Good bot vs. bad bot: Opportunities and consequences of using automated software in corporate communications

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Purpose – The paper attempts to lay a foundation for research on the use of bots in corporate communications. The first step is to identify opportunities and challenges that may offer starting points for future regulations.

Design/methodology/approach – In this research project, expert interviews were conducted in the form of guideline-based telephone interviews. A total of ten experts from the scientific community and experts from the practical field were interviewed. Following this, a qualitative-reductive content analysis was conducted with the aim of building categories and hypotheses based on them.

Findings – The results show that experts from the scientific community and practical field clearly see advantages for corporate communications, but also highlight hurdles and ethical challenges that are currently seen as a major barrier to the use of bots. In this context, experts mention, among other things, the assumption of structured routine tasks, ensuring efficiency and quality in corporate communications, cost efficiency and relieving employees. On the other hand, weaknesses, like the lack of transparency, data protection and loss of control arise. Results clearly show that the ethical perspective has to be taken into account. In this context, data protection, the question of responsibility and possible manipulation intentions are particularly worth mentioning.

Research limitations/implications – The study provides a first insight into the field of bot types used in corporate communications. Future research should examine e.g. the acceptance of bots among corporate communications practitioners and the challenges for the implementation of bots. Quantitative approaches would enrich and complement the findings.

Practical implications – The results show the opportunities that the use of bots opens up in corporate communications. At the same time, the challenges demonstrate that there must be general rules for handling automated software in companies in order to meet both customer needs and employee concerns.

Originality/value – The article presents the first study in corporate communications that deals with bots of all kinds in this field and examines their use from both a scientific and practical perspective. Furthermore, the results of the exploratory study show that there are two sides of the same coin when it comes to the use of bots. Apart from the advantages and opportunities, the associated risks have to be taken into account. Therefore, this paper provides implications for practitioners working in corporate communications.

Keywords – Bots, Automated Software, Artificial Intelligence, Corporate Communications

Introduction

Digitalization continues to advance at an enormous speed. People are able to network with each other everywhere and access information in seconds. This is also changing the way companies communicate with their stakeholders. While one-way communication or communication via mass media has long been the main component of corporate communication, there is now more and more dialogue between stakeholders and companies (Stieglitz and Wiencierz, 2019). In order to meet the growing demands of stakeholders, companies increasingly rely on automation and new technologies such as artificial intelligence (AI) in communication as well as in other functional areas (Stieglitz and Wiencierz, 2019). Algorithms can help to personalize communication by analyzing the communication behavior of stakeholders. Content can be adapted and delivered in a custom-fit way (Klewes *et al.*, 2017).

A form of this personal approach is already taking place in many companies via so-called bots, for example in customer service. *Deutsche Telekom AG*, for example, uses *Katy* and the airline *KLM Royal Dutch Airlines* makes use of *BB* to quickly enter into dialogue with their customers and clarify their concerns. Communication practitioners are increasingly attributing a high relevance to AI for their work (Zerfass *et al.*, 2016). As a result of a lot of negative reporting in the past bots are under the suspicion to have been used to manipulate public opinion and disrupt information dissemination to influence political relevant events such as elections (e.g. Bessi and Ferrara, 2016). For this reason, doubts have spread, not only among citizens but also among communication practitioners, about the use of bots and AI in communication. Some even speak of "AI anxiety" (Galloway and Swiatek, 2018, p. 736). This is accompanied by questions about uniform legislation and ethical rules for the use of AI.

There is a lack of a differentiated examination of the phenomenon of bots in corporate communications in order to be able to classify how bots can help corporate communications in practice, but also to sound out what consequences have to be taken into account when using them. For this reason, the research-guiding question of this paper is: *What opportunities and risks arise from the use of bots in corporate communications?*" In order to answer this question, the practice of using bots was examined more closely with the help of a qualitative approach. The aim was to identify the types and purposes of bots, but also to include the practical and ethical consequences in a holistic view.

Theoretical Background

Definition of Bots

To approach the topic, it is important to clarify what is meant by the term *bot*. Although research has only recently begun to deal with the phenomenon of bots, the technology was developed as early as 1966. The first bot technology is considered to be the computer program *ELIZA*, which was developed by Joseph Weizenbaum at MIT and served as a forerunner of the chat bot (Shum *et al.*, 2018). It was used to imitate the conversation style of humans by comparing patterns and using a ready-made script. AI in this context was first used in the 1990s (Boiano et al., 2018). Based on this, Richard Wallace expanded pattern matching and created *A.L.I.C.E.* This chat bot was able to simulate language in an even more natural way (Shum *et al.*, 2018). With the emergence of the Internet, *Jebberwacky* finally had access to a database of thousands of human interactions (Boiano et al., 2018). Since the early 2000s, chat bots have

also been able to learn from conversations with humans (Boiano et al., 2018). Chat bots can therefore be considered as the pioneer of bots. They are a "machine conversation system which interacts with human users via natural conversational language" (Shawar and Atwell, 2005, p. 1). They thus focus on one-to-one communication (Hofeditz *et al.*, 2019).

