	◯	◯	◯
Kommunikation mit Zulieferern	◯	◯	◯	◯	◯
Kommunikation mit Kunden	◯	◯	◯	◯	◯
Kommunikation mit anderen, für die Arbeit relevanten Personen	◯	◯	◯	◯	◯
Kommunikation mit Verbänden und Vereinigungen (z.B. Handelskammer, Branchenverbänden)	◯	◯	◯	◯	◯
Lernen und/oder Trainings/Weiterbildungsmöglichkeiten	◯	◯	◯	◯	◯
Hilfe bei aktuellen, arbeitsbezogenen Tätigkeiten	◯	◯	◯	◯	◯

Lernklima

	1. nicht zutreffend	2. eher unzutreffend	3. weder/noch	4. eher zutreffend	5. komplett zutreffend
Unsere Angestellten werden ermutigt, durch die Teilnahme an (offline-) Trainings/Weiterbildungsmöglichkeiten auf dem neusten Stand zu bleiben	◯	◯	◯	◯	◯
Der Arbeitsalltag der Angestellten bietet genügend Möglichkeiten, für unsere Angestellten auf dem neusten Stand zu bleiben	◯	◯	◯	◯	◯
Unsere Angestellten werden ermutigt, Veränderungen im Arbeitsumfeld als Herausforderungen für ihre professionelle Entwicklung zu sehen	◯	◯	◯	◯	◯
Einschätzung/Bewertung der Fähigkeiten der Angestellten ist ein wichtiger Bestandteil der Richtlinien unseres Unternehmen	◯	◯	◯	◯	◯
Einschätzung/Bewertung des Lernfortschritts (=ob ein Angestellter wirklich etwas Neues gelernt hat) ist ein wichtiger Bestandteil der Richtlinien unseres Unternehmens	◯	◯	◯	◯	◯
Der Lernfortschritt der Angestellten wird regelmäßig gemessen	◯	◯	◯	◯	◯
In unserem Unternehmen haben wir ein beachtliches Budget für Trainings/Weiterbildungsmöglichkeiten	◯	◯	◯	◯	◯
Unsere Angestellten werden ermutigt, sich mit e-learning zu beschäftigen	◯	◯	◯	◯	◯
Unsere Angestellten werden ermutigt, Probleme zusammen zu lösen	◯	◯	◯	◯	◯
Unsere Angestellten werden ermutigt, Informationen untereinander zu teilen	◯	◯	◯	◯	◯
Unsere Angestellten werden ermutigt, sich Informationen zusammen zu suchen	◯	◯	◯	◯	◯

Unsere Angestellten werden ermutigt, Informationen mit Kollegen aus demselben Gewerbe zu teilen	◯	◯	◯	◯	◯
Unsere Angestellten können selbst auswählen, was sie lernen möchten	◯	◯	◯	◯	◯

Benutzung von ICT

	1. nicht zutreffend	2. eher unzutreffend	3. weder/noch	4. eher unzutreffend	5. komplett zutreffend
In unserem Unternehmen benötigen wir Computer / Tablets/Smartphones, um unsere Arbeit zu erledigen	◯	◯	◯	◯	◯
Die meisten unserer Angestellten benutzen das Internet täglich	◯	◯	◯	◯	◯
Jeder Angestellte in unserem Unternehmen verfügt über genügende Fähigkeiten, um ein(en) Computer/Tablet/Smartphone zu benutzen	◯	◯	◯	◯	◯
In unserem Unternehmen benutzen wir ICT, um Informationen zu teilen	◯	◯	◯	◯	◯
In unserem Unternehmen benutzen wir ICT, um Informationen zusammen zu suchen	◯	◯	◯	◯	◯
Unsere Mitarbeiter denken im Allgemeinen positiv über ICT	◯	◯	◯	◯	◯
Unsere Mitarbeiter werden ermutigt, E-Mails zu benutzen	◯	◯	◯	◯	◯
Unsere Mitarbeiter werden ermutigt, das Internet zu benutzen	◯	◯	◯	◯	◯

Appendix B

Einverständniserklärung

Als erstes will ich mich vorstellen, ich bin ein Psychologie-Student der Universität Twente. Gerade arbeite ich an meiner Bachelorthese zum Thema Validierung eines Fragebogens, welcher „e-learning“ in klein- und mittelständischen Unternehmen messen soll. Um diesen Fragebogen zu validieren muss ich unter anderem auch eine erste Version als „Pilot-Version“ testen. Dies bedeutet, dass ich diese ausfüllen lassen muss und dabei sein muss für etwaige Fragen und Anmerkungen.

Ablauf der Studie

In dieser Studie werden Sie gebeten, einen Fragebogen über „e-learning“ in klein- und mittelständischen Unternehmen auszufüllen. Dies dauert ca. 15min.

