MASTER THESIS

Appreciative internal communication?

A qualitative requirements analysis for an employee app



Committee chair: Dr. J. Karreman **Committee member:** Dr. S. Janssen

Date: 9th July, 2021

Abstract

Aim. Although the impact of social media use in organizations has been studied from various perspectives, no research has been done on the requirements of employees and other stakeholders for such apps from a technical design perspective. This study addresses the research gap by exploring requirements of an employee app from various stakeholders to identify relevant requirement types for software development and to develop specific requirements. In addition, this study aims to determine attitudes towards the app in terms of internal communication and employee engagement. In doing so, the study links the two areas of organizational and technical communication.

Method. A qualitative case study was chosen using an exploratory approach with focus groups. A total of seven focus groups were formed, each with two to four participants, organized by stakeholder affiliation. Three main topics were discussed: attitudes towards internal communication, requirements of an employee app and attitudes towards the app. The case company, which formed the contextual framework, was a medium-sized communications organization based in Germany.

Results. Seven requirement types relevant to enterprise social media development were identified, along with detailed requirements for an employee app prioritized by stakeholder. The requirements for an employee app differ by stakeholder, especially in terms of interactivity. While management did not rule out the functionality of user-generated content, the other stakeholder groups were mostly against its inclusion. The majority defined the app as a consumption platform for organization-generated content rather than a platform for user-generated content. In terms of contributing to internal communication and employee engagement, some participants saw potential in the app, while others were skeptical about the added value.

Conclusion. The identified requirement types are considered a guide for the development of enterprise social media for organizations. Thereby, the inclusion of different stakeholder views has proven to be particularly important, as they reflect the complexity of internal communication. Organizational and individual factors appear to influence the expectations of using social media in companies. The introduction of an interactive platform for an organization therefore requires a holistic development process that includes both technological and cultural changes.

Keywords: enterprise social media, employee app, internal communication, employee engagement, requirements elicitation, CeHRes roadmap

Table of content

1 Introduction	
2 Theoretical framework	5
2.1 Internal communication	5
2.2 Employee engagement	6
2.3 Social media use in organizations	7
2.4 Requirements elicitation	8
2.4.1 CeHRes roadmap	9
2.4.2 Possible requirement types for an employee app	
3 Method	
3.1 Research design	
3.2 Pre-test of the focus group	
3.3 Protocol	
3.4 Sampling procedure	16
3.5 Participants	17
3.6 Data processing and analysis	
4 Results	19
4.1 Category 1: Attitudes towards internal communication	19
4.2 Category 2: Scope of an employee app	
4.3 Category 3: Requirements of an employee app	
4.3.1 Interactivity	
4.3.2 Content	
4.3.3 Usability	
4.3.4 Rights and roles	
4.3.5 Reliability and security	
4.3.6 Service	
4.3.7 Organizational	
4.4 Category 4: Attitudes towards an employee app	
5 Discussion	
5.1 Discussion of results	
5.2 Implications	
5.3 Future research	45
5.4 Limitations	
5.5 Conclusion	
References	47
Appendices	53

1 Introduction

Today's world of social networking and sharing has arrived not only in the private sphere, but also in organizations. Known as public social media, such as Facebook and Twitter (Treem & Leonardi, 2012) the topic has its roots in private use and was only later transferred to the organizational realm (Leonardi & Vaast, 2017). There, social media has two functions: First, organizations use public social media to get in contact with external parties, for example, by maintaining a corporate page (Leonardi et al., 2013). Second, and less commonly researched, organizations use social media as a platform for internal communication, also referred to as enterprise social media (ESM) (Leonardi et al., 2013). Thereby, the network is limited to employees within a company (Ellison et al., 2015). With the introduction of ESM, companies aim to increase knowledge sharing, communication and collaboration (Leonardi & Vaast, 2017).

Although the diffusion of ESM is increasingly high, its role has not yet been fully researched by organizational theorists (Leonardi & Vaast, 2017). According to Leonardi and Vaast (2017), this is due to two reasons: First of all, organizational scholars view technology issues as incidental to their field of interest. Second, there is a lack of theoretical frameworks that conceptualize social media in the context of organizational processes (Leonardi & Vaast, 2017). Existing studies around ESM focus on use, diffusion and organizational topics of already implemented systems (Leonardi & Vaast, 2017). What remains unconsidered in literature is the requirement elicitation in the ESM development process from the technical communication perspective. Research should be conducted to determine what functionalities an ESM should contain with respect to current innovations and needs (Wehner et al., 2017). Such requirements specifications are crucial for the development process to increase technology acceptance (Saiedian & Dale, 2000).

This study takes a step filling this research gap by combining both fields of organizational and technical communication for one specific form of ESM: an employee app. There are already several technology providers offering employee apps that are fully customized for a specific organization and targeted at its employees (Staffbase, n.d.-b). The main goal of the app is to make information easily, reliably and quickly available to any employee in the organization (Coyo, 2019). Regardless of the workplace, every employee can access the app and is thus quickly informed (Coyo, 2019). In contrast to one-sided communicaton, an employee app is designed to encourage interaction, for example, by commenting, liking or publishing posts (Coyo, 2019; Staffbase, n.d.-b).

Practical examples show that an employee app has the potential to positively influence internal communication. This type of communication, often understood as intra-organizational communication or employee communication (Tkalac Verčič et al., 2012), is considered important for building and fostering connections between organizations and employees. In addition, internal communication has been shown to impact employee engagement, which itself is a driver of positive organizational outcomes such as competitiveness and innovation (Welch, 2011). Examples of how an employee app can positively impact internal communication and employee engagement are given by the software provider

Staffbase: the Max Mara Fashion Group records 80% active users within a month for its app, which was introduced to connect and inform its more than 5500 employees (Staffbase, n.d.-a). Sunbelt rentals, a company that hires equipment for different markets, achieves 600 views per post and a survey engagement score of 80% for their app available for 3700 employees (Staffbase, n.d.-c).

Thereby, however, it remains unclear which functions are really required. Hence, this study investigates the development of an employee app from scratch by actively involving employees' communication needs. Rather than measuring effects on already implemented ESM, this study starts with the first initial step of technology development, namely requirements elicitation. Thus, the research contributes to literature in two distinct ways. First, for the technical communication literature, this study provides insights into requirement types that are relevant for ESM development from different stakeholder's perspectives and defines specific requirements for an employee app. Second, this work contributes to the organizational literature by examining employees' attitudes towards the app based on their own requirements, which provides new insights regarding the contribution of an app towards internal communication and employee engagement prior to software implementation. For managers of organizations planning to implement an app for internal communication, this research is a guide to the software development process. Important requirement types, different stakeholder views as well as attitudes demonstrate the complexity of ESM development and provide insights and recommendations for the organizational work. Taken together, following main research questions are examined:

RQ 1: What are requirements of an employee app from different stakeholder's perspectives?RQ 2: What are employees' attitudes towards an employee app whose requirements they develop themselves?

A qualitative, exploratory case study with focus groups was designed to answer the research questions. The organization under study was a medium-sized communications company headquartered in Germany with 500 employees that provides business-to-business services.

The next chapter establishes the theoretical framework by explaining key concepts, the use of social media in organizations and the requirements elicitation process in detail. Chapter 3 explains the methodology of this study by addressing the research design, implementation and analysis. Chapter 4 summarizes the results gained from the codebook and explains requirements as well as attitudes towards an employee app. Finally, Chapter 5 discusses the findings by answering the research questions, identifying implications and limitations, and drawing a conclusion.

2 Theoretical framework

This chapter first describes the concepts of internal communication and employee engagement, followed by an overview of social media use in organizations. Subsequently, the requirements elicitation process is explained using a multidisciplinary approach from the eHealth sector. The chapter ends with listing possible requirement types for an employee app that serves as a basis for research in this study.¹

2.1 Internal communication

Internal communication is an essential factor for the success of an organization and has become an important research topic in recent years (Lee & Yue, 2020; Ruck & Welch, 2012). Depending on the discipline in which it is located, the concept is studied from different angles such as organizational communication, psychology or public relations, with the latter being very common (Lee & Yue, 2020; Tkalac Verčič et al., 2012). Tkalac Verčič et al. (2012) emphasize the need for further research on this topic within the field of public relations, which is characterized by communication with internal stakeholders (Lee & Yue, 2020). In their recent study, Lee and Yue (2020) underline this suggestion, not least due to continuous technological, economic and social developments.

According to Kalla (2005), internal communication includes such communication that occurs both informally and formally at all internal organizational levels. The author highlights the multidisciplinary nature of the concept by providing a model that integrates management, business, corporate and organizational communication (Kalla, 2005). While communicating, these different domains need to be balanced to be effective and to reach the target group (Kalla, 2005).

Internal communication is aimed at a very specific target group, namely employees (Dolphin, 2005). As shown by Dolphin (2005), employees are among the most important resources of organizations and can even take the role of ambassadors for companies. That's why effective communication is crucial for the identification with an organization as well as the company's overall prestige (Dolphin, 2005; Ruck & Welch, 2012). However, literature shows that previous studies have mainly focused on one-way communication effectiveness failing to integrate employees perspectives into communication strategies (Ruck & Welch, 2012). Ruck and Welch (2012) have expressed the importance of incorporating employees' needs into internal communication processes to be aware of their expectations. The communication content should coincide with the interests of employees (Ruck & Welch, 2012).

The recent study of Tkalac Verčič and Špoljarić (2020) shows that internal communication effectiveness also depends on the channel that is selected. It has to be in line with employees' preferences to be adopted (Tkalac Verčič & Špoljarić, 2020). Especially with the rise of new media and technologies, the researchers claim that organizations have to consider their ways of communicating and possibly adapt them in order to further reach their internal stakeholders (Tkalac Verčič & Špoljarić, 2020). This

¹ Some parts of this chapter were taken from the proposal I wrote in the Research Topics course, which served as the basis for this master's thesis.

finding can be traced back to the theoretical basis of technology acceptance models (e.g. Venkatesh et al., 2012).

As a result of communication practices, employees' satisfaction with internal communication can be measured (Tkalac Verčič, 2021). According to Hecht (1978b) as cited in Gray and Laidlaw (2004, p. 426), communication satisfaction can be defined as "a socioemotional outcome resulting from communication interactions". High levels of internal communication satisfaction among employees can positively influence effectiveness within organizations, while low levels can result in higher absence and lower commitment (Hargie, Dickson & Tourish, 1999 in Hargie et al., 2002).

2.2 Employee engagement

Studies show that internal communication is closely related to employee engagement (Tkalac Verčič, 2021). According to Kahn (1992) as cited in Welch (2011), communication is a fundamental factor in the context of employee engagement. Tkalac Verčič and Pološki Vokić (2017) confirm the significant relationship between both concepts. If internal communication is effectively implemented and leads to satisfaction, this is the precursor for engagement (Tkalac Verčič & Pološki Vokić, 2017). However, the study of engagement in the domain of public relations is rather rare (Tkalac Verčič et al., 2012).

There is no general definition of employee engagement, as the topic has been conceptualized differently from both academics and practitioners (Welch, 2011). Kahn (1990, p. 694) defined the concept "as the harnessing of organization members' selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances." Welch (2011) summarized the concept as a mixture between traits and states, as it is critical to serve both the surface communication needs, related to state, as well as core communication needs, related to trait, of internal stakeholders. The author was the first to develop a conceptual model that integrates communication and engagement (Welch, 2011). Thereby, engagement was included as a construct consisting of cognitive, emotional, and physical elements, as previously defined by Kahn (1990), and communication, with its two-way function of promoting engagement in the sense of commitment and belonging and promoting its outcomes by means of understanding organizational aims and creating awareness (Welch, 2011). As a result of effective internal communication, companies achieve competitiveness, innovation and organizational effectiveness (Welch, 2011). This is in line with Mishra et al. (2014), who state that the likelihood of staying with the company, helping it become more effective and talking well about it is higher among engaged employees.

In general, every employee has the possibility of being engaged (Harter, Schmidt & Hayes, 2002 in Tkalac Verčič, 2021). According to Tkalac Verčič (2021), engagement is strengthened when employees have all information they need to perform their jobs, when they have opportunities for advancement and when they have an emotional connection to each other.

2.3 Social media use in organizations

Both concepts of internal communication and employee engagement are relevant in the context of organizational social media use. Unlike traditional media used in organizations, such as the printed employee magazine, social media increase transparency because all interpersonal discussions are visible to everyone in the network, even if they are not direct communication partners (Leonardi et al., 2013). Social media are much more of a communication platform than a channel, and their digital presence allows users to participate flexibly in terms of location and time (Leonardi et al., 2013).

Leonardi et al. (2013, p. 2) provide the following definition for ESM: "Web-based platforms that allow workers to (1) communicate messages with specific coworkers or broadcast messages to everyone in the organization; (2) explicitly indicate or implicitly reveal particular coworkers as communication partners; (3) post, edit, and sort text and files linked to themselves or others; and (4) view the messages, connections, text, and files communicated, posted, edited and sorted by anyone else in the organization at any time of their choosing."

According to Leonardi and Vaast (2017), the use of social media by companies is an essential change that affects the organizational life. However, research on this topic has been slow (Leonardi & Vaast, 2017). Literature shows that the use of ESM can positively influence organizational outcomes (Veeravalli & Vijayalakshmi, 2019). ESM can strengthen the voice of employees in the organization by enabling them to share their views (Leonardi & Vaast, 2017). However, the introduction of ESM does not directly ensure success (Veeravalli & Vijayalakshmi, 2019). Denyer et al. (2011), for example, discovered that ESM were not perceived as transparent and social as they were usually claimed to be. They found that the application under study was mainly used by managers to moderate discussions or for self-promotion, and that participation of employees was limited (Denyer et al., 2011).

One explanation for different attitudes towards ESM can be given by motivations for use. Social media use in the private sphere, where it originated, primarily pursues social and interpersonal goals, such as entertainment and maintaining social contacts (Ellison et al., 2015). In contrast, ESM are associated with professional, work-related goals, such as knowledge sharing (Ellison et al., 2015). By transferring the concept from the private to the organizational realm, motivations for social media use change, so it may be difficult to imagine the benefits of such applications in this new organizational context. This was, for example, found by Treem et al. (2015) who state that employees' attitudes towards ESM depend on social media experiences in their private lives. Those who had used social channels heavily in their free time and younger employees were skeptical about productivity with ESM use, while older employees or those without strong experiences had seen potential in ESM use (Treem et al., 2015). In addition, other factors play a role in ESM adoption. For example, Mark et al. (2014) concluded that the network size of an organization negatively affects employees' assessment of social networks. If the organization's network is small, the assessment is more positive (Mark et al., 2014).

Leftheriotis and Giannakos (2014) found a positive and significant relationship between use of ESM and employee performance, with utilitarian and hedonistic values playing an important role in

social media use for work. According to Huang et al. (2015), who introduced the term 'communicational ambidexterity' in their study, two competing modes can exist in parallel. In terms of social media, this refers to user-generated content and organization-generated content, both of which can successfully coexist within the system (Huang et al., 2015). Additionally, Gibbs et al. (2015) found that ESM use contributes to cross-boundary communication in terms of geographical and hierarchical boundaries.

These studies show that ESM certainly have the potential to improve internal communication, for example through knowledge sharing, and to increase employee engagement, for example by increasing productivity (Veeravalli & Vijayalakshmi, 2019). It is therefore interesting to analyze the potential of an employee app in terms of internal communication and employee engagement, with requirements formulated by employees and other stakeholders themselves. Therefore, the requirements elicitation process is discussed in the following.

2.4 Requirements elicitation

Requirements elicitation is an essential part in the process of software development (Taheri et al., 2014). Defined as "the specific processes of gathering, determining, extracting, or exposing software requirements" (Saiedian & Dale, 2000, p. 420), requirements elicitation aims to identify different stakeholders' needs with the goal to incorporate them into the software by formulating explicit specifications (Saiedian & Dale, 2000). Due to this procedure, software developers know exactly what needs to be done and users know what to expect from the new software (Saiedian & Dale, 2000).

According to the Institute of Electrical and Electronics Engineers (IEEE), a requirement is "a condition or capability needed by a user to solve a problem or achieve an objective" (IEEE, 1983, p. 29). A general distinction is made between functional and non-functional requirements (Sindhgatta & Thonse, 2005), although there is no clear definition for the latter (Glinz, 2005). In this study, functional requirements include all aspects concerning functions and services of a software as well as its behaviors and reactions, whereas non-functional requirements focus on product quality (Zimmermann & Grötzbach, 2007). In other words, non-functional requirements represent all those that do not explain the concrete behavior of a software, but rather its attributes (Glinz, 2005). Both types are interdependent, because non-functional requirements, for example, have an influence on functional ones (Zimmermann & Grötzbach, 2007).

In the literature, various classifications of requirement types can be found. Hasan et al. (2014), for example, differentiate non-functional requirements between goal-, aspect- or pattern-oriented. Other experts distinguish between high-level and detailed requirements in terms of business, user and system requirements (AltexSoft, 2018). An easily traceable distinction is made by Van Gemert-Pijnen et al. (2011), who designed a specific roadmap with a multidisciplinary requirements development approach, which is explained in the following subchapter.