In the meantime, so-called Intelligent Personal Assistants (IPAs) have found their way into people's households. These include *Siri* from Apple, *Alexa* from Amazon or *Cortana* from Google, for example. In particular, the challenge for such IPAs is the fact "that they must work well in many open domain scenarios as people learn to depend on them to manage their work and life efficiently" (Shum *et al.*, 2018, p. 11). Bots are thus increasingly becoming an integral part of everyday life, and with this comes a greater examination of the opportunities offered by their use, but also of the consequences that the technology brings with it.

The high level of skepticism towards bots is mainly due to social bots. Social bots are applications that automatically produce content and interact with humans on social media, trying to emulate and possibly influence human behavior (Ferrara *et al.*, 2016). Through the automatic production of content, social bots are able to leave comments or distribute likes in social networks. For this reason, they are suspected of having played a manipulating role in the US election campaign in 2016. While social bots could be easily exposed at that time, it is becoming increasingly difficult to determine whether an account is backed by a bot or a human being as technology develops (Haller, 2017). This raises the question of necessary labelling and, above all, uniform rules for handling the technology.

Chat bots are already frequently used by companies in customer service. In 2017, Business Insider reported that 80 percent of companies already use a chat bot or plan to introduce one by 2020 (Nguyen, 2019). Besides social bots, they can be seen as the most common types of bots. But there are many more technologies that belong to the genus "bot". Harringer currently distinguishes 13 types: web crawlers, monitoring bots, impersonators, messenger bots, scrapers, spammers, hackers, botnets, chat bots, social bots, transaction bots, editing bots and assistant bots (Harringer, 2018).

Table 1

Web Crawlers (Search engine spiders)	Programs that move through the net and websites index them to make them available for search queries. Their main purpose is to collect information.
Impersonators	Bots that disguise themselves and collect passwords.
Monitoring bots	Programs that monitor and control the functionality of software.
Chat bots	Text-based dialogue systems programmed to imitate human speech. It examines the input of users and provides answers and (re)questions, using routines and rules. One main application area is customer service.

Messenger bots	Messenger bots are communication modules on messenger platforms and are often seen as a subtype of chat bots
Scrapers	Automated software that collects e-mail addresses from websites.
Spammers	Programs that flood websites with advertising to divert traffic and generate clicks.
Hackers	Automated software that attacks websites and places malware.
Botnets	Large number of computers that have been infected with automated malware and are used centrally controlled for decentralized attacks.
Social bots	Simple social bots monitor the flow of information on platforms in order to then send out ready-made contributions on key terms. Social Bots are algorithms that can perform predefined tasks as (semi)automated agents. They often pretend to be a real person and try to influence the formation of opinion.
Transaction bots	Software that interacts with external systems to transfer data from one platform to another. They are used in the automation of business processes.
Editing bots	Were created for Wikipedia and facilitate the work of the platform.
Assistant bots	A kind of generic term for bots that combine several tasks in one software and are used for several of the mentioned purposes.

1 Different Types of Bots (Harringer, 2018; Gumz and Mohabbat Kar, 2016; Kind et al., 2017)

In order to provide a basis for what constitutes technology, the following definition should form the foundation of this work:

Bots, a phenomenon of the Internet, are computer programs written by humans, which, for example, collect data independently, depending on their purpose, disseminate information, communicate and interact with other users (Gumz and Mohabbat Kar, 2016) They can thus be described as software that automatically or with minimal human intervention (Harringer, 2018) executes commands, responds to messages or performs routine tasks.

Media and digital ethics

Bots therefore act autonomously to a certain degree and can automatically conduct conversations or perform actions. In addition, IPAs or chat bots, which are now the first point of contact in many interactions between stakeholders and companies, give them direct access to people's everyday lives (Shum et al., 2018). Again and again, ethical risks resulting from the use of (social) bots are the main topic of discussion. Ethical concerns are, on the one hand that it is difficult for users to tell the difference between human and bot. This scares many people. On the other hand, there are no uniform rules and laws on how to deal with big data, AI and bots. Scientists are therefore calling for new ethical rules in PR (Roettger and Wiencierz, 2018). Codes and guidelines already exist for most areas of public communication (Wiencierz *et al.*, 2017). However, only 24 percent of companies have formulated standards for digital ethics (PwC, 2020).

In 2019, Beck dealt with the three functional levels of media ethics (Debatin, 1997, 1999) and related them to ethics in online communication. The three functional areas include knowledge, freedom and identity (Beck, 2019). Central to the area of knowledge are practices that are oriented towards the value of truth. At this functional level, the focus is on the transparency of selection processes, for example through search engine optimization, on targeted disinformation and the authenticity of texts, and on authorship. With regard to bots that communicate on the basis of algorithms, quality assurance and credibility face increasing problems (Beck, 2019). The area of freedom refers to the free and equal access to communication, which often collides with the security aspect (especially in the case of child and youth restrictions). The desire for security also interferes with freedom on the Internet when authorities have content (e.g. Hatespeech) removed (Beck, 2019).