Ihre Rechte

Sie haben das Recht, diese Studie zu jedem Zeitpunkt ohne Erklärung zu unterbrechen/abzubrechen.
Weiterhin haben Sie das Recht, zu jedem Zeitpunkt zu fordern, dass jegliche Informationen, die von Ihnen bereits gegeben wurden, vernichtet werden.
Sie haben das Recht, das Beantworten einer Frage zu verweigern.
Sie haben das Recht, alle Fragen zum Ablauf der Studie beantwortet zu bekommen.
Wenn Sie irgendwelche Fragen haben, nachdem Sie dieses Dokument gelesen haben, wenden Sie sich bitte an den Urheber des Fragebogens.

Risiken

Es sind keine Risiken bekannt im Bezug auf das Ausfüllen des Fragebogens.

Anonymität

Die Daten, die mit dieser Studie erhoben werden, enthalten keine personsbezogenen Informationen. Niemand kann die von Ihnen gegebenen Daten mit Ihnen in Verbindung bringen.

Wenn Sie noch irgendwelche Fragen haben, zögern Sie nicht mich anzusprechen.

_____ _____

Unterschrift des Teilnehmers Datum

_____

Unterschrift des Versuchsleiters

Appendix C

Demografische Daten

Wie viele Personen sind in Ihrem Unternehmen angestellt (Sie und etwaige Freiberufler mit eingeschlossen)?

◯ 9 oder weniger
◯ 10-50
◯ 51-250
◯ mehr als 250

Welche der folgenden Kategorien beschreibt die Art Ihres Unternehmens am besten? Wenn mehrere Möglichkeiten zutreffen, wählen Sie bitte die aus, die am meisten zutrifft.

◯ Einzelhandel
◯ Dienstleistung
◯ Produktion
◯ Andere

An wie vielen Orten arbeiten Ihre Angestellten (z.B. zu Hause, in verschiedenen Gebäuden oder als Außendienstler)?

◯ 1
◯ 2
◯ 3
◯ 4+

	0 - 20%	20 – 40%	40 – 60%	60 – 80%	80 – 100%	Weiß nicht
Wie viele Angestellte haben einen Universitäts- oder Fachhochschulabschluss?	◯	◯	◯	◯	◯	◯
Wie viele Angestellte sind ausgebildete Arbeitskräfte (d.h. haben ein Zertifikat, das ihre berufliche Kompetenz beweist)?	◯	◯	◯	◯	◯	◯

Wie viele Angestellte nehmen teil an Trainings/Weiterbildungs-möglichkeiten, die von Ihrem Unternehmen organisiert werden?	◯	◯	◯	◯	◯	◯
Wie viel Prozent dieser Trainings/Weiterbildungsmöglichkeiten erfolgt online?	◯	◯	◯	◯	◯	◯

	0 - 20%	20 – 40%	40 – 60%	60 – 80%	80 – 100%	Weiß nicht
Wie viele Angestellte haben einen Computer auf der Arbeit für den eigenen Gebrauch?	◯	◯	◯	◯	◯	◯
Wie viele Angestellte haben eine eigene E-Mail Adresse auf der Arbeit?	◯	◯	◯	◯	◯	◯

Wie viel Zeit haben Angestellte pro Jahr für Trainings/Weiterbildungsmöglichkeiten?

◯ <10 Stunden
◯ 11-20 Stunden
◯ 20-30 Stunden
◯ 30-40 Stunden
◯ >41 Stunden

Wie ist das Verhältnis der Anzahl von Männern zu Frauen in Ihrem Betrieb?

◯ 100 % Männer
◯ mehr Männer als Frauen
◯ ungefähr 50-50 %
◯ mehr Frauen als Männer
◯ 100 % Frauen
◯ weiß nicht

Was ist das Durchschnittsalter der Mitarbeiter in Ihrem Betrieb?

◯ 25 Jahre oder jünger
◯ 26-35 Jahre

◯ 36-40 Jahre
◯ 41- 50 Jahre
◯ 51 Jahre oder älter
◯ weiß nicht

Welche der folgenden ICT werden in Ihrem Unternehmen benutzt (mehrere Antwortmöglichkeiten sind möglich)?
◯ E-Mail
◯Video conferencing
◯ Internetforen
◯ CD/DVD/Blu- ray
◯ Clouds
◯ Administrative Programme/Buchhaltung
◯ Präsentations-Programme
◯ Online lernen (z.B. Google, YouTube, etc.)
◯ Social Media (z.B. Facebook)
◯ Andere: …….

Welche der folgenden Arten von e-learning werden in Ihrem Unternehmen benutzt (mehrere Antwortmöglichkeiten sind möglich)?
◯ Online-Kurse
◯ MOOCs (Massive Open Online Courses)
◯ YouTube (or comparable)
◯ Social Media (Facebook, Twitter, etc.)
◯ Suchmaschinen (z.B. Google)
◯ “Blended Learning” (Kombination aus e-learning und Veranstaltungen, bei denen die Lernenden vor Ort anwesend sein müssen)
◯ Andere: …….

Welche Art von e-learning ist am wichtigsten in Ihrem Unternehmen?