2.4.1 CeHRes roadmap

The CeHRes roadmap designed by Van Gemert-Pijnen et al. (2011) is a requirements development process specifically created for the eHealth sector. The researchers aimed to create an approach that corresponds to the specific characteristics of the sector in which the target group is usually known before the technology is being developed and the service itself is generally free (Van Velsen et al., 2013). The approach combines the human-centered design process with business model elements to holistically integrate end users as well as other stakeholders within the process (Van Velsen et al., 2013). This is to avoid an imbalance between the context of use and the features of the technology directly from the beginning (Van Velsen et al., 2013).

Although this approach is designed for the eHealth sector, it can be further applied to other areas such as the communications industry this study, as the general procedure includes cross-sectoral methods and concepts. Basically, the approach emphasizes that the technology to be developed targets a specific group, is free of charge and takes into account different interests (Van Velsen et al., 2013). This also applies to the development of employee apps. Since the CeHRes roadmap enables the integration of employees as end users, but also other stakeholders such as managers who decide about organizational issues, which is of great relevance for an employee app development, it serves as a model for this study.

Figure 1 visualizes the CeHRes roadmap with its distinction of five different phases (Van Gemert-Pijnen et al., 2011). This study concentrated on the first two phases contextual inquiry and value specification. The first one dealt with the identification of goals, the definition of end users and other stakeholders and the exploration of requirements, whereas in the second one, requirements were analyzed (Van Velsen et al., 2013).

Figure 1





The approach distinguishes requirement types between functional/modality, service, organizational, content and usability/user experience (Van Velsen et al., 2013, p. 7):

- (1) *Functional/modality requirements* deal with technical aspects of the technology and are therefore addressed to software programmers,
- (2) *Service requirements* explain supporting processes to organize the technology by means of user support or marketing
- (3) Organizational requirements describe the integration of the platform into daily working routines decided by management
- (4) Content requirements focus on what specific contents should be included by the content manager
- (5) Usability/user experience requirements provide information concerning designs of interaction and interface through specialists of human factors

When analyzing requirements, priorities as well as conflicts have to be taken into account (Van Velsen et al., 2013). Due to limitations in time and money, the great number of different requirements cannot be implemented at the same time, so that priorities are needed to indicate the importance within the software development process (Van Velsen et al., 2013). It can be distinguished between low, medium and high priority, whereby the categorization also depends on the stakeholder's ranking (Van Velsen et al., 2013). Due to the great number of requirements and different perspectives, it is also possible that requirements are in conflict with each other (Van Velsen et al., 2013). According to the priority, those requirements need to be reformulated or rebalanced (Van Velsen et al., 2013). In terms of developing requirements for an employee app, following sub research questions were formulated:

Sub RQ 1: Which requirement types determine the development of an employee app? Sub RQ 2: Which requirements conflicts occur within the development of an employee app?

2.4.2 Possible requirement types for an employee app

Since app requirements in this study are conducted within the organizational context, requirements elicitation poses special challenges. According to Sindhgatta and Thonse (2005), the requirements of organizational applications must be accurately formulated and understood by both the users with their domain knowledge and developers with their implementation knowledge. The authors stated that usability, security, performance and reliability are the non-functional requirements critical for enterprise applications, whereby performance and usability are most evident (Sindhgatta & Thonse, 2005). Additionally, Patkar et al. (2019) highlighted the importance of innovativeness in requirements elicitation in relation to mobile software developments. Requirements for mobile applications vary from traditional ones, as service orientation, personal data and networking of contacts are in the foreground

(Patkar et al., 2019). According to the findings from the literature review, requirement types of an employee app can be categorized as shown in Figure 2. This categorization served as a first basis for the research in this study.

Figure 2

Possible requirement types of an employee app (based on Patkar et al., 2019; Van Velsen et al., 2013; Zimmermann & Grötzbach, 2007)



3 Method

This chapter explains the methodology of this study. Thereby, the research design is discussed first, followed by the pre-test. Next, an overview of the focus group protocol, the sampling procedure and the participants is provided. The chapter ends with a description of data processing and analysis.²

3.1 Research design

Research in this paper was conducted by using the qualitative approach of a case study (Creswell et al., 2007). The goal of this design method is to deeply analyze a current phenomenon within a real-life situation (Yin, 2009). An intrinsic and exploratory approach was chosen, since the investigation of requirements for an employee app represented a case that was both unique and not yet broadly researched (Boeije, 2010; Creswell et al., 2007).

This study has focused on two specific phases of the CeHRes roadmap shown in Figure 1: requirements elicitation within contextual inquiry and requirements analysis within value specification. Prior to conducting the study, a short stakeholder analysis was performed to get an overview of "main roles, responsibilities and task goals" (Maguire, 2001b, p. 599) of different users and groups in relation to the app to be developed. For requirements elicitation, the focus group method was chosen. Several semi-structured focus groups were conducted with the different stakeholders, whereby all groups were formed based on stakeholder affiliation. This method is suitable for the research interest of gaining knowledge, as well-performed focus groups benefit from the interactive flow of the participants' thoughts with the possibility to receive different viewpoints (Boeije, 2010). During requirements analysis, the focus group sessions were analyzed by creating a codebook. Before conducting the research and contacting the participants, the study has been approved by the Ethics Committee from the University of Twente.

3.2 Pre-test of the focus group

Before the focus groups were interviewed, a pre-test focus group was conducted. The purpose of this test was to examine the protocol in terms of feasibility. On the one hand, it was tested whether the questions and tasks were understood and whether the order of the topics was considered reasonable. On the other hand, it was checked whether a fruitful discussion could result. The protocol of the pre-test can be found in Appendix A.

Four participants were interviewed for the pre-test, all of whom belonged to the end user stakeholder group. They were all employed by the case company and recruited through the researcher's network. The average age of the participants was 26 years (SD = 3.37), with the youngest person being 21 years old and the oldest 28 years old. Two participants in the group were male and the other two were

 $^{^2}$ Some parts of this chapter were taken from the proposal I wrote in the Research Topics course, which served as the basis for this master's thesis.

female. In terms of interest in new technologies, all participants indicated they were very interested. In addition, all participants reported using social media apps several times a day. No other app category shows such a high level of use in this group. During the test session, the researcher acted as moderator and was responsible for conducting and evaluating the pre-test.

After conducting the pre-test, participants were asked to critically evaluate the session. Overall, participants indicated that the procedure was understandable and that the topics built on each other logically. However, it was criticized that the introduction was not very clear at the beginning, which is why the participants did not know about the scope of the app. They could not imagine the general direction of the app, such as documentation, project collaboration or information. Therefore, the protocol was revised to include a specific explanation about internal communication. Additionally, based on the answers participants gave during the first part of investigating attitudes towards internal communication, one question about internal communication satisfaction was extended by the factor "extent". Regarding the time scheduled for the individual sessions, no deviations could be found. With the changes, the final protocol for the focus groups emerged, which can be found in Appendix B. Finally, the pre-test group formed the first end user focus group in this research.

3.3 Protocol

As stated in the pre-test, no fundamental changes had to be made to the script. Therefore, the sequence remains the same in the final protocol: introduction, topic 1 (attitudes towards internal communication), topic 2 (requirements of an employee app), topic 3 (attitudes towards an employee app) and closing. This chapter describes the individual parts of the protocol in detail.

Introduction

Since the employees were working from their home offices due to the Corona pandemic, all focus group meetings were conducted virtually using the Microsoft Teams communication platform. Each participant received an invitation to join the discussion using their own device. The researcher, who served as the moderator, officially welcomed all participants after everyone entered the virtual meeting room in Microsoft Teams. All participants and the moderator turned on their cameras and their microphones to increase the sense of interaction. If participants did not know each other as direct colleagues, each participant briefly introduced themselves. The moderator called attention to the informed consent form that had already been signed before the session and asked if there were any questions that needed to be answered. Due to the virtual meeting, documents were sent out and questions were clarified beforehand to simplify the process. The moderator made clear again that the results will be treated anonymously and that the sessions will be recorded. In advance of the session, participants also completed a short demographic survey about age, gender, interest in new technologies and app categories they use, as seen in Appendix C. This served as an additional basis for the later analysis of

the results. The introduction ended with an explanation of the focus group approach chosen and the open-ended nature of the question types and schedule. Recording of camera and audio with the recording function of Microsoft Teams started to be able to analyze the discussions afterwards.

Topic 1: Attitudes towards internal communication

The first topic of the focus group dealt with participant's attitudes towards internal communication. Therefore, the concept of internal communication was explained and clarified by providing several general examples. With this concept in mind, participants were asked three introductory questions. First, they were asked about the channels used for internal communication within the company. The two other questions about satisfaction with internal communication in particular and in general should be answered by stating a number on a scale of 1 (not at all) to 10 (very much). The pronunciation of a number was intended to stimulate reflection and help participants classify and justify their thoughts. One of these questions was:

"How important is internal communication for you in general at the moment?" (Scale from 1 to 10)

Through the definition of the concept and the subsequent questions, participants became familiar with the topic. Strengths and weaknesses of current communication practices and channels used became clear, as did personal perceptions of the importance of internal communication.

Topic 2: Requirements of an employee app

The first topic served to familiarize participants with the concept of internal communication and to uncover their thoughts about it. This laid the foundation for the second topic, which addressed the first main research question: requirements elicitation for an employee app. Therefore, a brief description about the features of such an app was given, followed by two main questions, formulated as follows:

"Imagine that all employees – whether they are on set, at the client, in the office or at home – can access the app directly (via smartphone or computer). What are your requirements for such an app? What functions should it contain?"

These questions were deliberately posed in a very open manner, as the aim of the study was to come up with own requirements from scratch. For this reason, no concrete scenario was mentioned so as not to influence the participants in any direction. To let participants think quietly for a moment, the whiteboard feature was unlocked in Microsoft Teams so they could write down their ideas in the form of digital post-it notes if wished. One example of the digital whiteboard can be seen in Figure 3.

Figure 3 Digital post-its in the Microsoft Teams whiteboard



The discussion started with one participant stating his or her requirements. Subsequently, other participants commented on the statements and added their own requirements, so that a discussion arose. If the discussion stagnated or the moderator wanted to go deeper into a topic, open-ended questions related to the different types of requirements developed in the theoretical framework were asked. In doing so, the moderator referred in part to statements already made by focus groups, such as:

"Then another topic that other groups brought up was also the topic of surveys. That you can also map surveys via, via an app like this. How do you see that, for example?"

When the participants had nothing more to add, the moderator shared her screen to show a clip from a promotional video of an employee app provider. This served to reconsider the requirements mentioned so far and, if necessary, to formulate additional requirements. Furthermore, it became clear to what extent requirements coincided with or also differed from the app shown in the video. This was helpful because the participants were dealing with this topic in concrete terms for the first time without having thought about an employee app beforehand. Requirements elicitation ended when there were no more additions or comments.

Topic 3: Attitudes towards an employee app

After concrete requirements were formulated by the participants, they were asked about their attitudes towards such an app. This was the start of the third topic. Five questions, which participants were again asked to answer with a value on a scale between 1 (not at all) and 10 (very much), were designed to assess the contribution of the app in terms of internal communication and employee engagement, which addressed the second main research question. The questions also include whether participants would use the app regularly and whether it is time to introduce the app. After all questions have been asked and participants have given and justified their score, the moderator asked the final question if anything was still missing. Two sample questions from this topic were as follows:

"To what extent do you think an employee app based on your requirements contributes internal communication?" (Score from 1 to 10)

"To what extent do you think an employee app based on your requirements contributes to the feeling of being connected with others?" (Score from 1 to 10)

Closing

Once all the topics were discussed, there was nothing left to add and the time was coming to an end, the moderator announced the end of the interview. She thanked the participants for their active participation and their time.

3.4 Sampling procedure

To be able to categorize the focus groups by stakeholder affiliation and address individuals accordingly, a brief stakeholder analysis was conducted. This is described in this subchapter, followed by the general sampling procedure of this study.

Stakeholder overview

According to Maguire (2001a), a general distinction can be made between primary and secondary user groups. Primary user groups are directly involved in the development, maintenance and use of the app, while secondary user groups are concerned with strategic involvement and alignment (Maguire, 2001a). Figure 4 visualizes relevant stakeholder groups regarding an employee app, divided into primary and secondary user groups.

Figure 4

Primary and secondary user groups of an employee app (based on Maguire, 2001a)



Primary user groups of the app consist of maintainers, installers, and end users (Maguire, 2001a). In this study, maintainers are defined as the support staff providing a helpdesk and solve problems related to the app. Installers are those employees, such as software developers and IT project managers, who are responsible for the development of the app and its technical maintenance over time. The last group, the end users, are employees within the company who use the app for internal communication.

Secondary user groups of an employee app are characterized in this study by management, marketing and the works council. Management generally decides about the introduction of an app and about its usage in the organizational context. Employees from the marketing department use the app to publish information and may be primarily responsible for filling the app with up-to-date content. The works council as an institution of employee representation takes care of the app regarding the rights and needs of the employees.

Purposive sampling

For this study, purposive sampling with a theoretical approach was applied, since the aim was to receive information that have not been established in literature yet (Boeije, 2010). Rather than checking already defined requirements against stakeholders' needs, this study explored important requirements from scratch. Since qualitative methods were conducted within the case study, the formal way of agreeing on the specific topic through the board of directors was performed (Boeije, 2010). To recruit employees to participate, the researcher sent an email to a group of recipients she had selected. This direct approach and invitation to participate was intended to ensure heterogeneity of participants in terms of gender, age, professional activities, position and location. It was clearly stated that participation is voluntary. Each participant was individually asked to consent and was able to withdraw research at any time.

3.5 Participants

Although a distinction was made between different stakeholders, an employee app can be used by all employees, regardless of what other main tasks they have. In total, seven focus groups were interviewed, resulting in a sample of 23 participants, of which 15 were male and eight were female. Following stakeholder groups were formed: three end user groups, one marketing group, one management group, one IT group (installers), and one works council group. Due to the stakeholder orientation, the number of participants was not evenly distributed across the groups. The minimum number of participants was two in the marketing group and four in the end user groups. Within a stakeholder group, care was taken to ensure heterogeneity in terms of demographic as well as job-related characteristics. The sessions lasted between 52 and 79 minutes.

Participants were on average 35.22 years old (SD = 9.44). The youngest person was 20 years old and the oldest was 56 years old. Interest in technology in general was very high among the sample. Almost half of all respondents stated that they were very interested in new technologies and nearly 40%

were somewhat interested. In terms of the types of apps participants use in their free time, social media apps are characterized by the highest usage with nearly 83% of participants using them more than once a day and nearly 18% using them once a day. No one indicates not to use such an app at all, as is the case with the other types surveyed, such as games, education, food and drink, and health and fitness.

3.6 Data processing and analysis

After data collection, the video recordings were first transcribed verbatim. Words that could reveal information about the company as well as personal data were anonymized. Once the transcripts were completed, they were uploaded into the software for qualitative data analysis called Atlas.ti. The process of requirements analysis, in which meaningful codes, labels and categories were created, started. For this purpose, the qualitative research analysis process described in Boeije (2010) was chosen in terms of open and axial coding. The number of coded fragments in the transcripts varied from 71 to 143, with only meaningful and relevant fragments coded for research.

First, open coding was applied to the first two focus group transcripts. This involved coding the fragments in detail, often by incorporating words that were mentioned in the quotation. The detailed codes from both focus groups were combined and merged in form of axial coding. This means that thematically similar codes were merged into more global ones and naming was optimized.

Second, the remaining transcripts were coded using either the existing codes from the first process or newly developed codes from another open coding process. The codes were combined and merged once again, resulting in a final list of 79 codes. This list was again cross-referenced with all transcripts to ensure that each quote was marked with the most appropriate code. The codes were assigned to one of a total of four categories, which were developed on basis of the focus group protocol. After several rounds of open and axial coding, relationships between codes were explored and specific broader labels were added to them, which facilitated the analysis of the number of codes afterwards.

For reasons of reliability, a second independent coder was asked to code one focus group transcript. This was done to ensure that an independent coder would perform the analysis in the same or very similar way and thus the codebook could be considered reliable. According to the random principle, the third end user group transcript was selected for analysis. To clarify the context and make it understandable, the complete transcript was passed to the second coder with fragments highlighted in color that needed to be coded. The reliability analysis resulted in a Cohen's Kappa of .71. According to Cicchetti (1994), this value represents a good result, as it ranges from .60 and .74. Coding differences were discussed and changed after consultation. The results of the reliability analysis can be found in Appendix D. However, this did not mean that the codebook, which can be found in Appendix E, had to be adapted. Based on various stakeholder views and exploration of specific requirements, it is evident that the codebook has a certain level of detail.