The level of identity includes playing with different identities and responsibility for actions on the Internet (Beck, 2019). This is particularly relevant for dealing with bots. The question arises whether users need to be informed that they are not talking to a human but to a bot. In addition, another central question is who is ultimately responsible for the actions of virtual assistants. A challenge in the area of the ethical evaluation of bots is therefore whether bots are seen as actors in the communication process, or whether they are seen as a medium (Beck, 2019).

An initial approach to the formulation of ethical guidelines for strategic communication has so far only been available for Big Data. Wiencierz and colleagues derived ten guidelines for dealing with Big Data applications in corporate communications from existing codes (Wiencierz *et al.*, 2017). The first four refer to transparency regarding the intention to use data: what should be communicated about Big Data's applications in the company. The other six points deal with the question of how communication on autonomous applications should be designed. This includes values, standards and laws as well as sincerity, openness and truthfulness (Wiencierz *et al.*, 2017). However, in order to formulate such guidelines for bots in corporate communications, it makes sense to first identify which bots are used in corporate communications to develop coordinated guidelines that can be used in a targeted manner in communication. For this reason, the study asks about the different types of bots on the one hand and the different consequences of their use in corporate communications on the other. Accordingly, the first research question is:

RQ1. What types of bots are used for which purposes in corporate communications?

Literature review

In contextualising the debates about bots there is evident ambiguity and differing interpretations of what the opportunities arising from the exploitation are and what risks they entail. The research on bots in the broader realm of communication and information management is quite diverse. Much of the literature available to date relates to the use of bots in political discussions, the dissemination of fake news and the manipulation of expressions of opinion in social networks (e.g. Bessi and Ferrera, 2016; Gumz and Mohabbat Kar, 2016; Kind *et al.*, 2017; PwC, 2017) – fields that particularly promote a negative connotation of bots. Bessi and Ferrera (2016) pointed out that during the presidential election in America in 2016, over 400,000 social bots were responsible for more than one-five of total Twitter posts. In the Ukrainian crisis of 2014, a social bot network with 15,000 active Twitter accounts and 60,000 tweets was identified. The accounts spread false information and disguised themselves by also talking about everyday topics (PwC, 2017). On top of the potential to influence opinions during political debates and to spread misinformation, social bots are assigned other dangerous potentials. For example, the areas of effect range from the distortion of statistics when evaluating data in social networks to cyber warfare and white-collar crime (Kind *et al.*, 2017). They are considered so dangerous because often bots do not stand out as automation as they steal identities from real users, adopt usernames that resemble real ones or use user-related data for themselves (Ferrera *et al.*, 2014).

Although this is a major topic in the public debate, research in the field of corporate communications has only marginally addressed this issue. It is only recently that the topic of AI or Big Data seems to have gained in importance.

As mentioned before, the view of bots is mainly negative. This negative connotation is continued by the risks that practitioners in corporate communications see in the use of bots (e.g. Bourne, 2019; Kember, 2002; Kuenzli, 2019; Wiesenberg and Tench, 2020). One of the concerns is that the use of bots could result in the loss of jobs. Bourne (2019) explains that in corporate communications this could affect mainly junior positions and technical communicators. However, dissenting voices note that jobs need to be redefined (Chui *et al.*, 2015). In addition, experts point out that not all tasks can be performed by bots. These include creative activities and those that involve empathy (Chui *et al.*, 2015).

Furthermore, both Wiesenberg and Tench (2020) as well as Kuenzli (2019) note that practitioners are concerned that the use of bots can lead to reputational damage. The reasons for this are seen primarily in possible errors within the system, insufficient data protection and a lack of differentiation in communication through the bot. Companies are also concerned that not every customer wants to communicate with a bot (Kuenzli, 2019). In addition to these, ethical concerns are often cited that prevent the use of bots in corporate communications. Wiesenberg and Tench (2020) state that over half of all communicators surveyed in their study see ethical challenges in working with social bots. This is consistent with the findings of Zerfass, Verhoeven, Moreno, Tench, and Verčič (2020). They show that practitioners see the greatest ethical challenges in the use of "bots to generate feedback and followers on social media" (Zerfass *et al.*, 2020, p. 17).

According to Coleman (2018), however, the question is not only whether to use a bot or not, but above all the ability of such a tool to act and the purpose for which it is used. It is particularly important that the bot identifies itself as such and does not pretend to be human (Coleman, 2018; PwC, 2019). Moreover, the company has to ensure that the interlocutor gains trust in the bot. Transparency is the keyword here. It must therefore be disclosed what data is collected, how it is stored and what happens to it (Vermeer *et al.*, 2019; Wiencierz *et al.*, 2017). To this end, voices are becoming louder that ethical principles cannot be ignored alongside the efforts of the PR profession to grow through bots (Gregory, 2018). Both developers and companies should take responsibility for the bot (Jonas, 2018).