◯ Online-Kurse
◯ MOOCs (Massive Open Online Courses)
◯ YouTube (oder vergleichbar)
◯ Social Media (Facebook, Twitter etc.)
◯ Suchmaschinen (z.B. Google)
◯ "Blended Learning" (Kombination aus e-learning und Veranstaltungen, bei denen die Lernenden vor Ort anwesend sein müssen)
◯ Andere: ……..

Häufigkeit des Gebrauchs von ICT für bestimmte Zwecke

	1. Gar nicht	2. Selten	3. Manchmal	4. Häufig	5.Sehr häufig
Kommunikation intern im Unternehmen	◯	◯	◯	◯	◯
Kommunikation mit Kollegen aus anderen Unternehmen	◯	◯	◯	◯	◯
Kommunikation mit Zulieferern	◯	◯	◯	◯	◯
Kommunikation mit Kunden	◯	◯	◯	◯	◯
Kommunikation mit anderen, für die Arbeit relevanten Personen	◯	◯	◯	◯	◯
Kommunikation mit Verbänden und Vereinigungen (z.B. Handelskammer, Branchenverbänden)	◯	◯	◯	◯	◯
Lernen und/oder Trainings/Weiterbildungsmöglichkeiten	◯	◯	◯	◯	◯
Hilfe bei aktuellen, arbeitsbezogenen Tätigkeiten	◯	◯	◯	◯	◯

Lernklima

	1. nicht zutreffend	2. eher unzutreffend	3. weder/noch	4. eher zutreffend	5. komplett zutreffend
Unsere Angestellten werden ermutigt, durch die Teilnahme an (offline-) Trainings/Weiterbildungsmöglichkeiten auf dem neusten Stand zu bleiben	◯	◯	◯	◯	◯
Der Arbeitsalltag der Angestellten bietet genügend Möglichkeiten, für unsere Angestellten auf dem neusten Stand zu bleiben	◯	◯	◯	◯	◯
Unsere Angestellten werden ermutigt, Veränderungen im Arbeitsumfeld als Herausforderungen für ihre professionelle Entwicklung zu sehen	◯	◯	◯	◯	◯
Einschätzung/Bewertung der Fähigkeiten der Angestellten ist ein wichtiger Bestandteil der Richtlinien unseres Unternehmen	◯	◯	◯	◯	◯
Einschätzung/Bewertung des Lernfortschritts (=ob ein Angestellter wirklich etwas Neues gelernt hat) ist ein wichtiger Bestandteil der Richtlinien unseres Unternehmens	◯	◯	◯	◯	◯
Der Lernfortschritt der Angestellten wird regelmäßig gemessen	◯	◯	◯	◯	◯
In unserem Unternehmen haben wir ein beachtliches Budget für Trainings/Weiterbildungsmöglichkeiten	◯	◯	◯	◯	◯
Unsere Angestellten werden ermutigt, sich mit e-learning zu beschäftigen	◯	◯	◯	◯	◯
Unsere Angestellten werden ermutigt, Probleme zusammen zu lösen	◯	◯	◯	◯	◯
Unsere Angestellten werden ermutigt, Informationen untereinander zu teilen	◯	◯	◯	◯	◯
Unsere Angestellten werden ermutigt, sich Informationen zusammen zu suchen	◯	◯	◯	◯	◯
Unsere Angestellten werden ermutigt, Informationen mit Kollegen aus demselben Gewerbe zu teilen	◯	◯	◯	◯	◯
Unsere Angestellten können selbst auswählen, was sie lernen möchten	◯	◯	◯	◯	◯

Benutzung von ICT

	1. nicht zutreffend	2. eher unzutreffend	3. weder/noch	4. eher unzutreffend	5. komplett zutreffend
In unserem Unternehmen benötigen wir Computer / Tablets/Smartphones, um unsere Arbeit zu erledigen	◯	◯	◯	◯	◯
Die meisten unserer Angestellten benutzen das Internet täglich	◯	◯	◯	◯	◯
Jeder Angestellte in unserem Unternehmen verfügt über genügende Fähigkeiten, um ein(en) Computer/Tablet/Smartphone zu benutzen	◯	◯	◯	◯	◯
In unserem Unternehmen benutzen wir ICT, um Informationen zu teilen	◯	◯	◯	◯	◯
In unserem Unternehmen benutzen wir ICT, um Informationen zusammen zu suchen	◯	◯	◯	◯	◯
Unsere Mitarbeiter denken im Allgemeinen positiv über ICT	◯	◯	◯	◯	◯
Unsere Mitarbeiter werden ermutigt, E-Mails zu benutzen	◯	◯	◯	◯	◯
Unsere Mitarbeiter werden ermutigt, das Internet zu benutzen	◯	◯	◯	◯	◯

Definitions

e-learning= Gebrauch von Computertechnologien und vernetzenden Technologien um, primär über das Internet, Informationen und Anleitungen zu übermitteln (aus dem Englischen von Welsh, Wanberg, Brown, & Simmering, 2003)

Information and Communication Technologies (ICT)= dt. Informations- und Kommunikationstechnik; alle Technologien mit denen Informationen gespeichert, gesendet oder umgeformt werden