4 Results

This chapter summarizes the findings that emerged from the focus group sessions. In line with the categories developed in the codebook, this chapter distinguishes between four different sections: Attitudes towards internal communication, scope of an employee app, requirements of an employee app and attitudes towards an employee app. With regard to the first research question, the results are analyzed according to the different stakeholder groups. Selected quotes from the participants are used to support the findings. The list of quotes used can be found in Appendix F.

4.1 Category 1: Attitudes towards internal communication

As an introduction to the topic of an employee app, general attitudes towards internal communication were examined. The first question about the channels used for internal communication was answered similarly by all stakeholders. Many different channels are used that serve different purposes, such as documentation (Wiki), collaboration (Jira), quick consultation (Teams) or top-down communication (weekly mail, news platform). Overall, all stakeholder groups were satisfied with internal communication in general, its channels used and its extent. It was mentioned repeatedly that this communication has improved overall in recent years, especially during the Corona pandemic. On the one hand, this was expressed in very general terms, but on the other hand, two specific reasons could be identified. One reason for this was the increasing amount of different purposes, even when they are not in the office but on parental leave, for example. The other reason, which was mentioned by almost all stakeholder groups, was the weekly news mail sent by the management, which contributes a lot to internal communication, as covered by the following quote:

[1] "And in general, the fact that you are kept up to date on a weekly basis is actually great. And, well, I have to say, I'm actually very satisfied with it." (Works council, participant 3, male)

Across all stakeholders, the role of internal communication was generally considered very important. This was partly due to the relevance of being and staying informed, for example, about current organizational or work-related topics. Another important role mentioned across all stakeholders was seen as providing guidance to employees so that they are informed about the company's strategic development. It was also stated by end users and the works council that internal communication strengthens the sense of belonging, which is important for the identification with the company.

However, some potential for improvement regarding internal communication was also identified. All focus groups mentioned that the interaction of the various channels needs to be optimized. Sometimes channels consist of the same information, which does not add much value. Employees also indicated that they are not completely sure of what to communicate, through which channel, and how. Moreover, with the large number of channels, some of them get forgotten because they are not used regularly. Closely related is the statement that in some cases a reminder is missing when new information is available. This applies in particular to the digital employee news platform on the website, which, unlike the weekly mail, does not encourage employees to read it, for example, via push notifications. In addition, participants also claimed potential for improvement regarding the usability and accessibility of certain channels, such as the digital employee news platform. From the marketing perspective, it became clear that the information does not always reach all employees, so there is potential for improvement as well. In addition, end users also indicated that the content should be expanded to include more general information, for example, about company's locations, services, or various departmental tasks, as shown in the following quote:

[2] "So it's important to me that I'm also involved, especially because we don't just have one location, but I'm also interested in what's going on at the other locations. I think we could perhaps get a bit more out of that. I think that here and there the focus is a bit on the headquarter." (End user 1, participant 3, female)

Another potential for improvement that was clearly addressed by management is to receive more feedback from employees and to be able to interact with them directly. Although the weekly news mail sent by management is well received by employees, this channel does not seem to be optimal for interaction, shown as follows:

[3] "But what we really lack is the feedback channel. And in that respect, we're rather dissatisfied." (Management, participant 2, male)

The discussions in the first part about internal communication in general served to familiarize the participants with the topic and to identify attitudes and satisfaction levels in this regard. This laid the foundation for the main topic of an employee app, which is discussed in the following sections.

4.2 Category 2: Scope of an employee app

Following the first part, the phase of requirements elicitation began with a brief description of an employee app. Participants were asked to imagine that an app for internal communication should be introduced that would enable all employees, for example, even those without mail access, to reach the app quickly and easily via smartphone or computer. Accordingly, they were asked to develop their requirements for such an app. This task, which was deliberately kept very open, initially led some stakeholder groups, such as management, marketing and end users to think about the overall goal of the app first, as shown in the following quote:

[4] "Yes, you're, I think you're very quickly on the subject, because employee app is also such a relatively vague term. What's in it now? What is actually the goal of the whole thing? Do we want to inform employees or what is it?" (Management, participant 3, male)

From the discussions about the scope of the app, two main directions of communication emerged that the app could cover: 1) work-related communication and 2) social and organizational communication. A small proportion of individual participants from management, the works council and one end user group focused the app on work-related communication. They primarily addressed the exchange of information on production-related topics, as well as a possible activity recording via the app. In addition, a clear delineation of topics was made clear, as shown in the following quote:

[5] "That means you also have to make a clear distinction between private and business matters. I think that's very, very important, because otherwise they get mixed up. And then we end up with such chatter groups, where somehow 50 percent is blah and 50 percent is important." (End user 3, participant 5, male)

However, the majority of respondents across all stakeholder groups saw the goal of the app as covering social and organizational communication on an informational level, without going into production or customer-related details. This includes informal communication, such as the exchange between employees, as well as formal communication through information from management. This focus is summarized by the following quote:

[6] "[...] no business-relevant communication, but really just private things like that. Communication, marketing communication and employee retention communication, all of that. So, from a marketing point of view, communication [...]. So, as I said, I just think that only private or social communication could somehow be mapped in such an app [...]" (End user 1, participant 4, male)

Finally, after discussing the scope of the app, specific requirements were identified. As in the codebook, these were divided into seven different subcategories, each forming one requirement type. The following section presents the requirement types and their executions in detail.

4.3 Category 3: Requirements of an employee app

4.3.1 Interactivity

The first requirement type is called interactivity and includes requirements that provide opportunities for user interaction. As a key characteristic of social media, the topic of user-generated content was examined. The main question discussed within almost all focus groups was to what extent usergenerated content should be included in the app. According to management, the level of user-generated content depends on the specific scope of the app, shown as follows:

[7] "And if the goal is to keep employees as well informed as possible about things that are relevant to the company and they should always be up to date, then no one has to put their favorite recipe for roast pork in there. That's not of interest. When it comes to employee cohesion and social media, that's very much an issue." (Management, participant 3, male)

Management did not specify the extent of user-generated content. It was noted that, on the one hand, control of the content would be necessary to avoid overflowing information. On the other hand, an opportunity for social exchange among users in the form of user-generated content was seen to be helpful for employee cohesion. An ambivalence arose between the inclusion or exclusion of user-generated content from the management perspective.

Interestingly, end users, IT, marketing and works council were rather against the inclusion of user-generated content typically known from social media. They stated that it was generally a nice idea, but only few would use it in practice, as shown by the following quote:

[8] "Yes, so I can also say from my side, I probably won't post anything in there. I would not think of any things and purely post. Maybe something "comment", but so generate content itself so not." (End user 1, participant 4, male)

One reason given was that there would be a lack of acceptance and use of this feature. After all, if only a handful of employees used this function, it would prevent most others from using it. Another reason given was that due to the high number of employees, many would not be interested in what certain people post, for example, in their free time. In this case, it would be sufficient to use public social media, where many employees are already connected with each other. On top of that, it was stated that posts showing personal information, such as being on vacation, do not seem to be considered appropriate within the context of the employee app. Rather, participants see the app as a consumption platform. Instead of posting their own content, employees want to consume content created by the company. The only place where every user should be able to post their own content is the digital notice board.

Other requirements related to typical interaction functions in social media, such as liking, sharing and commenting. In particular, management was very interested in the integration of interaction and feedback functions such as liking and commenting. According to their potential for improvement in terms of feedback options, commenting was a crucial function for management, described as follows:

[9] "But to have the possibility to react to it and best-case even to get into dialogue with the person to discuss and improve the situation, that's what I would like to see." (Management, participant 4, male)

The commenting function was also considered important by other stakeholder groups, such as end users and works council. It was stated that comments generally include a high information content and are therefore very valuable. The marketing group highlighted the importance of giving feedback to the company from the employee's perspectives in this regard. In addition, the liking function was seen as a useful interaction tool that should be included in the app. According to the works council, the liking icon should be designed in line with the corporate identity.

In contrast to the positive comments regarding the inclusion of interaction and feedback functions, some groups also indicated limiting their inclusion. Participants from the IT and some end user groups warned against negative consequences when using the commenting function, arguing as follows:

[10] "Commenting, I would say no. Because that brings too much risk to having any discussions within the company that could escalate with comments that you wouldn't have that way at another level." (IT, participant 4, male)

The marketing group also saw it that way. Although participants from this group stressed the importance of giving feedback, they would not always include the commenting function to avoid excessive discussions. Rather, this group called for the inclusion of a survey function. This would allow employees to be more involved in the company and company decisions. At the same time, employee sentiments and feelings could be easily captured. The following quote sums it up:

[11] "So, if you could do questionnaires like that, employee surveys, anonymously, that would be pretty, pretty cool. And a pretty strong and powerful gimmick for, for HR, I think." (Marketing, participant 3, male)

The inclusion of a survey function was also expressed as desirable by all other focus groups after the potential function was asked by the moderator. Here, the content of the survey should focus on simple topics, such as the organization of upcoming employee events, rather than work-related topics, such as the progress of recent productions. According to one end user group, the latter refers to a longerterm topic to be documented, which is not properly placed in an employee app.

As part of giving feedback, management wanted the app to offer both anonymous and public feedback options. Regarding surveys, responses should be stored anonymously or on a personalized

basis, depending on the question. For comments on organization-generated posts, the author should be publicly visible so that the appropriate person can be contacted directly.

The last part of interactivity requirements focused on private communication, namely the inclusion of a private chat function. According to individual participants from the end user groups and the works council group, including a chat function would be valuable, as it could replace other chats that are currently used. Furthermore, it was argued that a chat could increase the relationship among colleagues. At the same time, however, other participants from these groups and from the IT group indicated that they would not include a chat function because there are already other communication tools, such as Microsoft Teams, that enable this type of communication. All interactivity requirements of the various stakeholder groups are summarized in Figure 5.

Interactivity	End user 1	End user 2	End user 3	IT	Marke- ting	Manage- ment	Works council
Consuming OGC	00•	00	00	00	000	00•	00
Posting UGC	000	0 • 0	• 0 0	• 0 0	• 0 0	000	000
Notice board	000	00•	000	000	00•	000	000
Like function	000	0 • 0	00•	000	00•	00•	00•
Comment function	00•	000	• 0 0	• 0 0	000	00•	00•
Survey function	000	00•	00•	000	00•	00•	000
Open/anonymous feedback	000	000	000	000	00•	00•	00•
Chat function	00•	• 0 0	0 • 0	• 0 0	• 0 0	• 0 0	0 • 0
\bigcirc \bigcirc \bigcirc not specified	$\cap \cap$ not rec	mired		somewhat rec	mired (real	vired

Figure 5

Interactivity	requirements
111161 4611 111 1	requirements

4.3.2 Content

The second requirement type is named content. In line with the overall requirement to consume organization-generated content, the first content requirements refer to the various content topics that the organization should create. Almost all stakeholder groups mentioned the requirement of including corporate information about strategy, news, goals, services, events, personnel and customers. This refers to such informative news that are of interest to the entire workforce and includes various perspectives, such as insights into the different departments and locations, the presentation of new colleagues, the development of customer projects, or the communication of strategies and goals. One example is provided in the following quote:

[12] "But I can imagine that if you only work in a certain area, you somehow have a very big focus on your own, your own area. But then it's also interesting to see what the company is doing beyond that, perhaps where would we like to develop." (End user 1, participant 3, female)

Another content topic is about information and exchanges that facilitate the daily work routine, which is again mentioned by almost all stakeholder groups. From the perspective of end users and the works council, this primarily includes organizational information, for example, onboarding information, employee contact details or a FAQ section. On top of this, work-related information in form of work schedules and educational videos are of interest for these groups. The latter is also mentioned valuable by management, as it could simplify the knowledge sharing process within the company. Furthermore, management argued that the app could also be used to simplify other organizational processes, such as conducting safety training or managing company cars.

In addition, information about career and training possibilities, benefits and employee's wellbeing could be included into the app. This was especially mentioned by marketing and end users. According to them, this type of content could draw users to the platform, as it creates incentives and enhances hedonistic feelings of having fun and feeling well, as shown in the following quote:

[13] "I can also think of another possible benefit that could be incorporated is the whole issue of health management. So that you might somehow add modules or somehow call them up again and say: So, here's a little break, break yoga assignment [...]." (Marketing, participant 2, female)

Another type of organization-generated content is related to information published by the personnel office, which was mentioned by participants from the end user groups and the marketing group. Their requirement was a digital personnel file that allows to view vacation requests and overviews or other information from payroll accounting. Finally, the works council pointed to using an employee app as a medium for communicating its work, as shown in the following quote:

[14] "But you could also use this as a works council medium to simply say: Here's some interesting news. Perhaps even legal news that may not have anything to do with the company at the moment but may be interesting from a general legal point of view." (Works council, participant 4, male)

In addition to the content-related requirements, those describing the format were also mentioned. A calendar function was requested by the works council and individual participants from the end user groups. Requirements ranged from global information, such as the company's appointment overview, to detailed functions, such as automatic appointment generation for lunch breaks with randomly selected colleagues or appointment reminders. Furthermore, there was a general requirement to include visual content such as images and videos in addition to text. Figure 6 summarizes all content requirements of the different stakeholders.

Figure 6

Content requirements

Content	End user 1	End user 2	End user 3	IT	Marke- ting	Manage- ment	Works council
Information about strategy, news, goals, services, events, personnel, customers	00•	000	000	000	000	000	000
Information/ exchange to facilitate the daily work routine	00•	00•	00•	000	000	00	00
Information about career, training possibilities, benefits & well-being	00•	00•	000	000	000	000	000
Information from the personnel office	00•	00•	00•	000	00•	000	000
Information from the works council	000	000	000	000	000	000	00
Calendar	00•	00•	000	000	000	000	00
Images & Videos	000	00•	00•	000	000	00•	000
○ ○ ○ not specified ●	○ ○ not req	uired	0 0 0	somewhat req	uired O	🔿 🔵 requ	ired

4.3.3 Usability

The third requirement type is called usability. It contains requirements for design, access, use and performance. Almost all stakeholder groups except the works council clearly mentioned the requirement for a user-friendly design. The app should consist of a simple user interface and a clear navigation. It should be easy to understand and intuitive without overloading it with content. In addition, marketing, IT and one end-user group indicated that they wanted the app to be consistent with the corporate design by including the logo and corporate colors. Another design element mentioned by all end user groups was a newsfeed always displaying latest news.

In addition to design requirements, there were also those for access and use. Regarding the potential for improvement in the interaction of different communication channels, two key requirements were formulated. First, the app should centralize information from different sources. This includes, for example, company posts published in public social media channels or company news sent by mail. Participants mentioned the advantage of bundling information in one medium, replacing other channels

and minimizing the number of incoming mails. Requirements related to this issue were expressed by all stakeholder groups, for example as follows:

[15] "So, the prerequisite is that, that does not duplicate itself everywhere. Otherwise, I'll never need the app if I know I've already seen it on Facebook, Xing or elsewhere." (IT, participant 4, male)

[16] "But of course it has to be ensured that I can replace certain channels with it. So, what I have in our employee area so far from the website would have to be prepared in a certain way so that I can then manage to bundle the whole thing in this app [...]." (End user 3, participant 5, male)

Second, also mentioned by almost all groups except management, the app should connect other systems used in the company, such as the company's brand shop or the meal ordering system. This also increases the user-friendliness regarding these systems, as they can be accessed in one central location.

An additional requirement, the inclusion of push messages, also arose from a stated potential for improvement. As participants lack a notification when news is available, all stakeholder groups required to integrate push notifications into the app. This directly informs employees and encourages them to consume the news, justified as follows:

[17] "I have to get it actively. So, the illusion of 'people are all so insanely interested and care about getting the latest news all the time,' that's at most in the grapevine channel." (IT, participant 4, male)

Some end user groups, the IT group and the works council group added the requirement of including a translation function. This way, employees speaking a language other than German can also be reached. Here, however, it should be noted that this requirement always came up after the promotional video of an employee app provider has been shown.

In terms of app access, a large proportion of participants from marketing, end users, management and IT emphasized the importance of making the app available for different platforms and versions. The app should be compatible with all devices, such as desktop, smartphone or tablet, so that it can be used on all personal devices as well. A web version should also be created for those employees who do not want to download an app. In all of this, care must be taken to ensure a responsive design and a consistent structure so that the app is always visually appealing, and all functions can be found in the same place. Through this technical diversity, the content can be made accessible to every employee.

Marketing, management and IT also advocated for connecting the app to the existing employee directory database to simplify the login process by allowing employees to use their login credentials

from the corporate context. This way, only employees without specific credentials will have to create new ones before they can log in. In addition, one end-user group and the marketing group cited general performance features, such as short loading times or the ability to track app usage information, as key requirements. All usability requirements by stakeholder groups are summarized in Figure 7.