A possible solution to educate organizations about the ethical use of bots would be training in communication ethics. Based on the results of the European Communication Monitor 2020, however, it can be concluded that there is still some catching up to do for communication professionals (Zerfaß *et al.*, 2020). Another solution offers a recognised bot code. Though, there is currently no such a code that shows what a bot must be like in order to be or act ethically. As mentioned before only Wiencierz, Berger, Roettger and Wietholt (2017) present an initial approach to how corporate communications can succeed in dealing with Big Data in a trusting manner. This is based on existing codes as well as their own research results and consists of ten ethical guidelines.

In addition to challenges of various natures, studies also show that the use of bots in corporate communications can make sense and offer advantages. Kaelbe (2018), Kuenzli (2019) as well as Yaxley and Theaker (2018) see the benefits of bots especially in repetitive tasks. This allows communicators to focus more on strategic ones (Bourne, 2019; Kuenzli, 2019) and those that require creativity (Yaxley and Theaker, 2018). Other reasons for using bots are cost efficiency (Kuenzli, 2019; PwC, 2019), constant availability (PwC, 2019), faster task completion (Kuenzli, 2019; PwC, 2019) and the occupation of several global spaces at the same time (Kember, 2002). Furthermore, there are many different task areas in which bots can be used. The duties taken on range from processes that still require human assistance to ones that the bot can perform completely independently (Kaelble, 2018). It becomes clear that chat bots and social bots are the most commonly used types here as well. Wiesenberg and Tench (2019) found out that social bots are mainly used in strategic communication to respond to posts, to comment on them and to identify and track opinion leaders.

In crisis communication, social bots can also be used, for example, to search for misinformation and keywords or to issue emergency warnings via social media (Hofeditz *et al.*, 2019). In addition, they can also be used in order to answer questions about crisis situations (Hofeditz *et al.*, 2019).Gentsch (2018) describes some possible applications of chat bots. For example, the activities can range from media and content management to internal communication and assistance tasks in the communication between different companies or consumers. Besides the use in customer service, such a bot can also be useful in the marketing area. Chat bots can act as personal assistants, signposts and entertainers (Neff and Nagy, 2011).

By specifying bots for individual sub-areas of corporate communications, the literature available to date also shows general areas of application in this professional field. For example, bots can be used for tasks in the areas of analytics, data management and monitoring (Valin, 2018). Moreover, they can help to design the customer journey in line with the company's communication goal for the customer and publish important information at the right time

(Kaelble, 2018). This also includes the fact that bots can generate personalized content for a company's stakeholders (Hoewner, 2017). Bots are considered particularly valuable for such journalistic work, since they can share their information in different networks (Anderson, 2017). Schatsky, Muraskin and Iyengar (2016) also show that bots can independently extract and process information from audio, video or text material.

Although bots are estimated to be able to save working time primarily in data collection and evaluation as well as in stakeholder communication, and both scientists and communicators regard them as an achievement, companies have so far hardly used (social) bots (Wiesenberg and Tench, 2020; Buente, 2018; Zerfass *et al.*, 2017).

All in all, it is clear that studies on the use of bots in corporate communications and their areas of application have so far remained very selective and therefore reveal major research gaps. The present study claims to contribute to closing some of these gaps. In order to sharpen the view on the chances and consequences of bots, especially from the less considered perspective of corporate communications, the second research question is:

RQ2. What are the consequences of using bots in corporate communications from a scientific and practical perspective?

Method

Qualitative research approach
In order to answer RQ1 and RQ2, a qualitative approach was chosen to achieve a high level of insight in a field that has been little explored to date and to get as much detail as possible. Due to the knowledge potential (Blöbaum *et al.*, 2016) and to obtain individual, subjective assessments (Brosius *et al.*, 2016), expert interviews were conducted in the form of guideline-supported telephone interviews.

Operationalization
The focus of the guidelines was closely related to the literature review: types of bots, (future) application possibilities and consequences of using bots in corporate communications were the main topics within the interviews.

The expert interviews were operationalized by an interview guideline. It was based on the two research questions, which each represented a separate set of topics and divided the main part of the interview guideline into following blocks: (1) types of bots and their purposes in corporate communications and (2) consequences of the use of bots from a scientific and practical perspective.

Selection of respondents
The respondents were selected by a quoted sample. A sampling plan ensured that on the one hand experts with particularly important characteristics were included in the sample, while on the other hand it was designed to be open and flexible in order not to jeopardize unexpected findings with a bounded approach. The cases were deliberately selected to reflect the heterogeneity of the field as comprehensively as possible (Doering, 2014).

The final sample included ten experts representing two main groups of people: experts from the scientific community with a research focus on media communication and business informatics (n=2; expert r1&r2) and experts from the practical field (n=8; expert p1-p8). The names of the persons interviewed were made anonymous at their request. In order to make the respective affiliation visible, the experts from research will be called expert r1&r2 in the following, the experts from practice p1-p8.

Among these were practitioners from the service sector: a Managing Partner of an agency for communication and innovation, a Managing Director of a service provider in the field of automation and AI and a Consultant for information and communication technology.

On the other hand, practitioners from companies were also interviewed: a Senior Product Manager of a telecommunications company, a Referee in the online sales department of an airline, a Head of Business Development of an AI start-up, a Head of Communications in a tech company and a Head of the Digital Experience and Innovation department of a branch of a bank.

The central selection criterion was the existing experience with bots and profound knowledge of the complexity of topics related to bots in corporate communications. The interviews were conducted in German and English from December 2018 to February 2019. The duration of the interviews varied between 30 and 45 minutes due to different quantities of answers.

Transcription and data evaluation

The transcription of all conversations took place using the German transcription rules for a standardized form. Based on theoretical statements, categories were formed which were directly transferred and integrated into the test questions of the guideline-supported interview. Final categories were then derived from the material obtained. The transcriptions were thus put into a structured form by means of a summary qualitative content analysis (Mayring, 2010), after which the category system was formed, both deductively and inductively (using MAXQDA).

Findings

The evaluation of the expert interviews shows which bots are used for what purpose in corporate communications and which strengths and weaknesses, but also opportunities and risks, are created by them. The ethical aspect was also addressed in the interviews.

RQ1. What types of bots are used for which purposes in corporate communications?

By evaluating the expert interviews from practice and science, the following bots, which are used in corporate communications, could be analysed: chat bots, support bots, assistant bots and web crawlers were the main topics that were discussed. Furthermore, hybrids of bots and software were named which is already used in the company. Of all the types of bots mentioned by the experts, the chat bot stood out particularly strongly. These virtual communication robots are usually used when standardised tasks are to be performed. Here, the experts (p7) primarily speak of process optimisation within the communication of companies.

Table 2

Chat bots	Most used in corporate communications to optimize the process of communication between companies and their stakeholders, very helpful e.g. in crisis communication for standardised answers and repeated requests
Support bots, assistant bots	Used in internal communication for process automation (vacation planning, recruiting, back-office processes) provide regular information about the company
Web crawlers	Used for media monitoring and research on the internet to compile dossiers on relevant topics
Hybrids of bots and software	Used to make information (e.g. presskits) for external stakeholders available

Types of bots and their purposes of use in corporate communications

Looking at the use of bots in companies, two central areas can be identified. Firstly, they are an instrument for internal processes. Bots are used "in internal communication [...] for business process automation, in HR for vacation planning, recruiting" and also "as virtual business assistants" (p7). Several experts mentioned the possibility of using bots to provide employees with regular information and to support change processes with communication. In addition, there is the possibility of structuring administrative tasks such as applicant information and thus actively using the bot in the onboarding process as well as back-office processes. Secondly, experts consider the use of bots primarily in the external communication of companies, especially for customer inquiries and stakeholder communication. This includes standard inquiries or FAQs (r2). Furthermore, according to the interviews, the use of bots makes sense "when we are talking about press relations with external communication towards customers or press contacts" (p5). Then, in the first step, one could automatically "make things available" (p5) before the bot compiles its own press kit based on questions from the press officer. But the use of bots in the area of media monitoring is also possible:

> I am not talking about monitoring services, which are commonplace, but rather their own agent software, which carries out research on the Internet and then compiles dossiers (p1).

In addition, reports were also given on purposes in terms of agenda-setting. In particular, language assistants or chat bots are used to suggest certain topics to customers that the company would like to address: "This means that we can meet the needs of the customer right away with an innovative solution that we offer as a group" (p6). Customer enquiries and FAQs are also an important communication tool in the case of a crisis. One expert also mentioned the field of crisis communication as a possible area of application, in which automated processes with simple instructions for action would be handed over to bots (p10).

After identifying the most important areas of application for bots in corporate communications, the consequences of using bots will now be discussed.

RQ2. What are the consequences of using bots in corporate communications from a scientific and practical perspective?

In order to comprehensively illustrate the consequences of the use of bots in corporate communications, the results were divided into four fields: strengths, weaknesses, opportunities and threats.

Strengths

When it comes to the strengths of bots, experts often concur. For example, they cite primarily the assumption of structured routine tasks as one aspect that bots can easily take on. In this context, for example, they mention tasks that are similar in structure, can be repeated or simply adapted:

> Processes that can be clearly solved by humans, but which in principle do not require comprehensive judgement, can thus be primarily automated (p10).

The main issue is that recurring routine tasks cause motivation problems for employees as well as susceptibility to errors, which can also cause stress. The use of bots can help to take over simple tasks in order to relieve the person, so that the employee can turn to more complex work. (p2; p5; p6).