Usability	End user 1	End user 2	End user 3	IT	Marke- ting	Manage- ment	Works council
User-friendly design	00•	00•	00•	00	00	00	000
Corporate design	000	00•	000	00	00•	000	000
Newsfeed	00•	00•	00•	000	000	000	000
Centralizing information	00•	00•	00•	00	00•	00•	000
Connecting other systems	00•	00•	00•	00	00•	000	00•
Push messages	00•	000	0 • 0	0 • 0	00•	0 0 0	00•
Translation function	00•	00•	000	00•	000	000	00•
Providing app for different platforms & versions	000	00•	00•	00	00•	0 • 0	000
Connecting employee directory database	000	000	000	00•	00•	00•	000
Performance features	00•	000	000	000	000	000	000
○ ○ ○ not specified ● ○	ired	0 0 0 so	omewhat requ	ired O	O 🔵 requir	red	

Figure 7 Usability requirements

4.3.4 Rights and roles

The fourth requirement type, which includes configuration functions, is referred to as rights and roles. All stakeholder groups expressed the requirement of flexible and user-based configuration options. Participants wanted to be able to set filters individually, for example, to subscribe to certain app categories. This way, only the content that really interests the user would be displayed. They also wanted the ability to customize app notification settings, described as follows:

[18] "Yes, so if we now go over the topic of notifications, which we just had, that you can both on and, or activate and also deactivate. That is, if I'm on vacation, that I then not, and would like to have my peace, that then not all information always comes over." (Works council, participant 4, male) Another requirement is the flexible configuration of authors and recipient groups, which again was mentioned by all stakeholder groups. In terms of organization-generated content, it should be possible to specify different authors who can publish organizational information. Instead of having only one author, it should be possible to select different people who have the right to publish information. One example therefore is shown in the following quote:

[19] "Yes, of course, clustering like this also makes it possible to somehow give leaders or managers from each location extra access to the app, so that they can perhaps pass on information about the location." (Marketing, participant 2, female)

The same applies to recipient groups. Participants liked the idea of configuring recipient groups so that not always the entire workforce is addressed, but also only a specific department or location, depending on the topic. The app would therefore allow different distribution of rights and roles to users.

In addition, marketing and one end user group required the app to consist of multiple categories. This would enable that, for example, different departments and locations could publish their relevant information, and users would know where to find what type of information. Figure 8 summarizes all rights and roles requirements of the different stakeholders.

Figure 8

Rights and roles	End user 1	End user 2	End user 3	IT	Marke- ting	Manage- ment	Works council
Flexible, user-based configuration	00	00	00	00	000	00	00•
Flexible configuration of authors and recipient groups	00	000	00	00	00	00	00•
Configuration of different categories	000	000	00	000	00	000	000
○ ○ ∩ not specified ● ○ ○ not required ○ ○ somewhat required ○ ○ ■ required							

Rights and roles requirements

4.3.5 Reliability and security

The fifth requirement type is referred to as reliability and security. Ensuring confidentiality and data protection was named as an indispensable requirement by marketing, end users, management and works council. Overall, it was considered advantageous to use the app to communicate about company issues, as data protection can be directly ensured by the company itself in the process. Nevertheless, security and legal issues, such as tracking user behavior, need to be discussed and determined with the works

council before the app is introduced. Management described this as very challenging, as it would not possible to control app usage on private devices, and therefore the confidentiality of the information.

In addition, end users also expressed privacy concerns regarding app usage. It was said that some employees were critical of data protection issues, so this could be a barrier to app use. The prerequisite here is that the use of individual employees cannot be tracked too closely and that use overall is not heavily controlled by the company, otherwise it could discourage employees from using it. In addition, app use on personal devices was considered critical, shown as follows:

[20] "Because I also see the difficulty, I already see it now, so, yes, that is my private cell phone. I think that will be the biggest hurdle." (End user 3, participant 2, female)

Another risk identified by the works council was that it would not be possible to control app usage on private smartphones, argued as follows:

[21] "And I also don't know how you want to control whether someone uses their cell phone a lot in their private life or whether they really use the employee app effectively." (Works council, participant 4, male)

Some participants stated the risk that employee productivity will suffer if the app is used too often. Additionally, one requirement the works council mentioned after watching the promotional video was to implement read confirmation notifications only when specifically required. There may well be important issues where the company requires a read confirmation. However, these are exceptional cases. All reliability and security requirements of different stakeholders are summarized in Figure 9.

Figure 9

Reliability and security requirements

Reliability and security	End user 1	End user 2	End user 3	IT	Marke- ting	Manage- ment	Works council
Confidentiality and privacy	000	00•	00•	00•	00•	00•	00•
Selective use of read confirmation	000	000	000	000	000	000	00•
○ ○ ○ not specified ● ○ ○ not required ○ ○ ○ somewhat required ○ ○ ● required							

4.3.6 Service

The sixth requirement type is called service and contains requirements for the maintenance of an employee app. One end user group, marketing and management indicated that it would be important to assign a community manager to act as a key person for the app with two main tasks. First, the person needs to be responsible for the content of the app. This means to ensure that organization-generated content is published regularly, to prepare data for publication and to exchange with other authors about the planned content for the app. Second, the community manager needs to interact with the user community to provide feedback. This is done to avoid excessive discussions and to let employees know that they are noticed and have a voice. Following quotes are examples of these statements:

[22] "I don't think it's going to be filled, because if nobody feels responsible for it." (End user 1, participant 5, female)

[23] "You would really have to assign someone to simply observe what is happening there in order to catch it." (Marketing, participant 2, female)

Management expressed it even more strongly by saying that the app would only create the basis for communication. It is much more important to maintain the app with content, shown as follows:

[24] "It is the basic requirement to be able to do such things in a meaningful way. [...] But in the long run, someone has to maintain it and fill it and also see it as a self-understanding that you should do that." (Management, participant 3, male)

In contrast to the request to specifically control the content of the app within the company, the IT group indicated that the programming process of the app should not be carried out within the company but should be purchased externally to save own resources. Only a helpdesk should be integrated internally with the application support, according to marketing. The service requirements are summarized in Figure 10.

Figure 10

Service requirements

Service	End user 1	End user 2	End user 3	IT	Marke- ting	Manage- ment	Works council
Community manager	00•	000	000	000	000	00•	000
Low technical maintenance within the company	000	000	000	00•	00	000	000
\bigcirc						0 0 0 re	auired

4.3.7 Organizational

The last requirement type is called organizational and includes requirements explaining the integration of an employee app into the daily work routine. The first requirement mentioned by end users and works council was voluntariness in app usage. The app should be used on a voluntary basis, not least through the possibility of installing it on private end devices. Second, these groups demanded to be able to use the app during working hours and not only during free time. Otherwise, acceptance and use of the app would be limited, since it deals with company-related topics. At the same time, these groups as well as management and IT also stated that app use should not taking up too much working time, shown as follows:

[25] "So, if it doesn't exceed a certain level that's perfectly fine. But if we put comments and likes [...] and a lot of these time-destruction possibilities in there, then you should think about it. Then that would tend not to be working time." (IT, participant 4, male)

According to management, one requirement for enabling app usage during working hours is to communicate about company-related topics responsibly and without going overboard, shown as follows:

[26] "So, I think if you reduce it to the fact that it's not social media-related [...], but it's about the matter at hand. [...] Then there won't be such a quick discussion about whether this is working time and why he wrote it. But if the person posts his pork belly recipe and then it is discussed for three hours, then it leads to nothing. So maybe that's great employee cohesion, but then we'd probably rather veto it." (Management, participant 3, male)

As personal smartphone use is currently restricted in the company during working hours and this has also been regulated in a company agreement, the latter would have to be revised. This requirement was mentioned by management, IT and works council. In addition to the requirement of not taking up too much working time, one end user group, management and IT stated to limit the use of push messages. This would prevent employees from being constantly distracted from work. Instead, push messages should only be used for acutely important topics. In addition, marketing and works council called for the commenting function to be used only selectively as well. All organizational requirements are summarized in Figure 11.

Figure 11

Organizational	requirements
Orguni2uii0nui	requirements

Organizational	End user 1	End user 2	End user 3	IT	Marke- ting	Manage- ment	Works council	
Voluntariness	00•	00	00	000	000	000	00	
Use during working hours	000	00	00	000	000	000	00	
Not taking up too much working time	00•	00	00	00	000	00•	00	
Revising operating agreement	000	000	000	00	000	00•	00	
Selective use of push messages	000	000	00	00	000	00	000	
Selective use of comment function	000	000	000	000	00•	000	00	
\bigcirc \bigcirc \bigcirc not specified \bigcirc \bigcirc								

The results show that requirements differ depending on the stakeholder groups. To prioritize these, it was examined which requirements were expressed by most groups and which seem to be particularly important to individual groups. Appendix G provides a final listing of the requirements and their priorities, distinguishing between low, medium and high priorities, as well as excluded requirements. The following subchapter explains the participants' attitudes towards an employee app.

4.4 Category 4: Attitudes towards an employee app

After discussing requirements, the third part about attitudes towards an employee app followed. Participants were asked to imagine that the app would include their previously mentioned requirements. Based on the answers given, four different themes could be identified: critical success factors, contribution to internal communication, identification with the organization and acceptance.

Critical success factors

As part of the evaluation, participants first named critical success factors of the employee app. For all stakeholder groups, high relevance and added value were critical success factors. It was important to avoid the app being just another channel that might overwhelm users. Although participants see potential for added value in the app, they also expressed doubts about it, as shown by the following quote:

[27] "[...] I'm also unsure now, is it now one more channel or is it really helpful? So, this added value, yes. If that's not there, then it's difficult to classify it in the channels that we already have [...] But it can go in both directions. Can really improve something for our work. But it can also be a burden, and then there's one more channel." (End user 3, participant 4, male)

Another critical success factor for the app was identified as the strong frequency and actuality of content. Again, almost all stakeholder groups indicated that the app needs to be filled with content on a regular and timely basis. The key is to find the right balance between too much and too little news needs. In addition, information should go out promptly so that employees could be reached much faster.

Furthermore, end users, marketing and IT cited high acceptance and use as a critical success factor. There would always be some people who would not want to use such an app. Nevertheless, a high number of users must be ensured for the app to be successful, shown as follows:

[28] "And this app will only serve its purpose if, let's say, 95 percent of employees actively use it. And that's where I think the biggest difficulty lies. And the question is how to keep this app alive with content so that all employees stay on board." (Marketing, participant 3, male)

The final critical success factor cited by one end user group and management was interaction within the app. According to the participants, interaction, especially in the form of comments, needs to be enabled in order to use the app, shown as follows:

[29] "Yes, as long as it enables you to interact. So, if it's closed, if you don't have the possibility to comment, to like or to chat or something, then it doesn't bring much. But if you can exchange yourself. Because I think that's also exciting." (End user 1, participant 2, male)

Contribution to internal communication

Participants also gave their opinion on how much an employee app can contribute to internal communication. Almost all stakeholder groups except the IT group mentioned that the app can improve the accessibility of the entire workforce, as really every employee is offered the opportunity to use the channel. In particular, app usage via smartphone was perceived as beneficial in this context, as almost everyone owns a private smartphone. Hence, also employees who are not in the company or do not have access to a computer can be reached, shown as follows:

[30] "So now I also find the idea charming that you can simply include employees who don't have a computer with us in a company. We always have problems with non-permanent employees, with assistants, etc., but they also have to be informed." (Marketing, participant 2, female)

All groups expressed that the app could not completely replace other existing communication software used in the company, for example, channels for documentation and collaboration. An employee app should therefore focus on informative, short-lived information that does not require documentation. Additionally, participants from marketing, IT, works council and end users stated that the app could increase the level of information knowledge among employees. This is especially true for people who are not in the company on a daily basis, shown as follows:

[31] "Everyone uses a smartphone, and those who are only there until noon that day, or only at the beginning of the week, or only every two weeks, may be better informed as a result." (End user 3, participant 2, female)

Furthermore, almost all groups indicated that the app could increase the usability of consuming information. This is mainly due to the use on the smartphone, which is considered a common daily medium. In addition, marketing, management and one end user group indicated that the app could increase transparency, due to the possibility of reaching the whole workforce in a timely manner. However, some participants from the IT group and one end user group stated that the app would not change communication significant in a positive way, as they doubted the added value, argued as follows:

[32] "From the point of view that we, that the, yes the channels, the current channels would improve a little bit perhaps or would bundle. But basically, would probably not change the overall communication significantly." (IT, participant 3, male)

Identification with the organization

The extent to which an employee app can strengthen identification with the company was perceived differently by the participants. Some participants from marketing, management, works council and two end user groups thought that the use of the app could strengthen the relationship between company and employees. This was especially due to greater possibilities for interaction, shown by the following quote:

[33] "[...] even if there are ways of capturing a certain basic mood and counteracting it, that can of course also have a very great advantage in maintaining relationships between colleagues, among colleagues, but also between management levels and employees. Absolutely." (Marketing, participant 3, male)

However, other participants from works council, IT, management and two end user groups were of the opinion that an employee app would not be decisive for the relationship between company and employees. According to them, identification with the company is depended on other factors not relating to an app, shown by following exemplary quotes:
[34] "So I think I'd rather give it a 6, because if you can't identify with the company, then the app doesn't help anymore." (End user 2, participant 3, female)

[35] "If you like the company, you'll use 10 programs and 10 channels. If you don't like the company, I don't think anything will change. It's a matter of attitude. I don't find the company hipper or cooler, or come closer to the management as a result." (End user 2, participant 5, male)

There is a similar formation of opinion for the relationship among colleagues. Participants from all groups except marketing and IT expressed that the app could strengthen the relationship among colleagues. The main reason was to hear more about employees in different locations and departments, which could strengthen the emotional bond. According to management, the relationship among colleagues could be strengthened with a consumption app, although the inclusion of user-generated content would have an even greater effect on it, argued as follows:

[36] "If it's a pure info app [...] then that will be limited. Then it won't have no effect at all, because people will see that a discussion is taking place [...]. But that has a different quality for the employees than sharing their recipes or saying how great the last vacation was." (Management, participant 3, male)

In contrast, participants from marketing, IT and one end user group did not think that the relationship among colleagues could be strengthened with the app. From their perspective, the goal of the app is to consume information, which does not directly contribute to colleague connectedness. Finally, all end user groups felt that the sense of belonging could be strengthened using an app.

Acceptance

The last topic discussed was the acceptance of an employee app. Initially, it became clear that the app was not yet missed. Employees had not thought about this channel before and were overall already very satisfied with internal communication. In addition, some end users believed that such an app might be more likely to be adopted by younger rather than older employees, as the latter might not want to deal with yet another new channel.

Overall, all stakeholder groups showed interest in using the app. They indicated that once the relevant requirements have been implemented, they were very open to using the app, shown by the following quote:

[37] "And I think, but I think after that, the way it's currently presented and then if that's how it works, I would definitely use it." (Works council, participant 3, male)

However, some participants from all groups except works council stated that there would not be complete acceptance and use among the workforce. There would always be employees who would not want to use it, or would use it less in the long run, shown by the following quote:

[38] "The real answer is probably very common in the beginning. And the older the app gets, the less people will use it, so, I'll probably use it." (IT, participant 4, male)

In addition, one end user group, management and IT indicated to optimize current tools rather than implementing a new app. In their opinion, there are already many channels in the company that, used differently, would also solve the requirements of an employee app.

Participants from all end user groups indicated that the development and implementation of an employee app would fit in with the company's orientation and portfolio. Based on the services offered, such app development would fit well with the company's image.

When asked if it was time to implement an employee app, participants' opinions differed. Two end-user groups, marketing and the works council, were in favor of the right time. The current pandemic season in particular has made the workforce more familiar with digital channels, which can contribute positively, shown as follows:

[39] "Sure, it's not ready right away, but right now, when everybody is getting familiar with the digital means and so, then, I say, the willingness to still get familiar in the digital means is maybe higher than if you introduce it in 3, 4 years or so." (End user 1, participant 4, male)

Interestingly, the other end user group, management and IT indicated that it would not be the right time for app introduction. IT clarified that the introduction of a dedicated app would not be necessary, as other means could be used for the purpose. According to management and the end-user group, the company is undergoing a change process that would make it difficult to introduce a new app at this time. They doubted the current acceptance of such an app, shown by the following quote:

[40] "If there was an employee app added to it now, I think there would be, so I don't think the acceptance would be too great. Not even for me. I think right now would not be the right time for me." (End user 2, participant 2, female)

In summary, attitudes towards the app varied among participants. While some saw the potential to contribute to internal communication, others were skeptical. The requirements differed depending on the stakeholder and were sometimes in conflict with each other. The following chapter discusses the results in detail.

5 Discussion

This chapter discusses the findings by answering the main and sub research questions. Subsequently, implications for academics and practitioners are provided, followed by the listing of future research topics. Finally, limitations of this study are explained and a conclusion is drawn.

5.1 Discussion of results

Two main research questions were investigated in this research. The first was formulated as: "*What are requirements of an employee app from different stakeholder's perspectives?*" To answer this, two sub research questions were developed, which are answered in the following.

Sub RQ 1: Which requirement types determine the development of an employee app?