Another strength that results from the use of bots is that they can ensure efficiency and quality in corporate communications. Automated dialogue systems are particularly worthwhile for standardized organizational processes. Bots can greatly reduce the susceptibility to errors in standardized tasks and at the same time increase efficiency. Experts mention the completion of forms that can be processed more quickly by a bot in order to provide customers with a precisely targeted answer. Especially in customer service, the keyword 'self service' is mentioned here, so that the customer does not need any employee contact and can gather the information himself without much effort (p6).

Based on this, the experts identify a further strength: Bots are permanently available and can therefore be used at any time, no matter where the customer, employee or journalist who wants to receive information is located (p7)This means that a bot can work continuously and without interruptions and, for instance, provide faster responses to customer communications. Due to its constant availability, communication can sometimes even reach more target groups (p5).

> And this new interface, often referred to as a chat bot then, makes it possible to enable a new type of communication between companies and customers, that is personalization, dynamics, automation, availability that goes beyond the human information structure and simply a faster supply of information to the respective user (p2).

An additional strength resulting from the use of bots in companies is cost efficiency. According to the experts, routine tasks that still take up a lot of time for the operator can be completed

quickly and efficiently, reducing the workload. In some cases, it is also problematic for companies to find personnel to take over these tasks. One expert said on the subject that companies "sometimes have up to 20% recurring requests for one and the same question or for one and the same product per day" (p7). These recurring requests could be taken over by a bot and thus on the one hand relieve personnel and on the other hand would have less problems in finding personnel, because less personnel is needed.

Weaknesses

The weaknesses resulting from the use of bots are divided primarily into four areas: A lack of transparency, the desire for human interaction, data protection, and immature technology are often seen as shortcomings by experts. The lack of transparency is seen in the context that a user sometimes does not notice that he is interacting with a bot. The experts recommend clear communication to avoid potential confusion (p1; r1; p3). It is also recommended to offer the possibility to talk to a real person at any time (p5). The desire for human interaction is also a common weakness in the use of bots. People prefer to communicate with like-minded people, especially when dealing with sensitive topics, which is one reason why bots can be more difficult to implement:

> In the sensitive area. Sensitive in the form of, if I have a hysterical customer [...] what do I do now? Then not a bot should respond, but a human being should answer his questions (p5).

In addition, the acceptance of talking to a bot also depends on the customer group and customer age (p4).

Another weakness is the fear of insufficient data protection when communicating with bots. This is because it is not always clear to customers how data is stored and processed, so that a certain concern arises and leads the customer back to the desire for human interaction. According to the experts interviewed, the processing of the data should always be openly communicated:

> It must be possible to understand when data is collected, what happens to this data and it must be possible to delete this data at any time. [...] Furthermore, the user should be able to decide what happens to his data when it is collected by a bot. It should be made clear to the user why the data is gathered at all and what added value he has from it (p5).

One further weakness - the immature technology - is addressed by most experts. They consider bots primarily as a way to perform simple tasks and to optimise processes (p7). However, as soon as it moves on to more complex tasks, a human being will always remain important and will have to take over communication (p4).

> Some things are, until further notice, too complex to be answered by machines. Therefore: If it does not work perfectly, disappointment is inevitable (r2).

Opportunities

The most frequently mentioned opportunity regarding the use of bots in corporate communications is the relief of employees. According to the experts, it is more efficient to use bots, especially for routine tasks or constantly repeating processes, so that employees can devote themselves to more creative or more complicated tasks. This can be applied in customer service, for example.

> The moment I decide to answer standardized inquiries automatically, I relieve my customer service employee and he automatically has more time to deal with really difficult cases and thus of course also improve service quality (p5).

Expert p4 suggests that the top 100, 1000 or 10,000 questions that a company receives should be used as case studies and systematically answered by a bot. In addition to employees, external stakeholders can also be relieved by the use of bots. For example, long waiting times for customers when interacting with a company can be avoided, with the side effect that "a customer relationship that is as smooth and continuous as possible" (p2) can be established.

Internally, bots do not only offer the chance to relieve employees, but also to motivate them. In the company of expert p8, for example, e-mails are automatically sent to employees in which they are praised or reminded of tasks still to be completed:

> The bot only triggers what humans sometimes may forget to say, for example "that was good" or "have you looked at this or that?" (p8).

The results of the interviews also show that the implementation and ongoing use of bots can create many new jobs in companies. While bots may replace people in some routine processes, it is currently always necessary to ensure that the bots work correctly, are developed further and are provided with knowledge.

> This creates completely new jobs and completely new fields of activity in terms of knowledge acquisition, modeling, maintenance, etc. (p4).

Finally, the interviewees see a great opportunity in the area of agenda setting or reaching target groups through the use of bots in communication. Companies can, for instance, prepare content on a certain topic generically once and then have it adapted by a bot specifically for different stakeholders (customers, employees, partners, journalists, etc.). In this way, scattering losses can be avoided when addressing target groups (p5). The second option for companies in terms of agenda setting is to program their own chat bots with exactly the answers and messages that the company wants to disseminate to the outside world. By having the chat bot respond to specific questions, the company can ensure that the same clear message is always conveyed to the stakeholders, thus creating a clear picture of the company (p5).

Threats

The interviews helped to identify two risks that currently arise from the use of bots in corporate communications: manipulation and loss of control.

Social bots in particular can be used manipulatively by giving the "impression, as automated network profiles, that a substantial part of the public participates in a discussion, which is actually not public at all, because they are bots" (p1). As a particularly relevant event, the experts refer to the US election campaign in 2016/2017.

> If you look at Facebook and the elections, we have the huge task of ensuring that we introduce regulations and structures to deal with bots. This is certainly a problem of which we must be aware (p2).

Bots can also be used as a manipulation tool in the field of influencer marketing, for example when influencers buy fake followers that are bots and thus pretend to have a wider reach. Expert p8 calls this a "grey area", which is unacceptable from a transparency point of view.

The second risk that could result from the use of bots in communication is the loss of control over them. The experts give the following example:

> The maybe most famous example is the Twitter bot by *Microsoft Corporation*, which went offline relatively quickly because it learned things through Twitter and after a few days the bot was finally becoming an ultra-racist (r1).

The *Microsoft*-bot was apparently fed by trolls with negative or problematic content. Through "deep learning" (r1), the bot developed into a racist in a very short time, with only little information entered, and could no longer be controlled. This is also conceivable for all other types of bots. Expert p1 sees a further danger from the use of bots in addition to the risks mentioned:

> A scenario could be conceivable in which bot networks are fought with bot networks. Then there would be a kind of arms race, similar to what is already happening with virus programs.

Ethical perspective

Some of the weaknesses and risks mentioned clearly show that the ethical perspective on the subject of bots in corporate communications is also quite relevant. The issue of data protection in particular has been mentioned several times by almost all the experts. If, for instance, users of chat bots are not informed about which of their data is stored and to what extent it is processed, the question arises as to whether this is ethically justifiable. The issue of transparency is also relevant here: Do users even know that they are dealing with a bot or do they think they are interacting with a human being? The interviewees are in agreement:

> It is ethically perfectly legitimate to use bots, as long as they do not deliberately mislead. As long as it is made transparent that it is an automated program and not a human interaction, I think the use of bots is completely legitimate (p8).

According to the experts, the question of responsibility is also ethically relevant: Who is held responsible if, for example, a chat bot provides false information and the user suffers damage

as a result? Especially when bots develop independently through deep learning and people therefore no longer have full control, companies should carefully consider how they act in case of a problem and who is liable in case of doubt.

> I believe that machines cannot bear responsibility in the narrower sense. Above all, they cannot be held responsible. So it makes no sense to rebuke them, punish them or do anything else (r2).

Expert p2 adds that a bot can only be as good as the company develops and maintains it. This insight is accompanied by another observation: Bots cannot and will not solve all of the problems that occur in companies or their communication. Many tasks are too complicated to be handled by bots. The technology behind them is not yet fully developed.

Ethically questionable are also the already mentioned manipulative intentions that can hide behind the use of bots. The experts therefore demand clear rules and structures, especially for bots in social networks, so that malicious or dangerous effects can be prevented.

Lastly, the issue of jobs should be mentioned here. Many people are afraid that their work, and therefore they themselves, will be replaced by bots and that they will lose their jobs. The experts are divided on this. Some of them see the situation as unproblematic:

> Many people complain that if you implement bots, they will replace a lot of jobs. For the year we have been working with bots we actually have not seen that. There are more people working on the bots and how bots behave than the people we needed to reduce (p3).

Nevertheless, the question arises as to whether the very employees whose work is being replaced are also capable of looking after the bots or whether they will simply lose their jobs. From an ethical point of view, the economic cost benefits to companies can therefore be questionable. It is probably up to the companies themselves to decide how to deal with these problems in a responsible manner.

Discussion

The present study shows that although experts from science and the practical field see advantages for corporate communications, they also point to hurdles and ethical challenges that are currently considered to be a greater inhibition threshold for the use of bots. This is in line with the findings of the literature, which has already shown that comparatively few organizations have used bots in their corporate communications to date (Wiesenberg and Tench, 2020; Buente, 2018; Zerfass *et al.*, 2017). The hurdles that organisations and the whole professional field will have to overcome in the future can be divided into three sub-areas. Firstly: Establishing binding ethical guidelines for the use of bots. Secondly: Work on acceptance of bots within the organisation. Thirdly: Creating acceptance for communication with bots among external stakeholders.

Creating commitment - Ethical guidelines and know how to use for the use of bots

Even though Wiesenberg and Tench (2020) found that ethical challenges do not represent an obstacle for companies to use social bots in corporate communications, the experts in this study point out that they are more often than not an entry hurdle. This view is also supported by the findings of Zerfass *et al.*, (2020), which show that practitioners still see the use of bots in certain areas as the greatest ethical challenge in the professional field. The concern about ethical challenges can possibly be explained by the misunderstanding that still exists in many organisations regarding this technology. The fact that experts in this field are particularly sought after is shown by the poor availability of scientists and technology officers from companies that already use bots. They are being called in at this very moment to answer such questions. However, this also indicates that communication experts in organisations need to be trained and to train themselves, especially in these areas.