This research has shown that the development of an employee app is determined by seven requirement types: 1) interactivity, 2) content, 3) usability, 4) rights and roles, 5) reliability and security, 6) service and 7) organizational. This partially coincides with the findings from the literature collected in the theoretical framework. The requirement types listed by Van Velsen et al. (2013) – content, usability, service and organizational – were confirmed by this study for the development of an employee app. Additionally, reliability, security and performance were found to be requirement types for an employee app development, which is consistent with Sindhgatta and Thonse (2005) who identified these as critical for organizational applications. The high importance of usability and performance noted by the Sindhgatta and Thonse (2005) was also recognized in this study, with performance defined as a subcategory of usability based on the findings from the codebook.

Two new requirement types were identified that, to my knowledge, had not yet been found in this form in the literature: Interactivity and rights and roles. Interactivity emerged as an important requirement type to consider when developing an employee app. It was the type with the most conflicting opinions, especially regarding the inclusion of user-generated content and interaction features, both typical of social media. Rights and roles included specific configuration requirements for individual settings, authors and user groups, as well as configuration of various categories.

All identified requirements belong to non-functional requirements, as they were not specifically formulated for development, but were researched from scratch with a focus on app quality (Zimmermann & Grötzbach, 2007). Figure 5 visualizes the final requirement types that are relevant for an employee app development.

Figure 12

Requirement types of an employee app



Sub RQ 2: Which requirements conflicts occur within the development of an employee app?

First of all, Ruck and Welch (2012) can be agreed with, who stated to that employees' needs should be included in internal communication processes. This study has shown that the inclusion of different needs, especially with regard to different stakeholders, is highly relevant for software development processes as competing requirements arise (Van Velsen et al., 2013).

Initially, the overall scope of the app was perceived differently, as it was not predetermined but was to be defined by the participants themselves. While some participants wanted the app to cover work-related topics, such as sharing about customer-related productions, most other participants required the app to include social and organizational content. This led to the conclusion that the employee app should cover one of the four types mentioned by Kalla (2005), namely organizational communication. To ensure a balance of all communication types (Kalla, 2005), further channels need to cover the other types of communication. That is in line with the study of Matthews et al. (2014) who argued that various social tools with specific scopes should coexist in order to increase collaboration.

The greatest requirements conflicts identified in this research were between management and the other stakeholders. While management was ambivalent about integrating user-generated content into the app, end users, marketing, works council and IT were mostly opposed. The latter cited the risk that posting their own content could harm productivity. Similar opinions applied to the interaction and feedback functions, which some stakeholder groups felt could lead to ambiguous discussions. These are interesting findings, as social media is typically characterized by user-generated posts and interaction (Leonardi et al., 2013). Strikingly, Leonardi and Vaast's (2017) view of giving employees a voice was

almost exclusively held by management. Other stakeholder groups, especially end users and IT, were against publishing posts or commenting on them. This provides room for debate. Instead of seeing the benefits of Web 2.0 media, namely having a voice and being heard through the interaction within an app (Leonardi & Vaast, 2017), participants mainly followed the idea of traditional media for information transaction. An explanation for this can be found in the review of Veeravalli and Vijayalakshmi (2019), who identified the organizational factors of climate, strategy, culture and platform design that influence ESM adoption. According to them, organizations need to ensure an open and transparent culture in which making mistakes is allowed and communicated clearly (Veeravalli & Vijayalakshmi, 2019). Although the case company is characterized by flat hierarchies, employees may not feel comfortable expressing their opinions in the organization and possibly making mistakes. This could be explained by the strong growth of the case company in recent years. Due to the increasing size of the teams and new departments, communication could mainly take place within many smaller groups. It is possible that employees have become so accustomed to it that they no longer even think about the benefits of crossorganizational communication interaction. This can be supported by the findings of Mark et al. (2014), who stated that the larger the network, the less positively ESM were perceived. At the same time, twoway communication was probably not specifically promoted during the company's growth, so this may also be a reason why employees still see internal communication as simply receiving organizational information.

Another explanation can be based on previous studies (Koch et al., 2013; Treem et al., 2015) which found that perceptions about ESM depend on former experiences with social media in the personal realm. All participants reported using social media channels at least once a day in their free time. As a result of this heavy use in the personal sphere, participants developed attitudes towards social media that do may not transfer to the corporate sphere. It is possible that they have different expectations of social media in the private sphere and cannot imagine their potential within organizations (Koch et al., 2013; Treem et al., 2015). This is accompanied by the perception that there is 'channel overload'. Participants pointed to the high number of channels used in the organization and the confusion of their interaction. Consequently, participants may see the app as another channel they would need to serve. Additionally, and consistent with Bucher et al. (2013), participants might see the risk of information overload, if an additional, interactive channel is introduced for internal communication.

The only category indicated by end users for user-generated content in the app was the notice board to communicate about specific private topics, such as selling private items. Again, this is interesting as this category may be most consistent with the concept of social media in private use, as it represents hedonistic motivations as described in Leftheriotis and Giannakos (2014). Management, however, criticized this feature as it could distract from organizational topics. At the same time, this stakeholder group did not want too much app usage within working hours. This in turn, namely use during working hours, is a requirement of all other stakeholder groups. In summary, requirement conflicts occurred primarily in the interactivity and organizational requirement types between management and the other stakeholder groups. This demonstrates the complexity of app expectations, which is similar to the complexity of internal communication in general, not least because of the different stakeholder functions, employee roles, and power relationships within organizations.

Main RQ 1: "What are requirements of an employee app from different stakeholder's perspectives?"

From the answers to the sub research questions, it can be concluded that requirements for an employee app differ depending on the stakeholder. A total of seven requirement types were identified as relevant for app development, with the relevance of individual types differing according to stakeholder. The interactivity type plays an important role, as it was discussed in all groups and let to contradicting opinions. While management did not explicitly exclude the typical social media function of user-generated content, the other stakeholder groups were mostly against its inclusion. The same applied to the integration of interaction functions such as liking and commenting. As a result of this study, the main goal of an employee app was identified as providing a consumption platform for organization-generated content. Interestingly, the benefits of an app in terms of interaction and having a voice were not required by employees.

The second main question was: "What are employees' attitudes towards an employee app whose requirements they develop themselves?" Based on the findings, it can be answered as follows:

The complex and sometimes contradictory requirements for an employee app were also reflected in attitudes towards the app. In line with Chin et al. (2015), who identified factors influencing ESM use, several factors were cited by participants as critical to the app's success. First, there must be relevance and added value, which Chin et al. (2015) described as satisfying needs and providing a perceived value to employees. In terms of content, participants highlighted the need of high actuality and frequency and, in some cases, the possibility to interact. This is consistent with Chin et al. (2015) who expressed the importance of information quality and the ability to interact. Finally, the app requires high acceptance and use, which Chin et al. (2015) described as reaching the critical mass.

Interestingly, however, the results of this study have shown that the added value of an app is almost exclusively in receiving information bundled through a popular medium and possibly having the option to comment or like a post. Compared to the possibilities that such an app could have in terms of interaction and having a voice, this app may only add little value in terms of internal communication within the company, which is already rated as good by the participants.

This was also reflected by the participants' responses. Based on the critical success factors, participants indicated that the app could potentially reach all employees and increase usability for

obtaining information. This is consistent with Tkalac Verčič and Špoljarić (2020), who state that employee preferences must be considered in order to create a channel that reaches them. With its frequent use, the smartphone was perceived as a beneficial medium for communication that is in line with employees' preferences (Tkalac Verčič & Špoljarić, 2020). Additionally, an employee app could increase the level of information knowledge as well as transparency. However, some participants indicated that the app would not significantly improve internal communication in a positive way. This can be explained by the fact that the potential of the app was already limited by the participants' requirements.

Furthermore, participants had different views on the app's contribution to identification with the company. While some participants felt than an employee app can strengthen this relationship, which is consistent with Dolphin (2005) and Ruck and Welch (2012) who stated that internal communication is essential in this regard, others felt that the app does not have a strong impact on this relationship. Rather, it depends on the corporate culture and the individual people within the company. This was also noted in the study by Chin et al. (2015) who highlighted that organizational culture and employee personality traits play a role in ESM use.

A similar opinion was expressed for the relationship between colleagues. While some participants indicated that the connection among colleagues would be strengthened by an employee app, others disagreed. Proponents justified this as learning more from colleagues, even across departments and locations, which corroborates the study by Gibbs et al. (2015). Other participants, however, did not see the goal of the app as strengthening collaboration among colleagues.

In summary, there are proponents and skeptics of the app. The requirements made by the participants have already limited the potential of the app in terms of communication and engagement. Therefore, it is important to be clear about the role of internal communication and promote it within the organization. It became clear that software alone does not directly lead to success (Veeravalli & Vijayalakshmi, 2019). Rather, it can be agreed with several authors who state that companies need to implement a holistic ESM strategy and culture rather than simply installing software (Veeravalli & Vijayalakshmi, 2019). To benefit from the employee app, companies have to recognize and communicate its potential. As explained by Veeravalli and Vijayalakshmi (2019), this could be done by management, for example, by exemplifying and promoting interactivity.

5.2 Implications

Theoretical implications

This study has examined requirements and attitudes towards a specific form of an ESM, namely an employee app. The dual perspective, combining technical and organizational communication within one study, has provided new insights into the development of ESM as well as attitudes towards ESM prior to their implementation.

First, this research has expanded the literature on technical communication by identifying requirement types that are relevant to ESM development in general, which to my knowledge has not been studied before. In doing so, this study first collected requirement types that had already been examined in the literature on general software development. Related to an ESM these were identified as content, usability, security, performance, reliability, service and organizational (Sindhgatta & Thonse, 2005; Van Velsen et al., 2013). During this research, the requirement types were confirmed, with performance defined as a subcategory of usability. Additionally, this study explored two new requirement types for ESM development, namely interactivity and rights and roles. Interactivity emerged as an important requirement type in relation to ESM, as it defines key features of social media, namely the inclusion of interaction opportunities and user-generated content.

Second, this study was the first to formulate and prioritize concrete requirements for an employee app that have not yet been found in literature. Because the principle of social media has been adopted from the private environment to the corporate environment (Leonardi & Vaast, 2017), it seems that functionalities were also adopted without having reconsidered them for the organizational context. Researchers have already recognized this gap by stating that a simple ESM installation does not automatically lead to success (Chin et al., 2015) and ESM designs need probably to be adapted based on current innovations and user needs (Wehner et al., 2017). With this research, concrete requirements for an employee app development were formulated, which led to valuable findings for the literature. It became clear that the functionality to post user-generated content was not desired. Rather, the app was seen as a consumption platform for information. This finding challenges the general definition of ESM (Leonardi et al., 2013). The typical functions of being open and participatory in the sense of sharing personal posts were not fundamentally desired or assumed. This has also been found by other studies, but with the difference that the function was already implemented. The present study, on the other hand, shows that the basis for acceptance of an ESM can be created in advance of implementation by taking needs into account. In other words, functions that are not needed can be filtered out in advance and excluded from the development process to develop successful software that is also accepted. In addition, the requirements elicitation process can be used to inform stakeholders about the potential of ESM and thus create awareness for possibilities and advantages of certain functions, for example, the potential of user-generated content and interaction.

Finally, this study has shown that the involvement of various internal stakeholders is a valuable factor for the ESM development process. The CeHRes roadmap, a human centered-design process that allows to integrate different stakeholders (Van Gemert-Pijnen et al., 2011), has proven to be an appropriate approach in this regard. Although this model was originally created for the eHealth sector (Van Gemert-Pijnen et al., 2011), this study has shown that it can be used for other sectors as well.

Practical implications

In addition to theoretical implications, this study also offers practical implications for organizations. First, due to the case study method, this research has explored specific requirements of an employee app that the case company can consider when deciding to develop such an app. For other organizations that are thinking about implementing an employee app or other types of ESM, this research provides insights into requirement types that are relevant for the software development process. Because the requirement types and their subcategories studied are generic, they can be considered by other organizations in the ESM development process by providing a guideline. The specific requirements developed for an employee app can further provide guidance and ideas.

Second, this research has confirmed the importance of integrating multiple stakeholder views into software development for ESM, as they can totally differ from each other. Although literature has shown that the adoption of an ESM is often decided by non-technical staff (Leonardi & Vaast, 2017), such as the marketing department, this research has indicated that it is important to seek different opinions in order to improve use and acceptance of the application, especially if the ESM is to be developed enterprise-wide. Therefore, companies should not let decisions about enterprise-wide solutions be made by only a few people or one department.

This automatically leads to the third implication, namely the scope of the app and thus the integration of user-generated content. As shown in this study, the nature of an app for internal communication is complex. Requirements differ from a fundamental level, such as the role of the app, to the very detailed level, such as specific design elements. Companies should therefore not assume that social media is as fruitful and well perceived in the organizational context as it is in the personal sphere. They need to think carefully about what the goal of an ESM to be introduced should be, especially in conjunction with other social tools. Typical social media functions should be reconsidered individually and not simply adopted by existing software.

This is followed by the final implication. As suggested by Denyer et al. (2011), companies planning to implement an ESM need to not only holistically manage the development process itself, but also rethink the organizational culture and existing processes. Employees need to know what to expect, be encouraged to speak up and trained to use the software (Denyer et al., 2011). In addition, and also in line with Denyer et al. (2011), this study highlighted the importance of assigning key individuals or a team to take responsibility for ESM implementation and maintenance. Besides the development of the software based on internal stakeholder's needs, maintaining the software and ensuring interaction is essential for success.

5.3 Future research

Recommendations for future research topics can be derived from the discussion and implications of this study. First, the specific requirements should be translated into a prototype of an app created specifically for the case company. Therefore, it is proposed for the case company to follow the remaining phases of the CeHRes roadmap, namely design, operationalization, and summative evaluation (Van Gemert-Pijnen et al., 2011). This way, employees' attitudes towards an employee app could be more reliably assessed. For the final app, it is advisable to conduct a longitudinal study in the case company to gain insights on how the app contributes in terms of internal communication and employee engagement and whether the given attitudes can be confirmed from this study. Instead of a qualitative study, this could be done using a quantitative research method, since the goal is not to research requirements from scratch, but to measure the impact of app usage on internal communication and employee engagement.

Second, the same research on an employee app could be conducted in companies from other industries and with a different number of employees. This way, results of this research could be compared with other case studies to take a step making them generalizable.

Third, as this research found an app to consist of limited user-generated content and due to the fact that ESM were adopted from the private use, it is proposed to further conceptualize ESM accurately for the organizational context. This research, as well as other studies around ESM use, has shown that the level of user-generated content is not static. Rather, the level depends on the particular goal and scope, as well as the interaction of other social tools. Future research should therefore further investigate the general functions of an ESM with a focus on the interactivity requirement type. It would be interesting to know how participants from other case companies think about the inclusion of user-generated content and the potential for interactivity of the app.

Finally, this study explored the requirement of creating an ESM in line with the corporate identity. Since ESM are web-based applications with a predefined design, it would be interesting to study whether the app design, which is in line with the corporate identity, has a significant effect on the perception and use of an ESM, as well as on the internal communication satisfaction and employee engagement.

5.4 Limitations

The study also has some limitations related to the research method and the sample. The research was conducted in the form of a qualitative case study with the aim of exploring requirements of an app from scratch. Although the objective could be well achieved through this type of study, it is known that this method does not allow a generalization of the results to other companies or cases (Creswell et al., 2007). The results are strongly related to the context of the studied company. Therefore, the orientation and specific requirements of an employee app are not universal, but only the general developed requirement types. Hence, the detailed results may differ for companies from other industries, with different workplaces, such as first line workers, or with a different number of employees.

The second limitation refers to the participants' imaginative power. As they were confronted with the topic of an employee for the first time and there was no specific scenario for an app given, it was sometimes difficult to formulate specific requirements. This would possibly change if employees were exposed to the issue for a longer period. In addition, it was also difficult to imagine what the app would look like based on their requirements in the end, since no prototype was available. Individual assumptions were made when giving statements.

Third, there are limitations regarding the sample. Due to the circumstances of the case company, the individual stakeholder groups did not consist of the same number of participants. In addition, it was only possible to conduct multiple end user groups. All other stakeholder groups existed only once. Therefore, the results would have been more reliable if multiple groups of the same stakeholders had been formed.

The last limitation is related to the focus group method chosen for this study. With this type of group interview, there is a risk that not every participant fully expressed their opinion. In some groups, there were more extroverted individuals who may have persuaded other participants to adopt a similar stance or opinion, which they may not have done had they been interviewed alone. Nevertheless, the method was particularly suited to the requirements development approach because it allowed participants to come up with different ideas and discuss them fruitfully.

5.5 Conclusion

This study has investigated requirements and attitudes of a specific form of an enterprise social media (ESM), namely an employee app from scratch, based two main research questions. As a result of the first research question about requirements for an employee app, seven different requirement types and a list of detailed requirements based on different stakeholders were identified. These serve both as a general guidance for ESM development as well as a concrete instruction of an employee app. The second research question explored participants' attitudes towards the app based on their own requirements and revealed contrasting opinions regarding its contribution to internal communication and employee engagement. In summary, this research has taken a step to investigate ESM from a technical design perspective to identify different stakeholder needs, unify them into one software to increase adoption, and evaluate the contribution before implementation. In addition to incorporating different perspectives into the ESM development process, the study has shown that organizational factors also need to be considered in the process.