A further explanation is provided by the codes of ethics in the use of bots, which are not yet uniformly recognised. In the near future, one approach will be to jointly develop such codes for the professional field and make them known. As already mentioned, Wiencierz *et al.*, (2017) already offer a good approach, which should be further promoted in the industry and, if necessary, developed further with experts from the field. According to the authors of this study, these two points addressed can not only help to overcome the inhibition threshold within the company itself, but also create a basis of trust and acceptance for external stakeholders that is still lacking.

Bots as enrichment for the employees

Many employees see the increasing use of bots as a loss of jobs. A headline about the Microsoft company, for example, is currently fuelling fears among employees. Microsoft is said to have dismissed employees and automated their tasks (Futurezone, 2020). However, the company states that the work capacities are rather to be redistributed and that the use of new technologies will not per se lead to job losses. This statement is supported by the literature already cited in the state of research (Bourne, 2019; Chui *et al.*, 2015) as well as by the findings of the experts surveyed in this study. The latter even see an opportunity to employ more people. Moreover, the currently existing bots cannot yet replace a person and their work. The experts, on the other hand, see a relief for employees who can delegate repetitive tasks to bots and can therefore devote themselves more to strategy development or creative activities. As with the two points mentioned above, the conclusion can be drawn that the use of bots in companies must be based primarily on transparency and education. Employees must be relieved of their fears and the positive sides of using bots for their work must be shown. This study provides the scientific basis for this.

Acceptance from external stakeholders

"Bots are on the rise - 2020 will be their year" writes handelsjournal (Albert, 2020). One of the hurdles to be overcome when using bots in a company is the acceptance of external stakeholders. If this generally increases, the relevance for companies also increases. External stakeholders are still quite sceptical about this new technology. Fittkau and Maaß Consulting show that 71% of the 1,200 German Internet users they surveyed refuse to communicate with a chatbot. Yet almost half of them do not even know what a bot is and what it does. Out of

ignorance and lack of trust in a technology they cannot evaluate, external stakeholders prefer to interact with a human rather than a machine. This is also shown in this study. In order to gain trust in bots, it must also be clear what data is collected during an interaction and how it is used. Only when companies succeed in making users trust a bot and it is clear that it works transparently can a company benefit from the use of a bot. The mere implementation of a bot is therefore not enough, the company must also educate the public.

Limitations and future perspectives
First, the sample, especially the relationship between experts from the scientific community and the practical field, must be critically reviewed. In the process of recruiting, it became clear that relatively few academics have already dealt with the topic of bots or can make a contribution to it with regard to corporate communications. Moreover, those researchers who are already considered experts in this field are so much in demand due to the topicality and the high level of interest in this topic that making an appointment was successful in only two cases. Consequently, the proportion of experts from the practice is predominant in this study, so that the topic is viewed very one-sidedly and a practical perspective prevails. Reflecting on the explorative character of the study presented here, we are fully aware that the limited number of interviews and the unbalanced proportion of experts demonstrate a limited perspective on the research field. The results of this study are therefore not representative, so that no generally valid statements can be made.

If one compares the already published results of other studies with those of this one, it becomes clear that comparable findings are not yet available. This study thus provides a first insight into the field of bot types used in corporate communications.

The fact that very different companies and experts in a wide variety of positions were interviewed must also be critically examined. Additionally, this study dealt exclusively with companies that already use bots. Many of the experts referred in their statements (almost) exclusively to chat bots, which brings a further limitation. Thus, the perspective on the research field and especially on the answers to the research questions is limited here as well. From the point of view of scientists and practitioners, many companies have not yet sufficiently dealt with the topic to be able to really fully exploit the potential of bots. The reasons or risks that argue against the use of bots of any kind are not considered in this study. However, given the described circumstance that so far only a few companies have used bots or even dealt with the issue at all, it is even more important to determine the reasons for this phenomenon. Therefore, future studies can further examine how high the acceptance of bots among corporate communications practitioners really is and which challenges exist for the implementation of bots in corporate communications. In addition, future research should further examine what effects the use of automated software has on external communication and, for example, on cooperation with journalists.

With regard to the one-sided perspective in this study, future research should also take into account other professional communicators.

It also remains interesting to observe the extent to which communications departments are changing in the course of increasing digitalization and automation, which types of bots will dominate corporate communications in future, and to what extent specialization and dissemination into other corporate divisions is advancing.

During the research phase, it once again became obvious that the topic of bots in corporate communications is a field that has been little researched to date. This was already evident from the literature review and during the interviews. As already mentioned, this study offers a first insight into the research field and highlights the possibilities and consequences of the use of automated software in corporate communications. In addition, the study offers further possible approaches. Especially quantitative approaches would enrich and complement the findings.

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