References

AltexSoft. (2018). Functional and non-functional requirements: Specification and types. Retrieved December 12, 2020, from https://www.altexsoft.com/blog/business/functional-and-non-functional-requirements-specification-and-types/

Boeije, H. (2010). Analysis in qualitative research. Thousand Oaks, CA: Sage Publications.

- Bucher, E., Fieseler, C., & Suphan, A. (2013). The stress potential of social media in the workplace. *Information Communication and Society*, 16(10), 1639–1667. https://doi.org/10.1080/1369118X.2012.710245
- Chin, C. P. Y., Evans, N., & Choo, K. K. R. (2015). Exploring factors influencing the use of enterprise social networks in multinational professional service firms. *Journal of Organizational Computing and Electronic Commerce*, 25(3), 289–315. https://doi.org/10.1080/10919392.2015.1058118
- Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment*, 6(4), 284–290. https://doi.org/10.1037/1040-3590.6.4.284
- Coyo. (2019). *What's an employee app?* Retrieved November 25, 2020, from https://www.coyoapp.com/en/blog/whats-an-employee-app
- Creswell, J. W., Hanson, W. E., Clark Plano, V. L., & Morales, A. (2007). Qualitative research designs: Selection and implementation. *The Counseling Psychologist*, 35(2), 236–264. https://doi.org/10.1177/0011000006287390
- Denyer, D., Parry, E., & Flowers, P. (2011). "Social", "open" and "participative"? Exploring personal experiences and organisational effects of enterprise2.0 use. *Long Range Planning*, 44(5–6), 375– 396. https://doi.org/10.1016/j.lrp.2011.09.007
- Dolphin, R. R. (2005). Internal communications: Today's strategic imperative. *Journal of Marketing Communications*, *11*(3), 171–190. https://doi.org/10.1080/1352726042000315414
- Ellison, N. B., Gibbs, J. L., & Weber, M. S. (2015). The use of enterprise social network sites for knowledge sharing in distributed organizations: The role of organizational affordances. *American Behavioral Scientist*, 59(1), 103–123. https://doi.org/10.1177/0002764214540510

- Gibbs, J. L., Eisenberg, J., Rozaidi, N. A., & Gryaznova, A. (2015). The "megapozitiv" role of enterprise social media in enabling cross-boundary communication in a distributed russian organization. *American Behavioral Scientist*, 59(1), 75–102. https://doi.org/10.1177/0002764214540511
- Glinz, M. (2005). Rethinking the notion of non-functional requirements. *Proceedings of the Third* World Congress for Software Quality, Munich, Germany, September 2005.
- Gray, J., & Laidlaw, H. (2004). Improving the measurement of communication satisfaction. *Management Communication Quarterly*, 17(3), 425–448. https://doi.org/10.1177/0893318903257980
- Hargie, O., Tourish, D., & Wilson, N. (2002). Communication audits and the effects of increased information: A follow-up study. *Journal of Business Communication*, 39(4), 414–436. https://doi.org/10.1177/002194360203900402
- Hasan, M. M., Loucopoulos, P., & Nikolaidou, M. (2014). Classification and qualitative analysis of non-functional requirements approaches. In: Bider I. et al. (eds) Enterprise, Business-Process and Information Systems Modeling. BPMDS 2014, EMMSAD 2014. *Lecture Notes in Business Information Processing*, 175. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-662-43745-2_24
- Huang, J., Baptista, J., & Newell, S. (2015). Communicational ambidexterity as a new capability to manage social media communication within organizations. *Journal of Strategic Information Systems*, 24(2), 49–64. https://doi.org/10.1016/j.jsis.2015.03.002
- IEEE. (1983). IEEE standard glossary of software engineering terminology. *ANSI/ IEEE Std 729-1983*, 1–40. https://doi.org/10.1109/IEEESTD.1983.7435207
- Kahn, W. A. (1990). Psychological conditions or personal engagement and disengagement at work. *Academy of Management Journal*, 33(4), 692–724. https://doi.org/10.5465/256287
- Kalla, H. K. (2005). Integrated internal communications: A multidisciplinary perspective. *Corporate Communications: An International Journal*, 10(4), 302–314. https://doi.org/10.1108/13563280510630106

- Koch, H., Leidner, D. E., & Gonzalez, E. S. (2013). Digitally enabling social networks: Resolving ITculture conflict. *Information Systems Journal*, 23(6), 501–523. https://doi.org/10.1111/isj.12020
- Lee, Y., & Yue, C. A. (2020). Status of internal communication research in public relations: An analysis of published articles in nine scholarly journals from 1970 to 2019. *Public Relations Review*, 46(3), 101906. https://doi.org/10.1016/j.pubrev.2020.101906
- Leftheriotis, I., & Giannakos, M. N. (2014). Using social media for work: Losing your time or improving your work? *Computers in Human Behavior*, 31(1), 134–142. https://doi.org/10.1016/j.chb.2013.10.016
- Leonardi, P. M., Huysman, M., & Steinfield, C. (2013). Enterprise social media: Definition, history, and prospects for the study of social technologies in organizations. *Journal of Computer-Mediated Communication*, 19(1), 1–19. https://doi.org/10.1111/jcc4.12029
- Leonardi, P. M., & Vaast, E. (2017). Social media and their affordances for organizing: A review and agenda for research. Academy of Management Annals, 11(1), 150–188. https://doi.org/10.5465/annals.2015.0144
- Maguire, M. (2001a). Context of use within usability activities. *International Journal of Human-Computer Studies*, 55(4), 453–483. https://doi.org/10.1006/ijhc.2001.0486
- Maguire, M. (2001b). Methods to support human-centred design. *International Journal of Human Computer Studies*, 55(4), 587–634. https://doi.org/10.1006/ijhc.2001.0503
- Mark, G., Guy, I., Kremer-Davidson, S., & Jacovi, M. (2014). Most liked, fewest friends: Patterns of enterprise social media use. Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing (CSCW '14). Association for Computing Machinery, New York, NY, 393–404. https://doi.org/10.1145/2531602.2531662
- Matthews, T., Whittaker, S., Badenes, H., & Smith, B. A. (2014). Beyond end user content to collaborative knowledge mapping: Interrelations among community social tools. *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing (CSCW '14)*. Association for Computing Machinery, New York, NY, USA, 900–910. https://doi.org/10.1145/2531602.2531694

- Mishra, K., Boynton, L., & Mishra, A. (2014). Driving employee engagement: The expanded role of internal communications. *International Journal of Business Communication*, 51(2), 183–202. https://doi.org/10.1177/2329488414525399
- Patkar, N., Gadient, P., Ghafari, M., & Nierstrasz, O. (2019). Towards a catalogue of mobile elicitation techniques: Research preview. In: Knauss E., Goedicke M. (eds) Requirements Engineering: Foundation for Software Quality. REFSQ 2019. *Lecture Notes in Computer Science, 11412*. Springer, Cham. https://doi.org/10.1007/978-3-030-15538-4_20
- Ruck, K., & Welch, M. (2012). Valuing internal communication; management and employee perspectives. *Public Relations Review*, 38(2), 294–302. https://doi.org/10.1016/j.pubrev.2011.12.016
- Saiedian, H., & Dale, R. (2000). Requirements engineering: Making the connection between the software developer and customer. *Information and Software Technology*, 42(6), 419–428. https://doi.org/10.1016/S0950-5849(99)00101-9
- Sindhgatta, R., & Thonse, S. (2005). Functional and non-functional requirements specification for enterprise applications. In: Bomarius F., Komi-Sirviö S. (eds) Product Focused Software Process Improvement. PROFES 2005. *Lecture Notes in Computer Science*, 3547. Springer, Berlin, Heidelberg. https://doi.org/10.1007/11497455_16
- Staffbase. (n.d.-a). *How Max Mara fashion group informed and engaged their workforce*. Retrieved June 1, 2021, from https://staffbase.com/en/customers/max-mara-fashion-group/
- Staffbase. (n.d.-b). *Reach, include, and engage every employee*. Retrieved December 28, 2020, from https://staffbase.com/en/employee-app/
- Staffbase. (n.d.-c). *Sunbelt Rentals sharpened their tools and transformed their internal comms*. Retrieved June 1, 2021, from https://staffbase.com/en/customers/sunbelt-rentals/
- Taheri, L., Pa, N. C., Abdullah, R., Abdullah, S., & Shafazand, M. Y. (2014). Identifying knowledge components in software requirement elicitation. *IEEE International Conference on Industrial Engineering and Engineering Management*, 286–291. https://doi.org/10.1109/IEEM.2014.7058645

- Tkalac Verčič, A. (2021). The impact of employee engagement, organisational support and employer branding on internal communication satisfaction. *Public Relations Review*, 47(1). https://doi.org/10.1016/j.pubrev.2021.102009
- Tkalac Verčič, A., & Pološki Vokić, N. (2017). Engaging employees through internal communication. *Public Relations Review*, 43(5), 885–893. https://doi.org/10.1016/j.pubrev.2017.04.005
- Tkalac Verčič, A., & Špoljarić, A. (2020). Managing internal communication: How the choice of channels affects internal communication satisfaction. *Public Relations Review*, 46(3), 101926. https://doi.org/10.1016/j.pubrev.2020.101926
- Tkalac Verčič, A., Verčič, D., & Sriramesh, K. (2012). Internal communication: Definition, parameters, and the future. *Public Relations Review*, 38(2), 223–230. https://doi.org/10.1016/j.pubrev.2011.12.019
- Treem, J. W., Dailey, S. L., Pierce, C. S., & Leonardi, P. M. (2015). Bringing technological frames to work: How previous experience with social media shapes the technology's meaning in an organization. *Journal of Communication*, 65(2), 396–422. https://doi.org/10.1111/jcom.12149
- Treem, J. W., & Leonardi, P. M. (2012). Social media use in organizations: Exploring the affordances of visibility, editability, persistence, and association. *Communication Yearbook*, 36, 143–189. https://doi.org/10.2139/ssrn.2129853
- Van Gemert-Pijnen, J. E. W. C., Nijland, N., van Limburg, M., Ossebaard, H. C., Kelders, S. M., Eysenbach, G., & Seydel, E. R. (2011). A holistic framework to improve the uptake and impact of eHealth technologies. *Journal of Medical Internet Research*, 13(4), e111. https://doi.org/10.2196/jmir.1672
- Van Velsen, L., Wentzel, J., & Van Gemert-Pijnen, J. E. (2013). Designing ehealth that matters via a multidisciplinary requirements development approach. *Journal of Medical Internet Research Protocols*, 2(1), e21. https://doi.org/10.2196/resprot.2547
- Veeravalli, S., & Vijayalakshmi, V. (2019). A morphological review of enterprise social media literature. *Journal of Organizational Computing and Electronic Commerce*, 29(2), 139–162. https://doi.org/10.1080/10919392.2019.1583456

- Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly: Management Information Systems*, 36(1), 157–178. https://doi.org/10.2307/41410412
- Wehner, B., Ritter, C., & Leist, S. (2017). Enterprise social networks: A literature review and research agenda. *Computer Networks*, *114*, 125–142. https://doi.org/10.1016/j.comnet.2016.09.001
- Welch, M. (2011). The evolution of the employee engagement concept: Communication implications. Corporate Communications: An International Journal, 16(4), 328–346. https://doi.org/10.1108/13563281111186968
- Yin, R. K. (2009). Case study research: Design and methods. Thousand Oaks, CA: Sage Publications.
- Zimmermann, D., & Grötzbach, L. (2007). A requirement engineering approach to user centered design. In: Jacko J.A. (eds) Human-Computer Interaction. Interaction Design and Usability. HCI 2007. Lecture Notes in Computer Science, 4550. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-540-73105-4_40

Appendices

Appendix A: Schedule of the pre-test Appendix B: Schedule of the focus groups Appendix C: Survey about demographic characteristics Appendix D: Reliability analysis of the codebook Appendix E: Codebook Appendix F: Quotes Appendix G: Prioritization of requirements for an employee app

Time Script Material Topic 5 min. Starting focus group session Introduction \checkmark Device of each participant Welcome by the moderator \checkmark Active cameras Introduction of the participants (if \checkmark Active microphones employees do not know each other) Explanation of the context Introduction into the research topic ▶ *The aim of the research is to identify* requirements for an employee app and to assess employee attitudes about it Informed consent *▶Results are treated anonymously* Signed consent forms received *beforehand; any remaining questions* that need to be answered? 5 min. Explaining focus group session \checkmark Device of each Research participant Reasons for choosing focus groups \checkmark Active cameras Explaining open form of question types \checkmark Active microphones Data will be transcribed and analyzed to 1) identify requirements for an employee app and order them based on priorities and 2) gain insights into attitudes towards an employee app Time indication 10 min. Topic 1: Internal communication Topic 1: Attitudes \checkmark Device of each towards internal participant What channels do you use for internal communication \checkmark Active cameras communication? How satisfied are you with the \checkmark Active microphones internal communication and its ✓ Start recording channels used at the moment? (Score from 1 to 10) How important is internal communication for you in general at the moment? (Score from 1 to 10) 30 min. Topic 2: Requirements elicitation \checkmark Device of each Topic 2: Requirements of participant ▶ Introduce into the topic of an an employee app \checkmark Active cameras employee app and stimulate thinking: \checkmark Active microphones You told me you use [channels] for \checkmark Whiteboard in internal communication; now, Microsoft Teams imagine that we use an app for ✓ Recording internal communication – an "employee app".

Appendix A: Schedule of the pre-test

	 Imagine that all employees – whether they are on set, at the customer, in the office or at home – can access the app directly (via smartphone or computer). What are your requirements for such an app? What functions should it include? ▶ Please think about it. You can write down your ideas on digital post-it's in the whiteboard of Teams. Afterwards, you will discuss your ideas. 		
	Depending on the stimulation of thoughts, the moderator can provide assistance by mentioning different types of requirements:		
	 Functional/non-functional Content Usability/ User Experience Security Performance Reliability Service Organizational 		
	After participants came up with own ideas, a video of an employee app provider is shown: There are already several service providers on the market. I'll show you a short video of one of them, so you can add requirements if necessary. 	 ✓ Shared screen of the moderator https://www.youtube. com/watch?v=yEWWs9 Kbm8Y 	
	If the participants have nothing more to add: Do you think there are important requirements missing?		
25 min.	 Topic 3: Attitudes towards an employee app Now that we've identified requirements for an employee app, I'd like to know more about your attitude towards it To what extent do you think an employee app based on your requirements contributes internal communication? (Score from 1 to 10) To what extent do you think an employee app based on your requirements contributes the requirements contributes the relationship between company and 	 ✓ Device of each participant ✓ Active cameras ✓ Active microphones ✓ Recording 	Topic 3: Attitudes towards an employee app
	<i>employee?</i> (Score from 1 to 10)		

	 To what extent do you think an employee app based your requirements contributes to the feeling of being connected with others? (Score from 1 to 10) Do you think you would use the app regularly (everal times a week)? (Score from 1 to 10) Do you think it is time to introduce an employee app? (Score from 1 to 10) Final question: We identified important requirements for an employee app and slightly discussed the relation to internal communication. Do you think that something is missing? 		
5 min.	End focus group session	 ✓ Device of each participant ✓ Active cameras ✓ Active microphones ✓ End recording 	Closing
10 min.	Additional time if needed		

Feedback and learnings:

- Scope of the app was not directly clear, which makes it difficult to come up with requirements \rightarrow including a description of internal communication and providing some examples
- Participants gave insightful answers to the second question in the first part of internal communication → including the term "extent" so that other groups also give their opinions about that
- Just offering the possibility to use the whiteboard in Teams; not necessary
- Time indications were fulfilled
- Fruitful discussions emerged

Time	Script	Material	Торіс
5 min.	 Starting focus group session Welcome by the moderator Introduction of the participants (if employees do not know each other) Explanation of the context Introduction into the research topic The aim of the research is to identify requirements for an employee app and to assess employee attitudes about it Informed consent Results are treated anonymously Signed consent forms received beforehand; any remaining questions that need to be answered? 	 ✓ Device of each participant ✓ Active cameras ✓ Active microphones 	Introduction
5 min.	 Explaining focus group session Reasons for choosing focus groups Explaining open form of question types Data will be transcribed and analyzed to 1) identify requirements for an employee app and order them based on priorities and 2) gain insights into attitudes towards an employee app Time indication 	 ✓ Device of each participant ✓ Active cameras ✓ Active microphones 	Research
10 min.	 Topic 1: Internal communication Introduce into the topic of internal communication: First, I would like to inform you about the scope of internal communication in this study. In this project, internal communication is related to general information regarding the company and its employees and includes, for example: Information about strategic measures and goals of the company Social and informal communication Information about developments of different company's locations Information about personnel External developments that have an impact on the company With this scope of internal communication in mind, I will now ask you three questions: 	 ✓ Device of each participant ✓ Active cameras ✓ Active microphones ✓ Start recording 	Topic 1: Attitudes towards internal communication

Appendix B: Schedule of the focus groups

	 What channels do you use for internal communication? How satisfied are you with the internal communication, its channels used and its extent at the moment? (Score from 1 to 10) How important is internal communication for you in general at the moment? (Score from 1 to 10) 		
30 min.	 Topic 2: Requirements elicitation Introduce into the topic of an employee app and stimulate thinking: You told me you use [channels] for internal communication; now, imagine that we use an app for internal communication – an "employee app". Imagine that all employees – whether they are on set, at the customer, in the office or at home – can access the app directly (via smartphone or computer). What are your requirements for such an app? What functions should it include? Please think about it and discuss your requirements. If you want, you can write down your ideas on digital post-it's in the whiteboard of Teams. Depending on the stimulation of thoughts, the moderator can provide assistance by mentioning different types of requirements: Functional/non-functional Content Usability/ User Experience Security Performance Reliability Service Organizational 	 ✓ Device of each participant ✓ Active cameras ✓ Active microphones ✓ Whiteboard in Microsoft Teams ✓ Recording 	Topic 2: Requirements of an employee app
	After participants came up with own ideas, a video of an employee app provider is shown: There are already several service providers on the market. I'll show you a short video of one of them, so you can add your requirements if necessary. 	 ✓ Shared screen of the moderator https://www.youtube. com/watch?v=yEWWs9 Kbm8Y 	

	If the participants have nothing more to add: > Do you think there are important requirements missing?		
25 min.	 Topic 3: Attitudes towards an employee app Transition from requirements to attitude towards the app: Now that we've identified requirements for an employee app, I'd like to know more about your attitude towards it To what extent do you think an employee app based on your requirements contributes internal communication? (Score from 1 to 10) To what extent do you think an employee app based on your requirements contributes the relationship between company and employee? (Score from 1 to 10) To what extent do you think an employee app based on your requirements contributes to the feeling of being connected with others? (Score from 1 to 10) Do you think you would use the app regularly (several times a week)? (Score from 1 to 10) Do you think it is time to introduce an employee app? (Score from 1 to 10) To what extent is to the feeling of being connected with others? (Score from 1 to 10) Do you think it is time to introduce an employee app? (Score from 1 to 10) To wout this it is time to introduce an employee app? (Score from 1 to 10) Do you think it is time to introduce an employee app? (Score from 1 to 10) 	 ✓ Device of each participant ✓ Active cameras ✓ Active microphones ✓ Recording 	Topic 3: Attitudes towards an employee app
5 min.	End focus group session	 ✓ Device of each participant ✓ Active cameras ✓ Active microphones ✓ End recording 	Closing
10 min.	Additional time if needed		

Appendix C: Survey about demographic characteristics

Survey focus group

1.	What is you gend	er?			
	male	female	🗌 di	verse	not specified
2.	What is your age	?			
3.	How interested a	re you in new t	echnologies?		
No	t interested at all				Very interested
]			

4. What kind of apps do you use in your free time and how often?

	Not at all	Once a month	Once a week	Once a day	Several times a day
Games					
Education					
Social Media (e.g. Facebook, Instagram, WhatsApp,)					
Food & Drinks					
Health & Fitness					

Appendix D: Reliability analysis of the codebook

Reliability analysis of focus group session			
Stakeholde	r group: End u	ser group 3	
Date: 01/04	4/2021		
Citation	Encoder 1	Encoder 2	Revised code
1	A-IC2.	A-IC2.	
2	A-IC10.	A-IC10.	
3	A-IC1.	A-IC1.	
4	A-IC8.	A-IC8.	
5	A-IC3.	A-IC5.	A-IC3.
6	A-IC10.	A-IC10.	
7	A-IC3.	A-IC3.	
8	A-IC8.	A-IC8.	
9	A-IC8.	A-IC8.	
10	A-IC10.	A-IC10.	
11	A-IC1.	A-IC5.	A-IC5.
12	A-IC8.	A-IC8.	
13	A-IC5.	A-IC5.	
14	A-IC5.	A-IC5.	
15	A-IC5.	A-IC5.	
16	A-IC6.	A-IC6.	
17	RQ-U4.	RQ-U4.	
18	RQ-C1.	S-2.	RQ-C1.
19	S-3.	S-3.	_
20	RQ-U5.	RQ-U5.	
21	RQ-U4.	RQ-U4.	
22	RQ-C4.	RQ-C4.	
23	RQ-U4.	RQ-U4.	
24	RQ-RR3.	RQ-U4.	RQ-RR3.
25	RQ-U6.	RQ-U6.	
26	RQ-19.	RQ-19.	
27	RQ-RS1.	RQ-RS1.	
28	S-3.	RQ-19.	S-3.
29	RQ-U1.	RQ-U1.	
30	RQ-RR3.	RQ-RR3.	
31	RQ-RR1.	RQ-U6.	RQ-RR1.
32	S-3.	RQ-U4.	S-3.
33	RQ-C4.	RQ-C4.	
34	RQ-U5.	RQ-U5.	
35	RQ-U4.	RQ-U4.	
36	A-EA6.	A-EA6.	
37	RQ-U4.	RQ-U4.	
38	RQ-U5.	RQ-U5.	
39	RQ-RR3.	RQ-RR3.	
40	RQ-U5.	RQ-U5.	
41	RQ-RR3.	RQ-RR3.	
42	RQ-C1.	RQ-U4.	RQ-C1.
43	RQ-RR3.	RQ-RR3.	
44	RQ-C1.	RQ-U1.	RQ-C1.
45	RQ-C7.	RQ-C7.	
46	RQ-RR3.	1	RQ-RR3.
47	RQ-U1.	RQ-U1.	
48	RQ-U6.	RQ-U6.	
49	RQ-U4.	RQ-U4.	
50	RQ-12.	RQ-C1.	RQ-12.
51	RQ-13.	RQ-U4.	RQ-I3.
52	RQ-RR2.	RQ-RR2.	
53	RQ-RR2.	RQ-RR2.	
54	RQ-U3.	RQ-RR1.	RQ-U3.
55	RQ-C1.	RQ-U4.	RQ-C1.
56	A-EA5.	A-EA5.	
57	A-EA5.	RQ-15.	A-EA5.
58	RQ-16.	RQ-16.	
59	RQ-17.	RQ-17.	
60	S-3.	A-EA6.	A-EA6.
61	RO-17.	RO-17.	

Citation	Encoder 1	Encoder 2	Revised code
62	A-EA6.	A-EA6.	
63	RQ-17.	RQ-17.	
64	RQ-C2.	RQ-U4.	RQ-C2.
65	RQ-C1.	RQ-C1.	
66	RQ-17.	RQ-17.	
67	RQ-01.	A-EA19.	RQ-01.
68	RQ-U8.	RQ-U8.	-
69	RQ-01.	RQ-01.	
70	A-EA6.	RQ-01.	A-EA6.
71	RQ-01	RQ-01.	
72	RQ-RS2.	RQ-RS2.	
73	S-3.	A-EA6.	S-3.
74	S-3.	A-EA7.	S-3.
75	A-EA6.	A-EA6.	
76	A-EA6.	1	A-EA6.
77	A-EA10.	A-EA10.	
78	RQ-U4.	A-EA1.	RQ-U4.
79	RQ-U8.	RQ-U8.	
80	A-EA1.	A-EA1.	
81	A-EA1.	A-EA1.	
82	RQ-U4.	RQ-U4.	1
83	A-EA5.	A-EA5.	
84	RO-U8.	/	RO-U8.
85	A-EA1.	A-EA1.	
86	A-EA12.	A-EA1.	A-EA1.
87	A-EA11.	A-EA11.	
88	A-EA12.	A-EA12.	
89	A-EA8.	A-EA8.	
90	A-EA7.	A-EA8.	A-EA8.
91	A-EA12.	A-EA8.	A-EA12.
92	A-EA7.	A-EA8.	A-EA7.
93	A-EA14.	A-EA14.	
94	A-EA14.	A-EA14.	
95	A-EA15.	A-EA13.	A-EA15.
96	A-EA15.	A-EA15.	
97	A-EA14.	A-EA14.	
98	A-EA5.	A-EA5.	
99	A-EA7.	A-EA7.	
100	A-EA18.	A-EA18.	
101	RQ-U5.	RO-U5.	
102	A-EA18.	A-EA18.	
103	RQ-U5.	RQ-U5.	
104	RQ-U4.	A-EA2.	RO-U4.
105	A-EA22.	A-EA18.	A-EA22.
106	A-EA21.	A-EA21.	
107	A-EA1.	A-EA1.	
108	A-EA3.	A-EA3.	1
109	RQ-U6.	RQ-U6.	1
110	A-EA2.	A-EA2.	1
111	RQ-U6.	RQ-U6.	
112	RQ-U6.	RQ-U6.	
113	RQ-01.	RQ-01.	1
114	A-EA1.	RQ-01.	RQ-01.
115	RQ-01.	RQ-01.	
116	RQ-U6.	RQ-U6.	1
117	A-EA7.	RQ-C3.	A-EA7.
118	RQ-03.	RQ-03.	
119	RO-05.	RO-05	1
120	RQ-02.	RQ-02.	1
121	A-EA15.	A-EA15.	

Appendix E: Codebook

Code I Code Name Description

Example

Frequency

Attitude	toward	ls internal commu	inication		
A-IC1.	of internal on	Satisfied with internal communication development	Being generally satisfied with internal communication and its development.	"I really do think that it has developed a lot. But in terms of communication with employees and so on, I would go for an 8 or so, even, because you really noticed that things have really changed in the last few years."	9
A-IC2.	development communicati	Satisfied with weekly news mail	Being satisfied with the weekly news mail sent in a "top-down" manner from management to employees.	"From my point of view, it's actually the case that we receive these weekly news mail, which actually provide a relatively high level of information as part of internal communication, at least from my point of view."	21
A-IC3.	Positive	Satisfied with communication channels	Being generally satisfied with the possibilities of current internal communication channels.	"So I think it's actually already relatively extensive and played across many channels."	8
A-IC4.	communication	Directional guide	Internal communication important for setting the strategic direction and bringing employees along.	"You also have to know in which direction a company is developing. Somehow we also need a bit of a navigation system so that everyone knows where the direction is. Do I have to go slightly right, slightly left, faster or not so fast? And internal communication is essential for this."	7
A-IC5.	f internal	Keep everyone informed	Internal communication important for bringing all employees up to the same information level.	"I have to know what's going on in the company, rather than just restricting your own little island there."	14
A-IC6.	Role o	Sense of belonging	Internal communication important for creating a sense of belonging to the company.	"[] you feel like you're part of everything, because you never know what's going on elsewhere. So a pure feeling of appreciation."	8
A-IC7.		Missing reminder	No reminder when new information is available.	"I don't even get to know when there's news anymore."	11
A-IC8.	ment	Unclear interaction of different communication channels	Many communication channels without a clear communication strategy.	"We simply have to learn a bit more that it is all used more uniformly and meshes better."	21
A-IC9.	tential for improve	Unconsidered content topics & target groups	Restrictions on content topics and user groups.	"So it's important to me that I'm also involved, especially because we don't just have one location, but I'm also interested in what's going on at the other locations. I think we could perhaps get a bit more out of that. I think that here and there the focus is a bit on the headquarter."	4
A-IC10.	Po	Lacking usability	Lack of user-friendliness in some channels.	"There's certainly still some catching up to do in one area or another, especially in terms of accessibility and usability."	6
A-IC11.		Lacking feedback to the company	Lack of "bottom-up" communication in terms of interaction with the company.	"That's pretty poor, because I'd say we already give away a lot of information, but we'd like to see more interaction."	4

Scope of employee app

S-1.	Specifying overall aim of the app	Being clear about and specifying the overall goal of the app.	"[] employee app is also such a relatively vague term. What's in it now? What is actually the goal of the whole thing? Do we want to inform employees or what is it?"	3
S-2.	Work-related communication	Using app for work-related topics.	"That you can perhaps post ad hoc: "I really have a bottleneck for tomorrow. Does anyone have someone who can support me? I have those and the requirements."	7
S-3.	Social & organizational communication rather than work- related	Using app for social and broader organizational topics rather than work- related topics.	"Yes, I also believe that you can hardly implement, I'll call it professional communication, with an app like that. But, I would say this, I would say a bit of social media for the company internally. That this is more the target area where the app could be used."	12

Requirement - Interactivity		Requirem	nent - I	nteractivity
-----------------------------	--	----------	----------	--------------

RQ-I1.	ntent	Level of UGC depends on aim of the app	How and to what extent user-generated content is included depends on the goal of the app.	"And if the goal is to keep employees as well informed as possible about things that are relevant to the company and they should always be up to date, then no one has to put their favorite recipe for roast pork in there. That's not of interest. When it comes to employee cohesion and social media, that's very much an issue."	2
RQ-12.	-generated co	Consuming OGC instead of posting UGC	Consuming content generated by the company instead of each user creating and publishing their own content.	"Yes, so I can also say from my side, I probably won't post anything in there. I would not think of any things and purely post. Maybe something "comment", but so generate content itself so not."	16
RQ-I3.	User-go	Posting UGC	Creating and publishing own content.	"Then partially post or repost things yourself."	5
RQ-I4.		Notice board	Sharing private topics while creating and posting individual content on the notice board.	"And the notice board that we currently have in Wiki is used very intensively. If you could include something like that, for example, I could imagine that it would attract many people to an app like this."	4
RQ-15.		Interaction & feedback functions	Including interaction functions like commenting, liking and sharing.	"So the possibility to react to something is definitely something I find very important. But I also think it's right to comment on things, to be able to comment."	16
RQ-I6.	ction	Limited interaction & feedback functions	Not including interaction functions such as commenting or liking.	"Commenting, I would say no. Because that brings too much risk to having any discussions within the company that could escalate with comments that you wouldn't have that way at another level."	8
RQ-I7.	Intera	Survey function	Including a survey function.	"But the whole issue of capturing employee sentiments could perhaps be mapped via this app by enabling surveys."	14
RQ-I8.		Anonymous & public feedback	Enabling anonymous as well as public feedback.	"That you have the opportunity to comment on things publicly []. On the other hand, there will certainly also be things that you deliberately do not want to do under your name."	3
RQ-19.	nication	Chat	Including a chat function.	"Or maybe even the possibility to communicate specifically via the app. So that you could somehow do without WhatsApp and iMessage and so on."	6
RQ-I10.	Private commu	No chat	Not including a chat function.	"I also see a chat, I also see critical, because I could imagine that then in such a chat at once also a lot of nonsensical stuff is written or any funny videos are shared, which otherwise run on WhatsApp or other things, which actually definitely not, not belong there."	9

Requirement - Content

RQ-C1.		Information about strategy, news, goals, services, events, personnel	Posting information about the company's strategy, news, products and services, events, personnel and customers.	"Then it's also interesting to see what the company is doing beyond that, perhaps "where would we like to develop?"	20
RQ-C2.	rated content	Information/ exchange to facilitate the daily work routine	Posting information that facilitate the daily work routine such as onboarding information, FAQ or video tutorials.	"You could also use it for onboarding. Especially to pick up new employees who are new to the company and help them find their way around."	14
RQ-C3.)rganizational-gene	Information about career, training possibilities, benefits & well-being	Posting information about open job offers or training possibilities, the sports program or other benefits.	"I also just thought of another benefit possibly that could be incorporated is the whole health management issue."	4
RQ-C4.	0	Information from the personnel office	Retrieving information about vacation requests and other personnel information.	"[] that you can then somehow look at vacation requests via app."	6
RQ-C5.		Information from the works council	Posting information from the works council perspective.	"[] but you could also use this as a works council medium"	3

RQ-C6.	8	Calendar	Including a calendar function.	"Maybe it would also be cool to have a kind of calendar	6
	nat			[]"	
RQ-C7.	OLI	Images &	Including images and videos.	"[] and be complementable by visual or video	3
	×.	videos		content."	

Requirement - Usability

RQ-U1.	lements	User-friendly design	Designing the app user-friendly with a simple interface.	"Yes, I think the handling, the usability, is simply important. That it's not totally overloaded, just intuitive. Apple-like, so to speak, in terms of use and self- explanatory."	16
RQ-U2.	esign e	Corporate design	Designing the app in the corporate branding.	"[] and at least recognizable in the corporate branding."	3
RQ-U3.	De	Newsfeed	Designing a newsfeed showing newest information.	"[] I really imagine, like such a tape, which represents just again and again new news []"	5
RQ-U4.		Centralizing information	Bundling information/news from different channels.	"In principle, the app should include all the information that we use on other channels for communication."	23
RQ-U5.	y features	Connecting other systems	Connecting other systems such as the company's brand shop or the meal ordering system.	"The company store, you could still bring that in there."	20
RQ-U6.	sabilit	Push messages	Including push messages.	"And just a feedback from the system when something new is set."	17
RQ-U7.	n	Translation function	Including a translation function to enable different communication	"One point I saw there that I found very interesting was the translation function."	6
RQ-U8.	access	Providing app for different platforms & versions	Providing app consistently for different platforms/devices and in different versions.	"So it would definitely have to run on all devices."	18
RQ-U9.	Simple	Connecting employee directory database	Connecting the global employee directory database to simplify access.	"But while we're on the subject of own profile and so on, of course the requirement would be with the, with the data from the Active Directory []"	5
RQ-U10.	Performance	General performance features	Enabling general performance features such as short loading times and performance tracking.	"[] some tracking of your, your users, your operation of the app []"	3

Requirement - Rights & Roles

RQ-RR1.		Flexible,	Configuring newsfeed, notifications	"Yes, so now if we go over the topic of notifications,	17
		user-based	and reachability individually.	which we just had now, that you can turn those on as	
	_	configuration		well as, or enable and as well as disable."	
RQ-RR2.	tio	Flexible	Configuring multiple authors and	"Maybe it would also be interesting that you, that you	10
	ura	configuration	different recipient groups.	can have different authors."	
	ffig	of author &			
	00	recipient groups			
RQ-RR3.	Ŭ	Configuration	Configuring different categories	"I would differentiate there in the categories."	8
		of different	according to subject areas or		
		categories	departments.		

Requirement - Reliability & Security

RQ-RS1.	acy	Confidentiality & privacy	Ensuring confidentiality and data protection.	"You would have to check again how to treat certain information that may have a confidentiality level confidentially, so to speak []"	9
RQ-RS2.	Priv	Privacy concerns	Arising privacy concerns in relation to app use.	"Because I also see the difficulty, I already see it now, so, yes, that is my private cell phone. I think that will be the biggest hurdle."	7
RQ-RS3.	ntrol	No control over smartphone use	Not possible to control app use on the smartphone.	"[] I can't monitor with simple means whether he is using his smartphone for private communication or only for internal company communication with my smartphone."	4
RQ-RS4.	ŭ	Selective use of read confirmation	Using the read confirmation function only selectively.	"So for such important information I think such a read notification might be quite useful, but not everywhere."	3

Requirement - Service

RQ-S1.	ance	Community manager	Assigning a person who will be the leading manager of the app.	"But maybe you'd really have to hire someone to do that."	9
RQ-S2.	laintens	Low maintenance	Buying the app rather than developing internally. Only providing helpdesk	"Because that ties up an insane amount of time and resources []"	2
	N	internally	internally.		

Requirement - Organizational

RQ-01.		Voluntariness	Ensuring voluntary use.	"I can't force anyone to do that, ultimately."	13
RQ-02.]	Use during	Ensuring use during working hours	"Well, I also find it critical if we were to block ourselves	7
	ne	working hours	rather than only in free time.	during working hours, because this is also a platform	
	outi			that relates to the company []"	
RQ-03.	kr	Not taking up	Ensuring that app is not taking up too	"So if it doesn't exceed a certain level that's perfectly	12
	VOL	too much	much working time.	fine."	
	ly v	working time			
RQ-04.	dai	Revising	Revising the operation agreement by	"And another thing that is problematic today is the	3
	Ito	operating	reformulating smartphone use during	company agreement, you can certainly get at that."	
	n i	agreement	working hours.		
RQ-05.	atio	Selective use of	Using push messages only selectively	"And push messages of course always have the danger	4
	egr:	push messages	and carefully.	that someone is then also kept away."	
RQ-06.	Int	Selective use of	Using comment function only	"So at one point or another, it might really make sense if	2
-		comment	selectively and carefully.	you can really use it selectively."	
		function			

Attitudes towards employee app

A-EA1.	ors	Strong relevance & added value	Need to ensure strong relevance and added value.	"I think it is only used when it is really relevant."	24
A-EA2.	ccess facto	Strong frequency & actuality	Need to ensure strong frequency and actuality.	"As long as the information content is regularly updated accordingly."	16
A-EA3.	tical su	High acceptance & use	Need to ensure high acceptance and use.	"And this app will only serve its purpose if, let's say, 95 percent of employees actively use it."	10
A-EA4.	Crit	Interaction	Need to ensure interactivity.	"That you act in any case. Otherwise, it looks like a one- way street."	7
A-EA5.		Reaching all employees	Can reach all employees.	"Something interactive like that would perhaps, yes, reach the employees better, I'd say."	17
A-EA6.	ommunication	Not completely replacing existing communication software	Cannot completely replace other communication software such as documentation or collaboration systems.	"such an app probably could not put down a Jira, a Teams and something like that. Just for reasons of complexity."	13
A-EA7.	internal o	Increasing level of information knowledge	Can increase the level of information knowledge.	"Because after all, yes, if you really summarize the info, there you are always informed."	10
A-EA8.	tion to	Increasing usability	Can increase the usability of consuming IC.	"Although I think that via an app, so really, you'd probably get another look in quicker. "	11
A-EA9.	ntribu	Increasing transparency	Can increase transparency.	"So, that creates ,yes, first still creates transparency."	6
A-EA10.	C	Not changing IC significantly positive	Not able to change IC significantly positive.	"But basically the overall communication would probably not change significantly."	5

4		a	a		0
A-EA11.		Strengthening	Can strengthen the relationship	"And then, especially for new employees, I think this is	9
		relationship	between the company and its	definitely an opportunity to bring them into the	
		between	employees.	company more quickly and perhaps also to bind them to	
		company		the company with a higher probability."	
		& employees			
A-EA12.		Not decisive	Cannot strengthen the relationship	"[] if you can't identify with the company, then the	8
	=	for relationship	between the company and ist	app won't help either "	-
	ţi,	hetween	employees	upp won theip ender.	
	liz:	company &	employees.		
	gar	company &			
	or	employees			
A-EA13.	ith	Strengthening	Can strengthen the relationship among	"In the emotional sense, so feeling connected with	13
	M	relationship	colleagues.	colleagues, it certainly has the possibility to promote	
	ioi	among		that."	
	icat	colleagues			
A-EA14.	fif	Not	Cannot strengthen the relationship	"But basically. I don't think connecting with each other	6
	der	strengthening	among colleagues	is necessarily the primary use case for such an app "	-
	Ē	relationshin	among concugues.	is necessarily the printing use cuse for such an upp.	
		among			
		antong			
		coneagues			
A-EA15.		Strengthening	Can strengthen the sense of belonging	"I would also say that you can strengthen employee	8
		sense of	to the company.	loyalty a bit more, and perhaps also this "we" feeling."	
		belonging			
A-EA16.		Not missed yet	App has not been missed yet.	"Until now, it wasn't on my radar, nor was it necessary."	7
A-EA17.		Greater	Young people are more likely to use	" I believe that this is also due to the fact that the	4
		acceptance by	the app than older people.	younger the employees become, the more accepted it	
		vounger than		is."	
		older people			
A-FA18		Interest in using	Expressing interest in using the app	"[] as it is currently presented and if that is how it	20
A-LAIO.		the app	Expressing interest in using the app.	works then I would definitely use it "	20
4 5 4 10		uie app	NT / 11 / 1 / 1		
A-EA19.		No complete	Not everyone will accept and use the	"No, I don't think we want to achieve a 100 percent	0
		acceptance &	app.	quota, but I think it's only effective if we achieve a very	
		use		high quota."	
A-EA20.	9	Optimizing	Optimizing already existing	"But maybe that you also use the things you have now	10
	anc	current tools	communication tools with respect to	for the time being."	
	pet	rather than	requirements instead of creating a new		
	ce	implementing	app.		
	V	new app			
A-EA21.		Consistent with	Introducing an EA is consistent with	"Yes, above all, I believe that in our position, the service	5
		company's	the service portfolio and direction of	we provide we would definitely build the bridge to do	2
		direction	the company	something like that "	
		Billed	are company.		
A-EA22.		Right time	It is the right time to introduce an	"Yes, if, then now. So 10! So in terms of timing."	6
		for app	employee app.		
		introduction			
A-EA23.		Not right	It is not the right time to introduce an	"I think right now would not be the right time for me."	8
		time for app	employee app.		
		introduction			

Appendix F: Quotes

[1] "And in general, the fact that you are kept up to date on a weekly basis is actually great. And, well, I have to say, I'm actually very satisfied with it." (Works council, participant 3, male)

[2] "So it's important to me that I'm also involved, especially because we don't just have one location, but I'm also interested in what's going on at the other locations. I think we could perhaps get a bit more out of that. I think that here and there the focus is a bit on the headquarter." (End user 1, participant 3, female)

[3] "But what we really lack is the feedback channel. And in that respect, we're rather dissatisfied." (Management, participant 2, male)

[4] "Yes, you're, I think you're very quickly on the subject, because employee app is also such a relatively vague term. What's in it now? What is actually the goal of the whole thing? Do we want to inform employees or what is it?" (Management, participant 3, male)

[5] "That means you also have to make a clear distinction between private and business matters. I think that's very, very important, because otherwise they get mixed up. And then we end up with such chatter groups, where somehow 50 percent is blah and 50 percent is important." (End user 3, participant 5, male)

[6] "[...] no business-relevant communication, but really just private things like that. Communication, marketing communication and employee retention communication, all of that. So, from a marketing point of view, communication [...]. So, as I said, I just think that only private or social communication could somehow be mapped in such an app [...]" (End user 1, participant 4, male)

[7] "And if the goal is to keep employees as well informed as possible about things that are relevant to the company and they should always be up to date, then no one has to put their favorite recipe for roast pork in there. That's not of interest. When it comes to employee cohesion and social media, that's very much an issue." (Management, participant 3, male)

[8] "Yes, so I can also say from my side, I probably won't post anything in there. I would not think of any things and purely post. Maybe something "comment", but so generate content itself so not." (End user 1, participant 4, male)

[9] "But to have the possibility to react to it and best-case even to get into dialogue with the person to discuss and improve the situation, that's what I would like to see." (Management, participant 4, male)

[10] "Commenting, I would say no. Because that brings too much risk to having any discussions within the company that could escalate with comments that you wouldn't have that way at another level." (IT, participant 4, male)

[11] "So, if you could do questionnaires like that, employee surveys, anonymously, that would be pretty, pretty cool. And a pretty strong and powerful gimmick for, for HR, I think." (Marketing, participant 3, male)

[12] "But I can imagine that if you only work in a certain area, you somehow have a very big focus on your own, your own area. But then it's also interesting to see what the company is doing beyond that, perhaps where would we like to develop." (End user 1, participant 3, female)

[13] "I can also think of another possible benefit that could be incorporated is the whole issue of health management. So that you might somehow add modules or somehow call them up again and say: So, here's a little break, break yoga assignment [...]." (Marketing, participant 2, female)

[14] "But you could also use this as a works council medium to simply say: Here's some interesting news. Perhaps even legal news that may not have anything to do with the company at the moment but may be interesting from a general legal point of view." (Works council, participant 4, male)

[15] "So, the prerequisite is that, that does not duplicate itself everywhere. Otherwise, I'll never need the app if I know I've already seen it on Facebook, Xing or elsewhere." (IT, participant 4, male)

[16] "But of course it has to be ensured that I can replace certain channels with it. So, what I have in our employee area so far from the website would have to be prepared in a certain way so that I can then manage to bundle the whole thing in this app [...]." (End user 3, participant 5, male)

[17] "I have to get it actively. So, the illusion of 'people are all so insanely interested and care about getting the latest news all the time,' that's at most in the grapevine channel." (IT, participant 4, male)

[18] "Yes, so if we now go over the topic of notifications, which we just had, that you can both on and, or activate and also deactivate. That is, if I'm on vacation, that I then not, and would like to have my peace, that then not all information always comes over." (Works council, participant 4, male)

[19] "Yes, of course, clustering like this also makes it possible to somehow give leaders or managers from each location extra access to the app, so that they can perhaps pass on information about the location." (Marketing, participant 2, female)

[20] "Because I also see the difficulty, I already see it now, so, yes, that is my private cell phone. I think that will be the biggest hurdle." (End user 3, participant 2, female)

[21] "And I also don't know how you want to control whether someone uses their cell phone a lot in their private life or whether they really use the employee app effectively." (Works council, participant 4, male)

[22] "I don't think it's going to be filled, because if nobody feels responsible for it." (End user 1, participant 5, female)

[23] "You would really have to assign someone to simply observe what is happening there in order to catch it." (Marketing, participant 2, female)

[24] "It is the basic requirement to be able to do such things in a meaningful way. [...] But in the long run, someone has to maintain it and fill it and also see it as a self-understanding that you should do that." (Management, participant 3, male)

[25] "So, if it doesn't exceed a certain level that's perfectly fine. But if we put comments and likes [...] and a lot of these time-destruction possibilities in there, then you should think about it. Then that would tend not to be working time." (IT, participant 4, male)

[26] "So, I think if you reduce it to the fact that it's not social media-related [...], but it's about the matter at hand. [...] Then there won't be such a quick discussion about whether this is working time and why he wrote it. But if the person posts his pork belly recipe and then it is discussed for three hours, then it leads to nothing. So maybe that's great employee cohesion, but then we'd probably rather veto it." (Management, participant 3, male)

[27] "[...] I'm also unsure now, is it now one more channel or is it really helpful? So, this added value, yes. If that's not there, then it's difficult to classify it in the channels that we already have [...] But it can go in both directions. Can really improve something for our work. But it can also be a burden, and then there's one more channel." (End user 3, participant 4, male)

[28] "And this app will only serve its purpose if, let's say, 95 percent of employees actively use it. And that's where I think the biggest difficulty lies. And the question is how to keep this app alive with content so that all employees stay on board." (Marketing, participant 3, male)

[29] "Yes, as long as it enables you to interact. So, if it's closed, if you don't have the possibility to comment, to like or to chat or something, then it doesn't bring much. But if you can exchange yourself. Because I think that's also exciting." (End user 1, participant 2, male)

[30] "So now I also find the idea charming that you can simply include employees who don't have a computer with us in a company. We always have problems with non-permanent employees, with assistants, etc., but they also have to be informed." (Marketing, participant 2, female)

[31] "Everyone uses a smartphone, and those who are only there until noon that day, or only at the beginning of the week, or only every two weeks, may be better informed as a result." (End user 3, participant 2, female)

[32] "From the point of view that we, that the, yes the channels, the current channels would improve a little bit perhaps or would bundle. But basically, would probably not change the overall communication significantly." (IT, participant 3, male)

[33] "[...] even if there are ways of capturing a certain basic mood and counteracting it, that can of course also have a very great advantage in maintaining relationships between colleagues, among colleagues, but also between management levels and employees. Absolutely." (Marketing, participant 3, male)

[34] "So I think I'd rather give it a 6, because if you can't identify with the company, then the app doesn't help anymore." (End user 2, participant 3, female)

[35] "If you like the company, you'll use 10 programs and 10 channels. If you don't like the company, I don't think anything will change. It's a matter of attitude. I don't find the company hipper or cooler, or come closer to the management as a result." (End user 2, participant 5, male)

[36] "If it's a pure info app [...] then that will be limited. Then it won't have no effect at all, because people will see that a discussion is taking place [...]. But that has a different quality for the employees than sharing their recipes or saying how great the last vacation was." (Management, participant 3, male)

[37] "And I think, but I think after that, the way it's currently presented and then if that's how it works, I would definitely use it." (Works council, participant 3, male)

[38] "The real answer is probably very common in the beginning. And the older the app gets, the less people will use it, so, I'll probably use it." (IT, participant 4, male)

[39] "Sure, it's not ready right away, but right now, when everybody is getting familiar with the digital means and so, then, I say, the willingness to still get familiar in the digital means is maybe higher than if you introduce it in 3, 4 years or so." (End user 1, participant 4, male)

[40] "If there was an employee app added to it now, I think there would be, so I don't think the acceptance would be too great. Not even for me. I think right now would not be the right time for me." (End user 2, participant 2, female)
Appendix G: Prioritization of requirements for an employee app

High Priority	Medium Priority	Low Priority	Excluded
Interactivity - Consuming OGC - Like function - Comment function - Survey function Content - Information about strategy, news, goals, services, events, personnel, customers	Interactivity - Open/anonymous feedback Content - Information/ exchange to facilitate the daily work routine - Images & videos - Information from the personnel office	Interactivity - Notice board Content - Information about career, training possibilities, benefits & well-being - Information from the works council - Calendar	Interactivity - Posting UGC - Chat function
 Usability User-friendly design Corporate design Newsfeed Centralizing information Connecting other systems Push messages Providing app for different platforms & versions Connecting employee directory database Performance features Rights and roles Flexible, user-based configuration Flexible configuration of authors and recipient groups Configuration of different categories Reliability and security Confidentiality & privacy Service Community manager Voluntariness Use during working hours Revising operating agreement 	Usability - Translation function Service - Low technical maintenance within the company Organizational - Not taking up too much working time - Selective use of comment function - Selective use of push messages	Reliability and security - Selective use of read confirmation	